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Sixteenth Meeting of SPA/BD Focal Points

Malta, 22-24 May 2023

**Agenda item 12: Adoption of the report**

**Report of the Sixteenth Meeting of SPA/BD Focal Points**

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## Report of the Sixteenth Meeting of SPA/BD Focal Points (Malta, 22-24 May 2023)

### Introduction

1. At their Twenty-second Meeting (Antalya, Türkiye, 7-10 December 2021), the Contracting Parties to the Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean, and its Protocols, invited the Specially Protected Areas Regional Activity Centre (SPA/RAC), to convene in 2023 a meeting of Focal Points for Specially Protected Areas and Biological Diversity (SPA/BD Focal Points) for the biennium 2022-2023.
2. The Sixteenth Meeting of SPA/BD Focal Points (hereinafter referred to as “the meeting”) was organized at the kind invitation of the Maltese Government, at the AX-The Victoria Hotel (Gorg Borg Olivier Street, Sliema SLM 1807), Malta, from 22 to 24 May 2023.

### Participation

3. All the SPA/BD focal points were invited to attend the meeting or designate representatives. The following Contracting Parties were represented at the meeting: Algeria, Bosnia & Herzegovina, Croatia, Cyprus, Egypt, France, Israel, Italy, Lebanon, Libya, Malta, Morocco, Montenegro, Slovenia, Spain, Syria and Tunisia.
4. The multidisciplinary group of experts nominated by the Contracting Parties to define parameters allowing the use of phytoplankton and zooplankton for relevant IMAP biodiversity indicators and elaborate the List of Reference of Pelagic Habitat Types in the Mediterranean Sea was represented by its Chair.
5. The Ad Hoc Group of Experts for Marine Protected Areas in the Mediterranean (AGEM) was represented by its Chair.
6. The Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS) was represented at the meeting.
7. The following organizations were also represented as observers: the International Union for Conservation of Nature (IUCN), the Network of Marine Protected Areas Managers in the Mediterranean (MedPAN), the Turkish Marine Research Foundation (TUDAV) and the Worldwide Fund for Nature (WWF).
8. The UNEP/MAP Coordinating Unit and the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC) were represented at the meeting.
9. The Specially Protected Areas Regional Activity Centre (SPA/RAC) acted as the secretariat of the meeting.
10. The list of participants is attached as Annex I to the present report.

### Agenda item 1:           **Opening of the meeting**

11. The meeting was opened on Monday, 22 May 2023, at 9.00 a.m., by the representatives of the host country, UNEP/MAP Coordinating Unit and SPA/RAC.

12. Honorable Dr. Miriam Dalli, Minister for the Environment, Energy and Enterprise recalled achievements and actions taken by Malta in various fields related to nature protection, air quality, waste management, circular economy and sustainable development. She underscored the Mediterranean marine environment as a precious asset, emphasizing its significance as a source of food, carbon sink, well-being booster, economic catalyst, and vital habitat teeming with biodiversity. Stressing the dire consequences that

could result from not ensuring the necessary protection for this delicate ecosystem, she emphasised the need to build on the expertise, research data, and guidance from the meeting to preserve the seas for future generations.

13. She strongly encouraged to continue striving for a healthier Mediterranean environment while relying on the knowledge and expertise of the UNEP/MAP system to implement measures that ensure its adequate protection.

14. Mr. Kevin Mercieca, Chief Executive Officer of the Environment & Resources Authority in Malta, acknowledged the strides made in marine biodiversity within the country while underscoring the importance of a regional framework to strengthen nation-level initiatives. Recognizing the UNEP/MAP Programme of Work for 2022-2023 as a “driving” force during “challenging times”, he expressed optimism in witnessing tangible outcomes on the ground.

15. Mr. Gabino Gonzalez Deogracia, Deputy Coordinator of UNEP/MAP, thanked Malta for hosting the meeting. He recalled that the Mediterranean region benefits from an efficient and resourceful system, the Barcelona Convention, which offers a forum for dialogue and joint actions and a pool of resources in addition to seeking a synergetic approach with the numerous stakeholders and partners with common objectives toward a better future. He said that the meeting will be the opportunity to present and appreciate the tremendous work and achievements implemented together with the Contracting Parties and in collaboration with the relevant regional and international partners to meet the global targets set by the Kunming-Montreal Global Biodiversity Framework (GBF), the resolution to forge the "Plastic Pollution Treaty", and the agreement on the new legally binding instrument on the conservation and sustainable use of marine biological diversity in areas beyond national jurisdiction, the "BBNJ Treaty".

16. Mr. Khalil Attia, Director of SPA/RAC, welcomed the participants and thanked the Maltese authorities for hosting the meeting and for their kind hospitality. He said that the biennium, as the first of the UNEP/MAP-six-year midterm strategy 2022-2027, had been very rich in terms of activities, processes and achievements at regional and national levels towards the implementation of the strategies and action plans adopted under the Barcelona Convention and the Specially Protected Areas and Biological Diversity Protocol. He stressed, however, that the Mediterranean faces many challenges leading it to set priorities, and that the coming years will be crucial at many levels. Climate change is impacting the region and its environment more and more severely; and more work, stronger commitment and more financial means are required to reverse the tendency and to achieve our ambitious global and regional objectives. He welcomed existing and future collaboration with partner organizations which would help to achieve common regional objectives by joining efforts and avoiding overlap and duplication. He also highlighted the resource mobilisation strategy elaborated in view of assisting the Contracting Parties in the implementation of the Post-2020 SAPBIO including the Post-2020 MCPA & OECM strategy where a project portfolio has been prepared and presented to several potential donors.

## **Agenda item 2: Organisational matters**

### **2.1. Rules of procedure**

17. The internal rules adopted for meetings and conferences of the Contracting Parties to the Convention for the protection of the Mediterranean Sea against pollution and its protocols (UNEP/IG.43/6, Annex XI) as amended by the Contracting Parties (UNEP(OCA)/MED IG.1/5 and UNEP(OCA)/MED IG.3/5) apply *mutatis mutandis* to this meeting.

## 2.2. Election of officers

18. The meeting unanimously elected the following officers:

Chairperson:	Ms. Claire Cordina Borg (Malta),
Vice-Chairpersons:	Ms. Tina Centrih Genov (Slovenia), Ms. Hassna Ismaili Alaoui (Morocco),
Rapporteur:	Mr. Moustafa Fouda (Egypt).

## 2.3. Adoption of the agenda

19. The Secretariat introduced the provisional agenda, which had been issued as document UNEP/MED WG.548/1 Rev.3, and the annotated version in document UNEP/MED WG.548/2 Rev.2.

20. After reviewing the two documents, the meeting approved the agenda and the proposed timetable. The agenda of the meeting appears as Annex II to this report.

## 2.4. Work organisation

21. The Secretariat proposed that the meeting be held in daily sessions from 9:00 a.m. to 1:00 p.m. and from 2:30 p.m. to 5.00 p.m., subject to adjustments, as necessary.

22. The working languages of the meeting are English and French. Simultaneous interpretation is available for all the sessions.

### **Agenda item 3: Status of implementation of the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean (SPA/BD Protocol)**

23. The Secretariat introduced document UNEP/MED WG.548/3 Rev.1, entitled “Report on the status of implementation of the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean (SPA/BD Protocol)”. The document contained an analysis of the information provided by the 8 countries that had submitted reports on the implementation of the SPA/BD Protocol through the online reporting system of the Barcelona Convention and its Protocols. The reporting period covered the previous biennium, starting in January 2020 and ending in December 2021.

24. The meeting welcomed the report presented by the Secretariat but emphasised the limited number of reports (08) submitted by the Contracting Parties which makes it difficult to obtain a comprehensive overview of the status of implementation of the SPA/BD Protocol.

25. Several Contracting Parties’ representatives stressed the complexity of the online reporting system and emphasised the difficulties they had encountered to use it. They requested additional time to enable the submission of more reports and the consideration of those sent after the deadline.

26. The meeting requested exploring solutions to improve the online reporting system, without adding new reporting obligations. This could involve implementing user-friendly features such as enabling collaborative national reporting from different relevant departments, staging data entry as well as providing capacity-building trainings to facilitate the online reporting. Furthermore, the meeting underlined the importance of timely addressing and resolving any issue that may arise during the reporting period, urging both the secretariat and Contracting Parties to collaborate in this regard.

27. It has been proposed by Contracting Parties that the next biennial reports will include a list of the Contracting Parties who will have submitted their reports.

28. The representative of the MAP Coordinating Unit indicated that the enhancement of the reporting format will be addressed in the upcoming “Compliance Committee” of the UNEP/MAP.

29.The MedPAN representative suggested the use of the database of Marine Protected Areas in the Mediterranean (MAPAMED) to support the reporting efforts of the Contracting Parties.

**Agenda item 4: Progress report on the activities carried out to implement SPA/RAC activities under the UNEP/MAP Programme of Work for the biennium 2022-2023**

30.The Director of SPA/RAC introduced the progress report contained in document UNEP/MED WG.548/4 and explained that it reflected the sequence of the themes, strategic outcomes and key outputs defined in the MAP Medium-Term Strategy 2022–2027. He gave a comprehensive presentation of the most important activities during the reporting period, including collaboration with relevant international and regional partners and key international and regional events organized by SPA/RAC or to which it has contributed, mainly by organizing side events.

31.Commenting on the presentation made by the director of SPA/RAC, delegates commended the efforts made by SPA/RAC to promote the implementation of the Protocol and to develop close collaboration with countries and partner organizations.

32.Delegates of Egypt, Israel, Lebanon, Libya, Morocco, Montenegro and Tunisia expressed their satisfaction with the support their countries had received from SPA/RAC in particular for activities related to the conservation of endangered species and key habitats, surveying and monitoring of marine and coastal biodiversity, development of a coherent network of marine protected areas and capacity-building. In this context, they expressed their thankfulness to donors such as the European Union, GEF, MAVA Foundation, SIDA, as well as to France and Italy for their voluntary contribution to support the implementation of important projects.

33.The delegate of France highlighted the importance of the MedBycatch project and its results, which involved extensive research, onboard observations, and testing of several measures to reduce the bycatch of vulnerable species. He stressed the need for the publication of the project results and dissemination of the valuable outcomes achieved which may help develop the next phase of the project.

34.Several delegates requested from the Centre to pursue its assistance to Mediterranean countries during the next biennium towards achieving the regional objectives.

35.Representatives of ACCOBAMS, IUCN, MedPAN, and WWF took the floor to express their satisfaction with the bonds of collaboration established between their organizations and SPA/RAC. They informed the meeting about the activities and projects developed by their respective organizations in relation to the topics of relevance to the SPA/BD Protocol and confirmed their willingness to pursue collaborative activities with the Centre and Mediterranean countries in the coming years.

**Agenda item 5: Conservation of Species and Habitats**

**5.1. Updating of the Action Plan for the conservation of bird species listed in Annex II to the SPA/BD Protocol**

36.Referring to document UNEP/MED WG.548/5 “Draft updated Action Plan for the conservation of bird species listed in Annex II to the SPA/BD Protocol”, the Secretariat briefly recalled the main steps in the preparation of the Action Plan and its update process recalling the active feedback of the Contracting Parties and the relevant regional organizations.

37. The meeting congratulated the Secretariat on the work achieved in updating the action plan and invited SPA/RAC to submit the Draft updated action plan for the conservation of bird species listed in Annex II to

the SPA/BD Protocol (Annex III to this report) to the MAP focal points meeting and to the 23<sup>rd</sup> Meeting of the Contracting Parties (COP 23) for adoption.

### **5.2. Updating of the Action Plan concerning species introductions and invasive species in the Mediterranean Sea**

38. Under this agenda item, the Secretariat introduced document UNEP/MED WG.548/6, which contains the Draft updated Action Plan concerning species introductions and invasive species in the Mediterranean Sea and explained the steps in evaluating its implementation, updating the plan and setting a timetable for the period 2024–2027. It also informed the meeting that the updating took into consideration the national, sub-regional and regional Non-Indigenous Species (NIS) baselines and the Ballast water management strategy for the Mediterranean Sea (2022-2027).

39. The representative of the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC) introduced document UNEP/MED WG.548/Inf.7 on the Final draft regional harmonised procedures for the uniform implementation of the Ballast Water Management (BWM) Convention in the Mediterranean Sea. He indicated that this document is part of the implementation of the Ballast Water Management Strategy for the Mediterranean Sea (2022-2027) which establishes a framework for a regional harmonised approach in the Mediterranean on ships' ballast water control and management that is consistent with the requirements and standards of the BWM Convention. The document proposes 7 harmonised procedures and will be submitted to the Fifteenth Meeting of the Focal Points of REMPEC and then to the MAP focal Point meeting and COP 23 for consideration.

40. Several countries expressed the necessity to focus more, as appropriate, on the prevention and mitigation of the invasive non-indigenous species and to consider spread through ballast water, shipping, corridors and other pathways.

41. The delegate of Spain informed the meeting about the invasion of the Spanish coast by the algae species *Rugulopterix okamurae*. She highlighted that her country adopted its strategy to try to prevent the expansion of the species and elaborated a deep risk analysis. She informed the meeting that the adopted strategy and the risk analysis could be shared if needed.

42. The meeting congratulated the Secretariat on the Action Plan concerning species introductions and invasive species in the Mediterranean Sea and invited SPA/RAC to submit it, as amended, (Annex IV to this report) to the MAP focal points meeting and to the 23<sup>rd</sup> Meeting of the Contracting Parties (COP 23) for adoption.

### **5.3. Report of the multidisciplinary group of experts nominated by the Contracting Parties to define parameters allowing to use phytoplankton and zooplankton for relevant IMAP biodiversity indicators and elaborate the List of Reference of Pelagic Habitat Types in the Mediterranean Sea**

43. Recalling Decision IG.25/13 of the 22<sup>nd</sup> Meeting of the Contracting Parties to the Barcelona Convention (Antalya, Türkiye, 7-10 December 2022), the Secretariat introduced document UNEP/MED WG.548/7 containing the Report of the multidisciplinary group of experts nominated by the Contracting Parties to define parameters allowing to use phytoplankton and zooplankton for relevant IMAP biodiversity indicators and elaborate the List of Reference of Pelagic Habitat Types in the Mediterranean Sea. It highlighted the main conclusions and recommendations of the multidisciplinary group of experts. It informed the meeting, that the group stressed the importance and necessity to continue for the next biennium the work of the Multidisciplinary group to move forward in the development of indicators based on the outcomes of relevant ongoing projects in the region (i.e., ABIOMMED) and in collaboration with the Joint Research Centre (JRC).



44. When commenting on the presentation of the secretariat, the meeting recommended that the Contracting Parties who have not yet appointed members to the multidisciplinary group of experts should do so as soon as possible to allow to take advantage of the diversity of skills and expertise across the region.

45. Then, the Chair of the group of experts, referring to the same document, presented the two main outputs that the Group had produced and the outcomes of the ABIOMMED Project. She emphasised that the group defined Biomass (Chl a, Carbon), Abundance, Size and Biovolume as parameters that can be used as key parameters to develop and compute pelagic habitat indicators. She confirmed that the modified classification of pelagic habitat types in the epipelagic layer (0-200 m) proposed in UNEP/RAC/SPA (2013) can be used, where necessary, as a basis for identifying reference pelagic habitats to be monitored and assessed at the national level under IMAP. This reference list could be further developed at national level to consider national features and specificities.

46. The meeting welcomed the conclusions and recommendations of the multidisciplinary group of experts and invited SPA/RAC to submit them, as amended (Annex V), to the MAP focal points meeting and to the 23<sup>rd</sup> Meeting of the Contracting Parties (COP 23) for adoption.

#### **5.4. Mid-term assessment of the implementation of the Regional Strategy for the conservation of the Monk seal in the Mediterranean**

47. Under this agenda item, the Secretariat introduced document UNEP/MED WG.548/8 Rev.1 including the mid-term assessment of the implementation of the Regional Strategy for the conservation of the Monk seal in the Mediterranean for the period 2019-2022.

48. Some Contracting Parties highlighted the usefulness of using monitoring tools such as citizen science and cameras.

49. The meeting took note and reviewed the mid-term assessment of the implementation of the Regional Strategy for the conservation of the Monk seal in the Mediterranean.

#### **5.5. Conditions and criteria for the award of the Regional Action Plans Partner title**

50. Referring to document UNEP/MED WG.548/9, the Secretariat introduced the Draft conditions and criteria for the award of the Regional Action Plans Partner title. The Secretariat emphasised that the conditions and criteria are in compliance with the provisions of the Action Plans and are developed to clarify the procedures for obtaining this title.

51. The meeting welcomed the initiative indicating that it will highly support NGOs, national institutes, universities, and private sector entities, and enhance their collaboration with the Contracting Parties.

52. Several countries highlighted the need of concertation with the concerned SPA/BD focal point in the awarding process about the requests received from national organizations, national and local NGOs and research institutions/laboratories.

53. The meeting reviewed and approved the Draft conditions and criteria for the award of the Regional Action Plans Partner title and invited SPA/RAC to submit the document, as amended, to the MAP focal points meeting and to COP 23 for adoption. The amended document appears as Annex VI to this report.

#### **5.6. Draft Restoration Programme of *Pinna nobilis***

54. Under this agenda item, the Secretariat introduced document UNEP/MED WG.548/10 including the Draft Restoration Programme of *Pinna nobilis*. It informed the meeting that this proposal follows a series of meetings organized by IUCN-Med and as a response to the regional alarming situation and the need and urgency to act for monitoring, studying and restoring the species as soon as possible in a coordinated

manner with a proven scientific approach. It emphasised that participants to the workshop held in June 2022 (i) urged the establishment of the Pan-Mediterranean task force to implement, propose and assess the translocation of potentially resistant individuals and any other matters in relation with the restoration of *Pinna nobilis*, (ii) suggested to call upon the relevant donors and national and international funding agencies to support the restoration programme of *Pinna nobilis* due to the urgency of its situation, and (iii) requested the submission of the draft restoration programme to consideration by the governing bodies of the Barcelona Convention.

55. When commenting on the presentation made by the secretariat, the meeting expressed appreciation for the draft restoration programme and emphasised its significance to the restoration of the species. Additional comments have been provided by several countries.

56. One Contracting Party stressed the importance of adopting a cautious approach for *Pinna nobilis* translocation to avoid the spread of mass-mortality causes to unaffected populations.

57. The meeting reviewed and approved the draft restoration programme of *Pinna nobilis* and invited SPA/RAC to submit it, as amended, to the MAP focal points meeting and to COP 23 for adoption. The amended document appears as Annex VII to this report.

### **5.7. Proposals for amendment to Annexes II and III to the SPA/BD Protocol**

58. Under this agenda item, the Secretariat introduced document UNEP/MED WG.548/18 “Proposals for amendment to Annexes II and III to the SPA/BD Protocol”.

59. The representative of France presented the rationale and the data required for inclusion in Annexes II and III of nine species of cartilaginous fishes.

60. The meeting was invited to consider the proposal and make recommendations on follow-up.

61. Many delegations and observers supported the proposal and provided additional scientific information to reinforce it. Malta representative agreed to the list being proposed by France but expressed reservations with regard to *Myliobates aquila* being proposed since this merits further evaluation at national level.

62. All the delegations who expressed their positions on this agenda item confirmed the need to preserve the cartilaginous species proposed by France for inclusion in Annexes II and III of the SPA/BD Protocol. However, the delegations of Algeria, Libya, Syria and Tunisia indicated their reservation due to the lack of time to consult with the concerned authorities in their respective countries. They therefore expressed the need for consultation on the issue at the national level.

63. The meeting then decided to submit the proposal of inclusion to the MAP focal points meeting taking place in September 2023, while indicating that the reservations expressed during the present meeting could be confirmed or lifted following consultations at the national level.

### **Agenda item 6: Conservation of sites of particular ecological interest**

#### **6.1. Report by the Chair of the Ad hoc Group of Experts for Marine Protected Areas in the Mediterranean (AGEM) on the group’s works during the biennial period 2022-2023**

64. Referring to document UNEP/MED WG.548/11, the Secretariat provided some background information on AGEM, followed by AGEM Chair’s presentation of the group of experts’ works during the period 2022-2023.

65. The Chair reported that AGEM held its third meeting (the first of the biennium) in March 2022, where the following items were discussed: (i) reviewing the outputs of the AGEM Working Group on Coherence,

(ii) providing guidance on the implementation of the Post-2020 Regional Strategy for MCPAs and OECMs and in particular its strategic pillar on OECMs, and (iii) discussing and agreeing on AGEM work programme for 2022-2023.

66.The AGEM outcomes on coherence provided guidance on two aspects: (i) the criteria for an MPA system to be coherent and connected, and (ii) enabling conditions to ensure that those criteria are met, as well as recommendations for decision makers at MPA, MPA system, national and regional levels. The most salient recommendations were related to the need for further scientific studies on connectivity and coherence, increasing no-take zones, and managing effectively existing protected areas.

67.AGEM recommended more intense and tighter communication with the countries to push forward the MCPA and OECM Strategy implementation through expert visits, face-to-face meetings, and the elaboration of tailored implementation guidance.

68.Regarding OECMs, it was recommended that the countries start working on the existing measures that could be identified as OECMs. AGEM also stressed the need of having a Mediterranean workshop to reflect on what should constitute a biodiversity outcome for an OECM. It was proposed that the SPA/BD Focal Points play a role of facilitation and coordination at the national level.

69.Participants were unanimous in their appreciation of the work done and the deliverables produced by AGEM.

70.It was noted that SPA/RAC should consider the coherence and connectivity of MPAs at regional and national levels, including the impact of climate change on connectivity for well-designed and resilient MPA networks, and further communicate on these aspects as well as on OECMs.

71.Efficient planning of the AGEM activities to enable the effective participation of the experts and guarantee timely and effective implementation of the AGEM work programme was highlighted.

72.The meeting requested from the Secretariat to review the AGEM terms of reference (ToRs) so that they match the provisions and timetable of the Post-2020 MCPA and OECM Strategy and its future Evaluation and Monitoring Framework, before the end of 2024 and to submit them electronically for review and approval. The approved ToRs will be used to renew (wholly or partially) the composition of AGEM for the forthcoming period starting in 2024, in close consultation with the SPA/BD Focal Points.

#### **6.1.1. Elaboration of an evaluation and monitoring framework for the Post-2020 Regional Strategy for MCPAs and OECMs in the Mediterranean**

73.Under this agenda item, the Secretariat presented the Draft Evaluation and Monitoring Framework for the Post-2020 Regional Strategy for MCPAs and OECMs in the Mediterranean submitted to the meeting in document UNEP/MED WG.548/12.

74.Several participants welcomed the evaluation and monitoring framework, emphasised its quality and shared proposals for amendments. The comments and amendments were integrated into the final version of the evaluation and monitoring framework.

75.One Contracting Party invited SPA/RAC to elaborate a definition for the “enhanced protection levels” with the support of the AGEM group.

76.SPA/RAC was invited to support the countries in reaching Target 3 of the CBD through, among others, capacity building, communication and ways for innovative sustainable financing.

77.The meeting endorsed the draft Evaluation and Monitoring Framework and agreed on its submission, as amended, to the MAP focal points meeting and the 23<sup>rd</sup> Meeting of the Contracting Parties for adoption. The document as amended by the meeting appears as Annex IX to this report.

## **6.2. Analysis of the reports on Specially Protected Areas (SPAs) for the Directory of Mediterranean SPAs**

78.Under this agenda item, the Secretariat presented document UNEP/MED WG.548/13 including an analysis of the reports on Specially Protected Areas (SPAs) for the Directory of Mediterranean SPAs.

79.Some Contracting Parties pointed out the complexity of the reporting format used, stressed the need to revise and simplify it, and expressed reservations about the accuracy of some parts of the analysis report.

80.The Secretariat indicated that the results of this first analysis are biased and do not offer a true and fair view of SPAs in the Mediterranean, mainly because data for a significant part of the Mediterranean were missing, and that the forthcoming round of reporting about SPAs should be made when submitting the national implementation reports under the Barcelona Convention for the biennial period 2022-2023.

## **6.3. List of Specially Protected Areas of Mediterranean Importance (SPAMI List)**

### **6.3.1. Ordinary Periodic Review of SPAMIs**

81.The Secretariat introduced the Report on the Ordinary Periodic Review of the areas included in the SPAMI List, undertaken in 2023 and contained in document UNEP/MED WG.548/14 and indicated that the SPA/RAC mandate concerning the 2022-2023 SPAMI ordinary reviews is related to the following five SPAMIs:

- Karaburun Sazan National Marine Park (Albania);
- Banc des Kabyles Marine Reserve (Algeria) ;
- Habibas Islands (Algeria);
- Les Calanques National Park (France); and
- Portofino Marine Protected Area (Italy).

82.The Secretariat highlighted the results of the review and informed the meeting that the Albanian SPAMI was not evaluated as the Albanian authorities did not designate either a SPA/BD Focal Point or a person responsible for the SPAMI management, despite repeated calls by the Secretariat.

83.The meeting approved the results of the ordinary review that recommended maintaining the Banc des Kabyles (Algeria), Les Calanques National Park (France) and the Portofino Marine Protected Area (Italy) in the ordinary review process; and including the Habibas Islands (Algeria) in a period of provisional nature of 6 years maximum.

84.In view of that decision, Algeria should inform the seventeenth meeting of SPA/BD Focal Points in 2025 about identifying and launching adequate corrective measures for the Habibas Islands.

85.The meeting requested SPA/RAC to revise the Format for the periodic review of SPAMIs adopted in 2019 and especially the scoring system under sections 4.1 and 4.2 to propose it in due course for adoption by COP 23, and to set up a working group for this purpose made up of representatives of the States concerned.

86.The Secretariat informed the meeting of the ordinary reviews to be conducted in 2024 and 2025.

87.The following five SPAMIs are to be reviewed in 2024:

- La Côte Bleue Marine Park (France);
- Les Embiez Archipelago - Six Fours (France);
- Capo Carbonara Marine Protected Area (Italy);
- Penisola del Sinis - Isola di Mal di Ventre Marine Protected Area (Italy); and
- Porto Cesareo Marine Protected Area (Italy).

88.The following fourteen SPAMIs are to be reviewed in 2025:

- The Lara-Toxeftra Turtle Reserve (Cyprus);
- Port-Cros National Park (France);
- Cerbère-Banyuls Marine Nature Reserve (France);
- Pelagos Sanctuary for the Conservation of Marine Mammals (France, Italy and Monaco);
- Egadi Islands Marine Protected Area (Italy);
- Landscape Park Strunjan (Slovenia);
- Alboran Island (Spain);
- Cabo de Gata-Nijar Natural Park (Spain);
- Cap de Creus Natural Park (Spain);
- Columbretes Islands (Spain);
- Mar Menor and Oriental Mediterranean zone of the Region of Murcia coast (Spain);
- Medes Islands (Spain);
- Sea Bottom of the Levante of Almeria (Spain); and
- Cetaceans Migration Corridor in the Mediterranean (Spain).

89.The Secretariat informed the meeting of the extraordinary reviews to be conducted no later than 2025. These would concern the five following SPAMIs:

- Palm Islands Nature Reserve (Lebanon);
- Tyre Coast Nature Reserve (Lebanon);
- La Galite Archipelago (Tunisia);
- Kneiss Islands (Tunisia); and
- Zembra and Zembretta National Park (Tunisia).

90.The meeting agreed to exceptionally allow postponing the ordinary review of the Karaburun Sazan National Marine Park (Albania) to 2024.

91.Taking into account the high number of SPAMIs to be evaluated in the forthcoming biennium, the importance to start the process of the SPAMI evaluation well in advance was highlighted, in order to allow the Technical Advisory Commissions to plan their missions and organize their visits.

### **6.3.2. Inclusion of areas in the SPAMI List**

92.The Secretariat informed the meeting that no proposals have been received to include areas in the SPAMI List during the intersession.

93.The meeting called upon SPA/RAC to encourage Southern and Eastern Mediterranean Contracting Parties to propose sites for inclusion in the SPAMI List with the aim of achieving a more balanced geographical distribution of SPAMIs.

#### **Agenda item 7: Status of implementation of the Ecosystem Approach (EcAp) Roadmap**

94.The Secretariat presented document UNEP/MED WG.548/Inf.11 on the status of implementation of the Ecosystem Approach (EcAp) roadmap, which described the progress made in implementing the Ecosystem Approach roadmap during the 2022-2023 biennium and IMAP at national and regional levels and in

particular aspects related to IMAP common indicators such as the assessment scales, assessment criteria, baseline, and threshold values. It informed the meeting about the assistance provided to countries to implement the national monitoring programmes and the development status of the ecological objective EO6 related to Sea Floor Integrity and the ecological objective EO4 related to the Food Webs.

95. The Contracting Parties welcomed the progress achieved, shared progress in their respective countries and thanked the Centre for its continuous support. They expressed the need for further assistance during the next cycle of IMAP.

96. Several countries participating in the IMAP/MPA project financially supported by the EU, stressed their need for an extension of the deadlines, including for future projects, to allow a proper implementation of the monitoring activities, collection and timely submission of the data on the IMAP info System.

97. The secretariat encouraged the Contracting Parties to continue working on the collective implementation of national IMAPs and commended the work achieved by the informal Online Working Groups (OWGs) and the valuable scientific contribution of the different nominated experts as well as the partner organizations.

**Agenda item 8:                   The Status of elaboration of the 2023 Mediterranean Quality Status Report (MED QSR 2023) and the content of the Ecological Objectives (EOs) of biodiversity, NIS and fisheries chapters**

98. The Secretariat presented the document UNEP/MED WG.548/15 “The Status of elaboration of the 2023 Mediterranean Quality Status Report (MED QSR 2023) and the content of the Ecological Objectives (EOs) of biodiversity, NIS and fisheries chapters”. It described the background and context for the preparation of the 2023 Mediterranean Quality Status Report (MED QSR 2023). It indicated that the presented document includes the measures and actions required to achieve the Good Environmental Status (GES), elaborated as part of section 6 of the 2023 MED QSR biodiversity and NIS assessment chapters.

99. The Secretariat informed the meeting that the assessment chapter related to Fisheries has not yet been provided by the GFCM Secretariat and is expected to be presented to the upcoming Integrated CORMON meetings (Athens, 27-28 June 2023).

100. One contracting party exhorted the secretariat to take all the urgent measures to ensure the delivery of this important document by the GFCM.

101. The meeting was informed that the 2023 MED QSR biodiversity and NIS assessment chapters will be presented and discussed as a whole during the integrated CORMON meeting to be held next June.

102. One participant suggested adding mitigation and prevention measures to the proposed measures and actions required to achieve Good Environmental Status (GES) for Non-Indigenous Species (NIS) in order to reduce new introductions.

103. Several delegations emphasised that their countries will not be able to designate representatives to the Integrated CORMON meeting scheduled for the 27<sup>th</sup> and 28<sup>th</sup> of June 2023, as the 28<sup>th</sup> is a UN official holiday for the celebration of the Eid Al Adha holidays in the Muslim world, which is a very important annual feast celebrated in families. They stressed the need to re-schedule the meeting and/or change its venue to allow the attendance of Muslim countries’ delegates and insure a good level of participation to the Integrated CORMON.

104. With regard to the point raised by several Contracting Parties concerning the upcoming date of the Integrated CORMON meeting, the UNEP/MAP Coordinating Unit representative noted that the Secretariat took Contracting Parties’ concerns very seriously and informed the meeting that written requests on the possible change of dates of the Integrated CORMON Meeting sent to the UNEP/MAP Secretariat were answered. He further noted that upon receipt of the written requests, the Secretariat explored the possibility

of changing the date, which is found not to be possible due to hotel availability. He further emphasised that the change of venue is constrained by the limited time available prior to the meeting, and by contractual arrangements and lengthy procurement procedures, which are now completed.

**Agenda item 9: Post-2020 Strategic Action Programme for the Conservation of Biodiversity and Sustainable Management of Natural Resources in the Mediterranean Region (Post-2020 SAPBIO)**

105. Referring to document UNEP/MED WG.548/16, the SPA/RAC Director informed the meeting about the steps undertaken for the implementation of the Post-2020 SAPBIO during 2022-2023. He emphasised that as a follow-up for the adoption of the Post-2020 SAPBIO and the Post-2020 Regional Strategy for MCPAs and OECMs, SPA/RAC launched the process of elaborating a resource mobilisation strategy for the Post-2020 SAPBIO, including the Post-2020 Strategy for MCPAs and OECMs, for the period 2022-2030.

106. He explained that the objective of the Resource Mobilisation Strategy (RMS) is to ensure financial support that will have a switch value to enable a sequence of actions for a realistic operational implementation of the Post-2020 SAPBIO by the countries with support from SPA/RAC and the relevant partner organisations. For the elaboration of the RMS, the following steps were undertaken:

- Elaboration of the Resource Mobilisation Strategy concept note;
- Elaboration of brief project concepts and their financial needs estimate;
- Mapping of the potential donors and funding agencies;
- Elaboration of a project portfolio (4 full project concepts);
- Organisation of the 4<sup>th</sup> Meeting of the SAPBIO Advisory Committee;
- Organisation of the 9<sup>th</sup> Meeting of the SAPBIO National Correspondents;
- Finalisation of the Resource Mobilisation Strategy and supporting documents; and
- Organisation of the donor conference.

107. He also informed the meeting that as a follow-up to the donor conference, bilateral meetings are being organized with the donors in order to better discuss the projects' components that are of interest to their respective organisations. Based on the outcomes of the bilateral meetings with donors, SPA/RAC will further develop the project portfolio in consultation with countries and partner organisations.

108. He added that following the mid-term evaluation to be undertaken in 2025 to assess the progress in the implementation of the Post-2020 SAPBIO, in consultation with the Contracting Parties and in collaboration with partner organizations, SPA/RAC will prepare a second project portfolio of the RMS and liaise with potential donors to mobilise the needed resources towards the achievement of 2030 regional targets.

109. Several delegations commended the efforts made by SPA/RAC in relation to the resource mobilisation for the implementation of the Post-2020 SAPBIO and the Post-2020 Strategy for MCPAs and OECMs.

110. One observer stressed the need to boost the implementation of the activities planned in the Post-2020 SAPBIO in order to meet the agreed targets in due course.

**Agenda item 10: Draft Programme of work of SPA/RAC for the biennium 2024-2025**

111. The Director of SPA/RAC presented the draft SPA/RAC work programme for the 2024–2025 biennium contained in document UNEP/MED WG.548/17. He recalled that it had been prepared since February 2023 and shared with the SPA/BD focal points. All the comments received had been considered.

112. He explained that since this is the second biennium of the MTS cycle (2022-2027), most of the proposed activities follow on those started in the present biennium. Some new activities are also proposed to implement relevant priority actions included in the new regional strategies adopted by the Contracting Parties to the Barcelona Convention at their 22<sup>nd</sup> meeting (COP 22, Antalya, Türkiye, 7-10 December 2021).

113.He added that the SPA/RAC draft 2024-2025 PoW is developed mainly under six of the seven MTS Programmes, namely “Towards a pollution and litter free Mediterranean Sea and coast embracing circular economy”, “Towards Healthy Mediterranean Ecosystems and Enhanced Biodiversity”, “Towards a Climate Resilient Mediterranean”, “Governance”, “Together for a shared vision of the Mediterranean Sea and coast” and “Towards a Stronger Advocacy, Awareness, Education and Communication of the Mediterranean Sea and Coast”.

114.He noted that particular attention has been and will be paid to collaboration with other MAP Components toward a more integrated MAP action. Cooperation with relevant regional partners with the aim of achieving a more coherent and inclusive regional partnership will be given particular attention as well.

115.The participants to the meeting congratulated the centre on the quality of the document and the relevance of the proposed activities and deliverables which cover all the priority actions. They welcomed the ambitious draft work programme proposed by SPA/RAC for the biennium 2024–2025 and emphasised the importance of awareness and communication activities for biodiversity protection.

116.Several countries requested that SPA/RAC continue to provide them with technical and financial support mainly for the establishment and management of SPAs, for the implementation of national action plans and national IMAP programmes and for public awareness.

**Agenda item 11: Any other matters**

117.Regarding the date of the next Integrated CORMON meeting in June, the issue was raised again and many Contracting Parties were not satisfied with the response of the Deputy Coordinator. Hence, many delegates proposed to raise the issue further up to the UNEP headquarters in Nairobi and also to the UN headquarters in New York via the appropriate national authorities.

118.The UNEP/MAP Deputy Coordinator informed the meeting that Mr. Khalil Attia, SPA/RAC Director, will retire by the end of this year. He commended the valuable contribution of Mr. Khalil Attia in promoting the role of SPA/RAC and UNEP/MAP. He emphasised that thanks to the leadership of Mr. Attia in the past nine years, SPA/RAC had fulfilled notable achievements and consolidated collaboration with Contracting Parties and partner organizations.

119.Following the intervention of the deputy coordinator, Mr. Khalil Attia was applauded by the participants.

**Agenda item 12: Adoption of the report**

120.The meeting reviewed the draft report prepared by the Secretariat, modified it and adopted the present report.

**Agenda item 13: Closure of the meeting**

121.After the customary exchange of courtesies, the meeting was closed on Wednesday, 24 May 2023, at 19:16 p.m.



**Annex I**

**List of Participants**  
*Liste des Participants*

**List of Participants**  
*Liste des Participants*

**REPRESENTATIVES OF THE CONTRACTING PARTIES**  
**REPRÉSENTANTS DES PARTIES CONTRACTANTES**

<b>ALGERIA / ALGÉRIE</b>	<p><b>Ms. Naima AIT MESBAH</b> Sous-Directrice de la Sensibilisation et de l'Education à l'Environnement Ministère de l'Environnement et des Energies Renouvelables</p> <p><b>Ms. Saida LAOUAR</b> Sous Directrice de la Préservation du Littoral, des Milieux Marins et des Zones Humides Ministère de l'Environnement et des Energies Renouvelables</p>
<b>BOSNIA &amp; HERZEGOVINA BOSNIE-HERZÉGOVINE</b>	<p><b>Mr. Admir ALADŽUZ</b> Hydro Engineering Institute Sarajevo</p>
<b>CROATIA / CROATIE</b>	<p><b>Ms. Ana Kobašić</b> Head of Service for Strategic Affairs Ministry of Economy and Sustainable Development Zagreb, Croatia</p>
<b>CYPRUS / CHYPRE</b>	<p><b>Ms. Marina ARGYROU</b> Director, Department of Fisheries &amp; Marine Research Ministry of Agriculture, Rural Development and Environment Nicosia, Cyprus</p> <p><b>Mr. Giannis IOANNOU</b> Fisheries and Marine Research Officer Department of Fisheries &amp; Marine Research Ministry of Agriculture, Rural Development and Environment Nicosia, Cyprus</p>
<b>EGYPT / ÉGYPTE</b>	<p><b>Mr. Mohamed Said ABDELWARITH</b> Environmental Researcher Nature Conservation Sector Egyptian Environmental Affairs Agency Cairo, Egypt</p> <p><b>Mr. Moustafa FOUDA</b> Advisor of Ministry of Environment Ministry of Environment of Egypt Cairo, Egypt</p>
<b>FRANCE / FRANCE</b>	<p><b>Mr. Jean VERMOT</b> Coordonnateur Milieux marins et contentieux européen Point focal des protocoles biodiversité et aires protégées des conventions de Barcelone, Carthagène et Nairobi et du PASBIO Mission Europe et international Direction de l'eau et de la biodiversité/DGALN Ministère de la transition écologique et solidaire Paris La défense, France</p>
<b>ISRAEL / ISRAËL</b>	<p><b>Mr. Simon NEMTZOV</b> Head of International Relations Department of Scientific Information Israel Nature and Parks Authority Jerusalem, Israel</p>

<b>ITALY / ITALIE</b>	<p><b>Mr. Leonardo TUNESI</b> Head of the Unit "Marine biodiversity, habitat and species Protection" Department for Environmental Monitoring and Protection and Biodiversity Conservation ISPRA – Italian Institute for Environmental Protection and Research Rome, Italy</p>
<b>LEBANON / LIBAN</b>	<p><b>Ms. Lara SAMAHA</b> Head of Department Department of Ecosystems Ministry of Environment Beirut, Lebanon</p>
<b>LIBYA / LIBYE</b>	<p><b>Mr. Elmaki Ayad ELAGIL</b> Director Natural Conservation Department Ministry of Environment Tripoli, Libya</p> <p><b>Mr. Hamza ABDELMULA</b> Nature conservation department senior advisor Ministry of Environment Tripoli, Libya</p>
<b>MALTA / MALTE</b>	<p><b>Hon. Dr. Miriam DALLI</b> Minister for the Environment, Energy and Enterprise</p> <hr/> <p><b>Mr. Perit Vincent Cassar</b> Chair, Environment &amp; Resources Authority</p> <p><b>Mr. Kevin MERCIECA</b> Chief Executive Officer, Environment &amp; Resources Authority</p> <p><b>Ms. Claire CORDINA BORG</b> Deputy Director Environment &amp; Resources Environment &amp; Resources Authority Hexagon House, Spencer Hill, Marsa, MRS 1441, Malta.</p> <p><b>Mr. Darrin T STEVENS</b> Deputy Director Environment &amp; Resources, Environment &amp; Resources Authority Hexagon House, Spencer Hill, Marsa, MRS 1441, Malta</p> <p><b>Ms. Angela BARTOLO</b> Senior Officer Thematic, Biodiversity &amp; Water Unit – Environment &amp; Resources Directorate, Environment &amp; Resources Authority Hexagon House, Spencer Hill, Marsa, MRS 1441, Malta.</p> <p><b>Mr. Luca LACITIGNOLA</b> Assistant Director, Office of the Permanent Secretary - Ministry for the Environment, Energy and Enterprise 6, Qormi Road, St Venera, SVR1301, Malta</p> <hr/> <p><b>Ms. Marie Therese GAMBIN</b> Unit Manager Thematic   Biodiversity &amp; Water Unit Environment &amp; Resources Directorate Environment &amp; Resources Authority Hexagon House, Spencer Hill, Marsa, MRS 1441, Malta</p> <hr/> <p><b>Ms. Miraine RIZZO</b> Team Manager Thematic, Biodiversity &amp; Water Unit – Environment &amp; Resources Directorate, Environment &amp; Resources Authority Hexagon House, Spencer Hill, Marsa, MRS 1441, Malta</p>

	<p><b>Ms. Aurora TESI</b> Economics Officer, Office of the Permanent Secretary - Ministry for the Environment, Energy and Enterprise 6, Qormi Road, St Venera, SVR1301, Malta</p> <p><b>Mr. Luke TABONE</b> Environment Officer Environment &amp; Resources Authority Hexagon House, Spencer Hill, Marsa, MRS 1441, Malta</p>
<b>MOROCCO / MAROC</b>	<p><b>Ms. Hassana ISMAILI ALAOUI</b> Chef de Service d'Aménagement des Parcs Nationaux et Aires Protégées Agence Nationale des Eaux et Forêts Département des Parcs Nationaux et Aires Protégées quartier administratif, Rabat Challah, Maroc</p> <p><b>Mr. Hocein BAZAIRI</b> Enseignant-Chercheur et expert marocain en biodiversité marine et côtière.</p>
<b>MONTENEGRO / MONTÉNÉGRÓ</b>	<p><b>Ms. Milena BATAKOVIĆ</b> Senior Advisor Department of monitoring, analyses and reporting Environmental Protection Agency Podgorica, Montenegro</p>
<b>SLOVENIA / SLOVÉNIE</b>	<p><b>Ms. Tina CENTRIH GENOV</b> Nature conservation advisor Institute of the Republic of Slovenia for Nature Conservation Regional Unit Piran Izola, Slovenia</p>
<b>SPAIN / ESPAGNE</b>	<p><b>Ms. Elvira GARCÍA-BELLIDO CAPDEVILA</b> Head Of Marine Protected Species Unit Minsitry For Ecological Transition and Demographic Challenge</p> <p><b>Mr. Jorge ALONSO RODRÍGUEZ</b> Head of MPA Unit General Directorate for Biodiversity, Forest and Desertification Ministry for Ecological Transition and Demographic Challenge Madrid, Spain</p>
<b>SYRIA / SYRIE</b>	<p><b>Ms. Maïada SAD</b> Head of biodiversity department Ministry of Local Administration and Environment Damascus, Syria</p>
<b>TUNISIA / TUNISIE</b>	<p><b>Ms. Samia BOUFARES</b> Directrice de la Gestion des Écosystèmes Littoraux Agence de Protection et d'Aménagement du Littoral (APAL) Tunis, Tunisie</p>

**THE MULTIDISCIPLINARY GROUP OF EXPERTS NOMINATED BY THE  
CONTRACTING PARTIES TO DEFINE PARAMETERS ALLOWING TO USE  
PHYTOPLANKTON AND ZOOPLANKTON FOR RELEVANT IMAP BIODIVERSITY  
INDICATORS AND ELABORATE THE LIST OF REFERENCE OF PELAGIC HABITAT  
TYPES IN THE MEDITERRANEAN SEA**

<b>Chair</b> <i>Président</i>	<b>Ms Janja FRANCE</b> Senior Research Associate Marine Biology Station Piran National Institute of Biology, Piran, Slovenia
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**AD HOC GROUP OF EXPERTS FOR MARINE PROTECTED AREAS IN THE  
MEDITERRANEAN (AGEM) / GROUPE AD HOC D'EXPERTS POUR LES AIRES MARINES  
PROTÉGÉES EN MÉDITERRANÉE (AGEM)**

<b>AGEM Chair</b> <i>Président de l'AGEM</i>	<b>Mr. Robert TURK</b> Nature Conservation and MPA expert Izola, Slovenia
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**REPRESENTATIVES OF OTHER INTERGOVERNMENTAL ORGANIZATIONS /  
REPRÉSENTANTS D'AUTRES ORGANISATIONS INTERGOUVERNEMENTALES**

<b>ACCOBAMS - Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area / Accord sur la conservation des cétacés de la mer Noire, de la Méditerranée et de la zone Atlantique adjacente</b>	<b>Ms. Mailys SALIVAS</b> Programme and Project Officer ACCOBAMS Secretariat Monaco
<b>IUCN / UICN International Union for Conservation of Nature and Natural resources / Union internationale pour la conservation de la nature</b>	<b>IUCN Center for Mediterranean Cooperation (IUCN-Med) Centre de Coopération pour la Méditerranée de l'UICN (UICN-Med)</b>  <b>Ms. Mercedes MUÑOZ CAÑAS</b> Manager Marine Biodiversity and Blue Economy line IUCN- Centre for Mediterranean Cooperation

**REPRESENTATIVES OF NON-GOVERNMENTAL ORGANIZATIONS  
REPRÉSENTANTS D'ORGANISATIONS NON-GOUVERNEMENTALES**

<b>TUDAV Turkish Marine Research Foundation</b>	<b>Ms. Elif OZGUR</b> <b>Researcher /Board Member</b> Istanbul, Türkiye
<b>MedPAN Network of Marine Protected Areas Managers in the Mediterranean / Réseau des Gestionnaires d'Aires Marines Protégées en Méditerranée</b>	<b>Ms. Carole MARTINEZ</b> Policy Office

<p><b>WWF</b> World Wide Fund for Nature / <i>Fonds Mondial pour la nature</i></p>	<p><b>Ms. Camille LOTH</b> Acting Director WWF Mediterranean Rome, Italy</p> <p><b>Mr. Mehdi AISSI</b> Marine Program Manager WWF NA</p>
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**UNITED NATIONS ENVIRONMENT PROGRAMME - SECRETARIAT TO THE  
BARCELONA CONVENTION AND COMPONENTS OF THE MEDITERRANEAN ACTION  
PLAN / PROGRAMME DES NATIONS UNIES POUR L'ENVIRONNEMENT - SECRÉTARIAT  
DE LA CONVENTION DE BARCELONE ET COMPOSANTES DU PLAN D'ACTION POUR LA  
MÉDITERRANÉE**

<p><b>UNEP/MAP / PNUE/PAM</b> United Nations Environment Programme / Coordinating Unit for the Mediterranean Action Plan - Barcelona Convention Secretariat / <i>Programme des Nations Unies pour l'environnement / Unité de Coordination pour le Plan d'Action pour la Méditerranée - Secrétariat de la Convention de Barcelone</i></p>	<p><b>Mr. Gabino GONZALEZ DEOGRACIA</b> Senior Programme Management Officer, MAP Deputy Coordinator UNEP/MAP Coordinating Unit Barcelona Convention Secretariat Athens, Greece</p>
<p><b>REMPEC</b> Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea / <i>Centre régional Méditerranéen pour l'intervention d'urgence contre la pollution marine accidentelle</i></p>	<p><b>Mr. Franck LAUWERS</b> Programme Officer REMPEC Sa Maison Hill, Floriana FRN 1613, Malta</p>

**SECRETARIAT OF THE MEETING / SECRÉTARIAT DE LA RÉUNION**

<p><b>SPA/RAC</b> Specially Protected Areas Regional Activity Centre / <i>Centre d'Activités Régionales pour les Aires Spécialement Protégées</i></p>	<p>Specially Protected Areas Regional Activity Centre Boulevard du Leader Yasser Arafat B.P. 337, 1080 Tunis Cedex, Tunisia</p> <p><u><b>Director / Directeur</b></u></p> <p><b>Mr. Khalil ATTIA</b></p> <p><u><b>Technical and scientific staff / Personnel technique et scientifique</b></u></p> <p><b>Mr. Issam ACHOUR</b> Data Management Assistant ILIAD Associate project officer</p> <p><b>Ms. Lobna BEN NAKHLA</b> Programme Officer (Species Conservation)</p> <p><b>Ms. Souha EL ASMI</b> Programme Officer (Specially Protected Areas)</p> <p><b>Mr. Dhia GUEZGUEZ</b> Programme Officer (Data &amp; Computing)</p> <p><b>Ms. Butheina JRAY</b> Secretariat Assistant</p>
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	<p><b>Ms. Asma KHERLJI</b> Project Associate Officer (IMAP-MPA - MPA Component)</p> <p><b>Ms. Samar KILANI</b> EcApMedIII project Assistant &amp; ABIOMMED Project Officer</p> <p><b>Mr. Atef LIMAM</b> IMAP-MPA &amp; GEF CP 3.1 Projects Officer</p> <p><b>Ms. Dorra MAAOUI</b> Communication Assistant</p> <p><b>Mr. Atef OUERGHI</b> Programme Officer (Ecosystem Conservation)</p> <p><b>Mr. Yassine Ramzi SGHAIER</b> Ecosystem Approach Projects Officer</p> <p><b>Mr. Anis ZARROUK</b> Project Officer (ILIAD project)</p> <p><b><u>Logistics and administrative staff / Personnel logistique et administratif</u></b></p> <p><b>Ms. Souad BEN AOUICHA</b> Scientific Unit Assistant</p> <p><b>Ms. Naziha BEN MOUSSA</b> Administrative Assistant</p> <p><b>Ms. Imtinen KEFI</b> Financial Assistant</p> <p><b>Ms. Syrine KEFI</b> Projects Financial Assistant</p> <p><b>Ms. Habiba MAKHLOUF</b> Director's Assistant</p> <p><b><u>Consultants / Consultants</u></b></p> <p><b>Mr. Chedly RAIS</b></p> <p><b><u>Reviser-translators / Réviseurs/traducteurs</u></b></p> <p><b>Ms. Saloua ESSAYEH</b> English reviser/translator</p> <p><b><u>Interpreters / Interprètes</u></b></p> <p><b>Ms. Hanem ATTIA</b> <b>Ms. Héra GAIDA</b> <b>Mr. Mondher KALAI</b> <b>Ms. Najet MCHALA</b></p>
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**Annex II**  
**Agenda of the Meeting**



## Provisional Agenda

- Agenda item 1**                    **Opening of the meeting**
- Agenda item 2**                    **Organizational matters**
- 2.1. Rules of procedure
- 2.2. Election of officers
- 2.3. Adoption of the agenda
- 2.4. Organization of work
- Agenda item 3**                    **Status of implementation of the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean (SPA/BD Protocol)**
- Agenda item 4**                    **Progress report on the activities carried out to implement SPA/RAC activities under the UNEP/MAP Programme of Work for the biennium 2022-2023**
- Agenda item 5**                    **Conservation of Species and Habitats**
- 5.1. Updating of the Action Plan for the conservation of bird species listed in Annex II to the SPA/BD Protocol**
- 5.2. Updating of the Action Plan concerning species introductions and invasive species in the Mediterranean Sea**
- 5.3. Report of the multidisciplinary group of experts nominated by the Contracting Parties to define parameters allowing to use phytoplankton and zooplankton for relevant IMAP biodiversity indicators and elaborate the List of Reference of Pelagic Habitat Types in the Mediterranean Sea**
- 5.4. Mid-term assessment of the implementation of the Regional Strategy for the conservation of Monk seal in the Mediterranean**
- 5.5. Conditions and criteria for the award of the Regional Action Plans Partner title**
- 5.6. Draft Restoration Programme of *Pinna nobilis***
- 5.7. Proposals for amendment to Annexes II and III to the SPA/BD Protocol**
- Agenda item 6**                    **Conservation of sites of particular ecological interest**
- 6.1. Report by the Chair of the Ad hoc Group of Experts for Marine Protected Areas in the Mediterranean (AGEM) on the group's works during the biennial period 2022-2023**

6.1.1. Elaboration of an evaluation and monitoring framework for the Post-2020 Regional Strategy for MCPAs and OECMs in the Mediterranean

**6.2. Analysis of the reports on Specially Protected Areas (SPAs) for the Directory of Mediterranean SPAs**

**6.3. List of Specially Protected Areas of Mediterranean Importance (SPAMI List)**

6.3.1. Ordinary Periodic Review of SPAMIs

6.3.2. Inclusion of areas in the SPAMI List

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|-----------------------|--|
| <b>Agenda item 7</b>  | <b>Status of implementation of the Ecosystem Approach (EcAp) Roadmap</b>   |
| <b>Agenda item 8</b>  | <b>The Status of elaboration of the 2023 Mediterranean Quality Status Report (MED QSR 2023) and the content of the Ecological Objectives (EOs) of biodiversity, NIS and fisheries chapters</b>   |
| <b>Agenda item 9</b>  | <b>Post-2020 Strategic Action Programme for the Conservation of Biodiversity and Sustainable Management of Natural Resources in the Mediterranean Region (Post-2020 SAPBIO)</b><br><br>9.1. Measures taken for the implementation of the Post-2020 SAPBIO<br><br>9.2. Next steps and way forward |
| <b>Agenda item 10</b> | <b>Draft Programme of work of SPA/RAC for the biennium 2024-2025</b>   |
| <b>Agenda item 11</b> | <b>Any other matters</b>   |
| <b>Agenda item 12</b> | <b>Adoption of the report</b>  |
| <b>Agenda item 13</b> | <b>Closure of the meeting</b>  |

**Annex III**

**Draft updated Action Plan for the conservation of bird species listed in Annex II to the SPA/BD Protocol**

## Foreword

In 1995, the Contracting Parties to the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention) adopted a new Protocol concerning Specially Protected Areas and Biological Diversity (SPA/BD Protocol) in the Mediterranean. Annex II of this new protocol lists endangered or threatened species found in the Mediterranean.

Subsequently a series of nine Action Plans were also adopted by the Parties to the Barcelona Convention. They also urge and encourage co-ordination and co-operation amongst Mediterranean states towards the achievement of conservation of a species or a group of species within this region.

During their meeting in Monaco in November 2001 the Contracting Parties had asked SPA/RAC to draw up a draft action plan for the bird species appearing in Annex II, which listed 15 endangered or threatened bird species.<sup>1</sup> Consequently, in 2003, the Parties to the Barcelona Convention adopted an Action Plan for the conservation of the bird species listed in Annex II. The main purpose of the Action Plan was to maintain and/or restore their population levels to a favourable conservation status and to ensure their long-term conservation. The Action Plan also aimed to contribute to the sharing of knowledge and expertise between the Mediterranean countries and to co-ordinate efforts among the countries and other relevant initiatives and agreements. It also inspired a synergic approach among the Mediterranean countries in the protection of these bird species and their habitats and encouraged research to fill the many gaps in our knowledge concerning coastal and pelagic birds in the Mediterranean, particularly seabirds' distribution and their movements, as well as their feeding, moulting and wintering areas at sea.

The development of the Action Plan for the conservation of these species followed various initiatives taken by other organisations, such as BirdLife International partners in Mediterranean countries, WWF, IUCN, Medmaravis, and Tour du Valat, on the conservation of birds and their important sites and habitats. Various actions have been taken at national level by the competent authorities and at species level by several non-governmental organisations (particularly BirdLife International partners) in their respective countries, to counteract some of the threats, which were being faced by several species covered by the Action Plan.

In 2005, the first Mediterranean Symposium on the ecology and conservation of the bird species listed in Annex II, was held in Villanova I la Geltrú (Spain) with the participation of 31 ornithologists and experts from 16 Mediterranean countries. The participants made several recommendations to SPA/RAC, including the addition of 10 new marine and coastal bird species to the list of Annex II<sup>2</sup>. In November 2009, the 16th Ordinary Meeting of the Contracting Parties to the Barcelona Convention, held in Marrakech (Morocco), adopted the addition of the 10 species of marine and coastal birds in Annex II, bringing up the total number of bird species to 25. Ten years after the Villanova Mediterranean Symposium it was appropriate to hold another symposium; SPA/RAC, in partnership with the Tunisian NGO Les Amis des Oiseaux (AAO/BirdLife Tunisia), Medmaravis, Tour du Valat Biological Station and the Conservatoire du Littoral, organised the 2<sup>nd</sup> Symposium on Marine and Coastal Birds in the Mediterranean in Hammamet, Tunisia, in February 2015<sup>3</sup> (a) to update the knowledge on the status of marine and coastal birds; (b) to assess the effect of new regulations, conventions and research tools; and (c) to call for a closer cooperation among the countries that adopted the list of 25 bird species of Annex II of the SPA/BD Protocol. Subsequently, the Action Plan for the Conservation of Bird Species listed in Annex II to the SPA/BD Protocol has been updated to include the new added species (COP19, Decision

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<sup>1</sup> The original number of species was 15, but two subspecies (*Puffinus yelkouan yelkouan* and *Puffinus yelkouan mauretanicus*) of one of the species (Mediterranean Shearwater *Puffinus yelkouan*), were given species status by taxonomists, namely Yelkouan Shearwater *Puffinus yelkouan* and Balearic Shearwater *Puffinus mauretanicus*. The latter is one of the 10 added bird species to Annex II in 2009

<sup>2</sup> UNEP/MAP- SPA/RAC. 2006. *Proceedings of the first symposium on the Mediterranean action plan for the conservation of marine and coastal birds*. Villanova i la Geltrú, (Spain), 17-19 November 2005, (Ed. Aransay, N.) SPA/RAC, Tunis.

<sup>3</sup> Yesou, P., Sultana, J., Walmsley, J. & Azafzaf, H. (Eds.) 2016. *Conservation of Marine and Coastal Birds in the Mediterranean*. Proceedings of the UNEP-MAP-SPA/RAC Symposium, Hammamet 20-22 February 2015, Tunisia.

IG22/12) and adopted by the 20th Conference of the Parties to the Barcelona Convention, held in Albania in December 2017. Decision IG.23/08) After more than five years from this update, a second update has been requested by the COP 21 (Decision IG.25/13) to review the results of the activities undertaken between 2018-2022 to ensure the effective implementation of the Action Plan.

Following the request made for SPA/RAC during the 22<sup>nd</sup> Meeting of the Contracting Parties to the Barcelona Convention (Decision IG.25/13), the Action Plan for the conservation of bird species drafted in 2003, revised in 2013, is updated during the biennium 2022-2023

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## 1. INTRODUCTION

1. Birds have captivated humans for millennia due to their beauty, song, flight, and ecological roles. Despite their significance, human activities have threatened many bird species in the Mediterranean and beyond. The Mediterranean region is home to several hundred bird species, some of which are exclusive to this climatic zone. Pelagic bird species are limited, but breeding colonies of Scopoli's Shearwater (*Calonectris diomedea*), Yelkouan Shearwater (*Puffinus yelkouan*), and the subspecies of the European Storm-petrel (*Hydrobates pelagicus melitensis*) may be found along sea-cliffs or on small isolated rocky islands and islets.

2. Coastal seabirds, including the subspecies *emigratus* of the Lesser Crested Tern (*Sterna bengalensis*), whose breeding area is restricted to Libya, are found in river deltas and inland saltwater lagoons. Many other coastal species, however, are found breeding in sub-optimal and man-modified habitats such as salinas, while others rely on municipal waste dumps and discards from fishing boats for their food.

3. Ten new bird species have been added to Annex II, including the critically endangered Balearic Shearwater (*Puffinus mauretanicus*), and the near-threatened Armenian Gull (*Larus armenicus*), whose population trend has been assessed by the IUCN as decreasing. Although the rest of the new species are regarded globally as least concern (LC), their breeding range in the Mediterranean is restricted to a few countries, particularly eastern ones. Furthermore, the population trend of some of them, such as Kentish Plover (*Charadrius alexandrinus*), Greater Sand Plover (*Charadrius leschenaultii*), Mediterranean Gull (*Larus melanocephalus*), and Common Gull-billed Tern (*Gelochelidon nilotica*) has also been assessed as decreasing globally.

4. The ornithological calendar of the Mediterranean is dominated by the seasonal migrations of birds from Europe to Africa in autumn and vice versa in spring, and several species which breed in Europe over-winter in the Mediterranean basin. Nonetheless, the Mediterranean is the home of several hundred bird species, some of which occur exclusively in this climatic zone. The seabirds found along the crowded coastal zone and the islands of this almost land-locked sea are quite resilient, including the comparatively rare and localised Audouin's Gull *Larus audouinii*.

## 2. PRESENT STATUS OF MARINE AND COASTAL BIRDS LISTED IN ANNEX II TO THE SPA/BD PROTOCOL

### 2.1. Bird Species listed in Annex II to the SPA/BD Protocol: List of Endangered or Threatened Species

5. The sequence and nomenclature follow del Hoyo, J. & Collar, N.J. (2014). HBW and BirdLife International Illustrated Checklist of the Birds of the World. Volume 1: Non- passerines. Lynx Edicions, Barcellona.

English Name	French Name	Scientific Name
Greater Flamingo	Flamant rose	<i>Phoenicopterus roseus</i>
European Storm-petrel	Océanite tempête	<i>Hydrobates pelagicus</i> ssp. <i>melitensis</i>
Scopoli's Shearwater	Puffin de Scopoli	<i>Calonectris diomedea</i>
Yelkouan Shearwater	Puffin yelkouan	<i>Puffinus yelkouan</i>
Balearic Shearwater	Puffin des Baléares	<i>Puffinus mauretanicus</i>
Pygmy Cormorant	Cormoran pygmée	<i>Microcarbo pygmaeus</i>
European Shag	Cormoran huppé	<i>Gulosus aristotelis</i> ssp. <i>desmarestii</i>
Dalmatian Pelican	Pélican frisé	<i>Pelecanus crispus</i>
Great White Pelican	Pélican blanc	<i>Pelecanus onocrotalus</i>
Kentish Plover	Pluvier à collier interrompu	<i>Charadrius alexandrinus</i>
Greater Sandplover	Pluvier de Leschenault	<i>Charadrius leschenaultii</i> ssp. <i>columbinus</i>
Slender-billed Curlew	Courlis à bec grêle	<i>Numenius tenuirostris</i>
Slender-billed Gull	Goéland railleur	<i>Larus genei</i>
Mediterranean Gull	Mouette mélanocéphale	<i>Larus melanocephalus</i>
Audouin's Gull	Goéland d'Audouin	<i>Larus audouinii</i>
Armenian Gull	Goéland d'Arménie	<i>Larus armenicus</i>
Little Tern	Sterne naine	<i>Sternula albifrons</i>
Common Gull-billed Tern	Sterne hansel	<i>Gelochelidon nilotica</i>
Caspian Tern	Sterne caspienne	<i>Hydroprogne caspia</i>
Lesser Crested Tern	Sterne voyageuse	<i>Thalasseus bengalensis</i>
Sandwich Tern	Sterne caugek	<i>Thalasseus sandvicensis</i>
Osprey	Balbuzard pêcheur	<i>Pandion haliaetus</i>
Pied Kingfisher	Martin-pêcheur pie	<i>Ceryle rudis</i>
White-breasted Kingfisher	Martin-chasseur de Smyrne	<i>Halcyon smyrnensis</i>
Eleonora's Falcon	Facoun d'Éléonore	<i>Falco eleonora</i>

### 2.2. Overview of threats

6. In general birds are threatened by habitat loss and disturbance and also from contamination by

oil pollutants. Fish farms and wind farms close to seabird colonies, as well as intensive deep-water fishing may constitute serious threats to some bird species.

7. Among the 25 species listed in Annex II as endangered or threatened one finds those:

- which are globally threatened;
- which are endemic to the region and have an unfavourable conservation status;
- whose populations are not concentrated in the Mediterranean, but which have an unfavourable conservation status and/or a restricted range in the region;
- whose populations are not concentrated in the Mediterranean, have a healthy conservation status but are regarded as flagship species.

8. However, they all have something in common. They are all endangered by a number of threats, including:

- Contamination by oil pollutants
- Direct and indirect depletion of food resources
- Non-sustainable forms of tourism
- Disturbance
- Direct persecution including illegal hunting and the use of poison
- Mortality from bycatch
- Wind farms
- Loss of habitats
- Degradation of habitat, particularly wetlands and small islands of high biological importance
- Introduction of and predation by alien species
- Climate change
- Marine litter (plastics)

### **2.3. Ecology and status of the species**

9. The biology, ecology, distribution and conservation status of the fifteen bird species in the original Action Plan (2003) had been presented in an information document entitled “List of Threatened Bird Species as Adopted by the Barcelona Convention”. It was composed of an annotated List compiled by Medmaravis and edited by J. Criado, J. Walmsley and R. Zotier (April 1996) and gave the status, population size and trends, ecology, threats and conservation measures for each species. This was complemented by other national, regional and global contributions, particularly by BirdLife International.

10. The additional 10 species, which were originally proposed in 2005 during the first Mediterranean Symposium on the ecology and conservation of the bird species listed in Annex II, held in Villanova I la Geltrú (Spain), were presented by Xavier Monbailliu on behalf of Medmaravis, using a scientific criterion to screen possible candidate species. They are species of particular importance for coastal habitats in the Mediterranean. Their biology, ecology, distribution and conservation status were based on BirdLife International’s publication *Birds in Europe: Population estimates, Trends and Conservation status* (2004).

11. Several ornithological studies have been carried out in the Mediterranean in the last twenty to thirty years, as can be noted particularly in the proceedings of various symposia including those organised by SPA/RAC, Medmaravis, Conservatoire du Littoral, Tour du Valat, and national NGOs in the Mediterranean countries. Despite all these studies, there are still many gaps in the knowledge of coastal and pelagic birds and their habitats in the Mediterranean, particularly seabird movements

and their distribution at sea. There is an urgent need for mapping of breeding, feeding, moulting and wintering areas of pelagic birds in the whole region.

## **2.4. Geographical scope of the Action Plan**

12. The geographical scope of the action plan is the entire semi-closed sea and the Mediterranean bio-climate parts of its bordering countries. Some of the species, such as Balearic Shearwater *Puffinus mauretanicus* and Yelkouan Shearwater *Puffinus yelkouan*, have a restricted breeding range in the Mediterranean. Others, such as Eleonora's Falcon *Falco eleonora*, have migration routes and/or wintering areas outside the Mediterranean. Other species, such as White Pelican *Pelecanus onocrotalus*, Greater Flamingo *Phoenicopterus ruber*, Osprey *Pandion haliaetus*, Sandwich Tern *Sterna sandvicensis* and Little Tern *Sterna albifrons*, are widespread elsewhere, but have a limited range and/or a small population in the Mediterranean. For Slender-billed Curlew *Numenius tenuirostris*, which is a globally Critically Endangered species, the Mediterranean used to be part of its wintering range, but now its population is estimated less than 50 according to BirdLife International species factsheet (2016) and there have been no recent confirmed records in the Mediterranean. Apart from the Armenian Gull *Larus armenicus*, which is Near Threatened, and the Balearic Shearwater, which is Critically Endangered, the other newly added species to Annex II are of Least Concern, according to BirdLife International. However, their breeding population and/or range in the Mediterranean are quite restricted.

## **3. ACTION PLAN OBJECTIVES AND TARGETS**

### **3.1. The main objective**

13. The main purpose of the Action Plan is to maintain and/or restore the population levels of bird species listed in the Annex II of SPA/BD Protocol to a favourable conservation status and to ensure their long-term conservation.

### **3.2. Other objectives**

- To share information, knowledge and expertise between Mediterranean countries and organisations dealing with the bird species listed in Annex II.
- To co-ordinate efforts among Mediterranean countries and other relevant organisations, initiatives and agreements, so as to ensure the implementation of this Action Plan.
- To encourage a synergetic approach among Mediterranean countries in the protection of the 25 listed bird species and their habitats.
- To encourage research to fill the many gaps which still exist in knowledge of coastal and pelagic birds in the Mediterranean, particularly of seabird distribution and movements, and of their feeding, moulting and wintering areas at sea.

## **4. STRATEGIC APPROACH**

14. In the implementation of this Action Plan there are three levels of priority:

### **At Species level**

- To implement this Action Plan for all species in Annex II of the SPA/BD Protocol.
- To consider the conservation of globally threatened species as one of the main priorities of the present Action Plan.
- To give priority to the conservation of other species, which have an unfavorable conservation status at regional level.

#### **At National level**

- To map the distribution of the species on land as well as at sea.
- To identify sea and coastal important bird areas, particularly for feeding and breeding.
- To identify and control threats for birds and their habitats.
- To protect and monitor Important Bird Areas (IBAs).
- To carry out proper Environment Impact Assessments for all proposed development where any of the species occur.
- To develop and implement appropriate legislation for the protection of birds and their habitats.
- To pursue the principles and adhere to the requirements of Agreements and Conventions related to bird conservation.

#### **At Mediterranean level**

- To strengthen co-operation and exchange of information and experience in research.
- To disseminate information.
- To promote and support the identification of coastal and sea areas which are important for birds.
- To promote the creation and monitoring of protected areas of coastal and marine important birds areas.
- To prevent and/or control the expansion of invasive species, particularly on small islands of high biological importance for birds.
- To identify and monitor migratory hotspots.
- To seek, whenever appropriate, collaboration at a broader international level with relevant Conventions/Agreements such as the Berne Convention, the Bonn Convention, and in particular with the Afro-Eurasian Waterbird Agreement (AEWA).

### **5. ACTIONS TO ACHIEVE THE OBJECTIVES OF THE ACTION PLAN**

#### **5.1. Protected areas**

- Important bird marine areas should be identified and given legal protection status.
- Breeding sites of all threatened species should be legally established as protected areas with an adequate management plan.
- Coastal and marine protected important bird areas should be continuously monitored and properly managed.

#### **5.2. Legislation**

- Throughout the Mediterranean, species should be afforded legal protection by the Contracting Parties in countries where they breed, winter or occur during migration, as per the guidelines provided by SPA/RAC (see para. 5).
- Legislation should include dissuasive penalties.
- Assessment of environmental impact on these species and their habitats by any type of development should be legally obligatory.

#### **5.3. Research**

- In view of the existing gaps in knowledge of coastal and pelagic birds and their habitats in the Mediterranean, especially of their movements and distribution at sea, priority must be given to the mapping of breeding, feeding, moulting and wintering areas of the species concerned.
- Resources should be made available for researchers to fill the gaps in knowledge, such as for the establishment of a Mediterranean seabirds' atlas, and for monitoring population size

and breeding success of less well-known species.

- In relation to the threats facing bird species, such as marine litter and climate change. It would also be good to carry out regular gap analyses to understand what research is needed and to prioritise research efforts.

#### **5.4. Monitoring Activities**

15. A major component of the Ecosystem Approach implementation in the Mediterranean is related to the monitoring and assessment of the status of the marine and coastal environment. In view of establishing a coherent region-wide framework, the Contracting Parties adopted in 2016 the Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria (IMAP) (COP 19 Decision IG.22/7). IMAP sets out all the required elements to cover in an integrated manner monitoring and assessment of biodiversity and fisheries, pollution and marine litter, and coast and hydrography.

16. In relation to seabirds, IMAP proposes to monitor and assess the following common indicators (CIs):

- CI 3: Species distributional range (EO1);
- CI 4: Population abundance of selected species (EO1);
- CI 5: Population demographic characteristics (EO1, e.g. body size, age class structure, sex ratio, fecundity rates, survival/mortality rates).

17. IMAP recommends monitoring and assessing those common indicators for a selection of 11 representative species from the List of endangered and threatened species (annex II of the SPA/BD Protocol) and organised into 5 functional groups.

18. In this context, Contracting Parties to the Barcelona Convention should

- with the support of the SPA/RAC, update their national monitoring programmes for biodiversity and or develop one in line with IMAP and report regularly quality assured data.
- with the help of national, regional or international organisations, undertake, when appropriate, joint monitoring initiatives on a pilot basis, with the aim to share and exchange best practices, using harmonized methodologies, and ensuring cost efficiency.
- support and take part in regional initiatives and projects led by competent partner organizations that will contribute to the implementation of the of the IMAP in order to strengthen strategic and operational regional synergies.

19. The SPA/RAC should work further and create more opportunities with relevant partner organizations, in order to strengthen technical support that countries might need to implement the IMAP at national level.

20. Moreover, The MSFD requires EU Member States to monitor the state of their marine waters and to take measures to achieve Good Environmental Status (GES). This includes monitoring of bird populations and their habitats, according to the criteria designed to allow assessment of the conservation status of seabird populations at the EU level.

21. Therefore, it is strongly recommended to harmonize, as appropriate, the ongoing monitoring work within the framework of the IMAP/EcAp Process and MSFD with regard to monitoring guidelines and protocols as well as the bird species list to be monitored.

## 5.5. Awareness, Education & Training

- Contracting Parties should promulgate legislation concerning endangered bird species.
- Contracting Parties should seek and/or provide the training of personnel for monitoring, conserving and managing protected important bird areas.
- The organisation of ornithological training courses *in situ* for trainers, important bird areas staff and relevant personnel should be supported by SPA/RAC and the partners of the Action Plan.
- Public awareness and education programmes and campaigns highlighting the vulnerability of threatened species, directed particularly at stakeholders and decision makers, should be planned and implemented in co-operation with non-governmental organisations.
- Conduct regular capacity building needs assessments to identify the skills required in each country, divided by target group.

## 5.6. National Action Plans

- Contracting Parties should formulate National Action Plans for the conservation of endangered and threatened bird species in the Mediterranean.
- National Action Plans should take into consideration the implementation of the specific actions relevant to the particular countries proposed in this Action Plan.
- New and updated National Action Plans should address the current factors causing loss or decline of the bird species in Annex II; suggest appropriate subjects for legislation; give priority to the protection and management of sites; and ensure continued research and monitoring of populations and sites.
- Contracting Parties should apply and implement their Action Plans.

## 6. IMPLEMENTATION

### 6.1. Regional co-ordination structure

22. Regional co-ordination of the implementation of the present Action Plan will be guaranteed by the Mediterranean Action Plan's (MAP) secretariat through the Specially Protected Areas Regional Activity Centre (SPA/RAC).

23. The main functions of the co-ordinating structure shall consist in:

- Promoting co-operation among Contracting Parties in those actions executed in trans-boundary areas and at sea in national waters and beyond.
- Promoting the development of a regional network for monitoring populations and distribution of threatened Mediterranean bird species, in co-ordination with other organisations.
- Supporting and collaborating with Contracting Parties in the establishment of important bird areas at sea.
- Providing detailed guidelines to assist countries in their efforts to afford adequate legislative protection to endangered species.
- Elaborating guidelines for monitoring and management plans in collaboration with experts and other interested organisations.
- Urging and supporting the Contracting Parties to create and/or update their national monitoring programmes in line with the guidelines and protocols elaborated within the IMAP/ EcAp process (Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria) and report regularly quality assured data.
- Supporting actions toward the harmonization as appropriate, of the Monitoring guidelines and protocols developed in the framework of the IMAP/EcAp Process and the MSFD
- Assisting countries in the monitoring and conservation of the species listed in Annex II

according to the proposed actions by this Action Plan.

- Organising meetings of experts on specific subjects relating to the ecology and conservation of the bird species found in Annex II.
- Preparing progress reports on the implementation of this Action Plan.
- Encouraging complementary work, done by other international organisations with the same objectives, and promoting co-ordination to avoid possible duplication of effort.

## **6.2. Participation**

24. Any interested international, regional and/or national organisation is invited to participate in actions necessary for the implementation of this Action Plan, while links with other bodies responsible for Action Plans dealing with one or more bird species listed in Annex II should be made, to strengthen co-operation and avoid duplication of work.

## **6.3. “Action Plan Partners”**

25. To encourage and reward contributions to the work of applying the Action Plan, the Contracting Parties may at their ordinary meetings grant the title of “Action Plan Partner” to any organisation (governmental, nongovernmental, economic, etc.) that has to its credit concrete actions likely to help the conservation of birds in Annex II of the Protocol. Conditions for the awarding of the Partner title shall be adopted by the Contracting Parties following advice given by the meeting of National Focal Points for SPAs. The co-ordination structure shall set up a mechanism for regular dialogue between the participating organisations and where necessary, organise meetings to this effect. However, any dialogue could also be done by mail/email and webinars (online conferences).

## **6.4. Assessment and revision**

26. National Focal Points for SPAs, in collaboration with national experts, will be expected to:

- Assess progress in implementing the Action Plan during their meetings.
- Suggest recommendations to be submitted to the Contracting Parties.
- Suggest adjustments to the implementation timetable.

## **6.5. Timing**

27. The actions advocated by the present Action Plan have to be carried out over a five- year period, starting from when the Action Plan is adopted by the Contracting Parties. At the end of this period, SPA/RAC will:

- Prepare a report on the progress made so far in implementing the advocated actions
- Suggest adjustments to action and its implementation timetable, if appropriate
- Submit the updated action plan to the national focal points for spa, who will make follow-up suggestions to the parties.



**6.6. Timetable**

<b>Action</b>	<b>Deadline</b>	<b>By whom</b>
1. Organisation of the fourth Mediterranean Symposium on ecology and conservation of the bird species in Annex II.	By end of 2029	SPA/RAC & Partners
2. Protect legally all bird species in Annex II	1 year after adoption	Contracting Parties
3. Establish/support research and monitoring programmes to track changes in the trends and to fill gaps in knowledge of threatened species in partnership with other organizations	From 2024 to 2029	Contracting Parties, SPA/RAC, AP Partners, AEWA, BirdLife International
4. Revision of the directory of organisations and experts concerned with the threatened and endangered bird species in the Mediterranean.	By end of year 2029	SPA/RAC
5. Creation and implementation of National Action Plans for the conservation of endangered and threatened bird species in the Mediterranean; and update them every 5 years from the date of their creation.	From 2024 to 2029	Contracting Parties & SPA/RAC
6. Application and implementation of any Action Plans/monitoring Programmes of the bird species listed in Annex II.	From 2024 to 2029	SPA/RAC & Contracting Parties
7. Participation in promotion of a regional network for monitoring populations and distribution of Mediterranean threatened bird species, in co-ordination with other organisations.	From 2024 to 2029	SPA/RAC , AP Partners, AEWA, BirdLife International
8. Legal establishment of protected areas important for bird species listed in the Annex II of the SPA/BD Protocol, with adequate management plans at breeding sites	By end of year 2029	Contracting Parties
9. Support Contracting Parties and Partners to produce and publish relevant scientific documentation contributing to update knowledge and enhance conservation action taken on the Annex II species.	From 2024 to 2029	SPA/RAC, AP Partners, AEWA, BirdLife International, ICCAT, GFCM
10. Identification of areas important for the birds listed in the Annex II of the SPA/BD Protocol, on land and at sea (mapping of breeding, feeding, roosting, resting, molting and wintering areas).	From 2024 to 2029	Contracting Parties, AP Partners, AEWA, Birdlife International
11. Mapping of breeding, feeding, moulting and wintering areas of pelagic species.	From 2024 to 2029	Contracting Parties
12. Produce progress reports in the implementation of the Action Plan.	By end of year 2029	SPA/RAC
13. Assess capacity building needs, organize trainings, and report results of specific training courses and workshops in coordination/synergy with international and/or national NGOs	From 2024 to 2029	SPA/RAC, Partners & Contracting Parties
14. Optimize synergies with international agreements and organisations dedicated to bird conservation	From 2024 to 2029	Contracting Parties

15. Raise public awareness, provide educational programmes, and advocate for policy changes to stimulate the implementation of the Action Plan	From 2024 to 2029	Contracting Parties, SPA/RAC, AP Partner, ICCAT, GFCM
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## 7. PROPOSED SPECIFIC PLANS

28. The hereafter listed Specific Action Plans for the 25 bird species listed in the Annex II of the SPA/BD Protocol should be implemented in all Mediterranean states where the species breed, winter or occur on migration. They should be reviewed and updated every three years. If sudden major environmental changes happen which may affect any of the species' populations in the Mediterranean, an emergency review should be immediately undertaken. The current status given below covers the countries that have a Mediterranean coast. Proposed actions, which apply to all species, should include inter alia the initiation of public awareness campaigns on the status of these species and the preparation of National Action Plans. Other on-going Action Plans, which have been developed by other institutions, and which cover some of the species, are listed below, and should be taken in consideration and implemented where these species occur.

### 7.1. Greater Flamingo (*Phoenicopterus roseus*)

#### Current status

29. In the Mediterranean, it breeds in localised sites in suitable wetlands, mainly in Spain, France, Turkey, Italy as well as in Algeria. Breeding colonies are established at sites free from human disturbance and secure from terrestrial predators. Breeding is irregular with numbers fluctuating from one season to another. Substantial numbers also occur in Tunisia, Greece and Cyprus but breed rarely. Mediterranean population seems to be separated from Asiatic populations, with minimal exchange and overlap in Libya and Egypt.

#### Current factors causing loss or decline

30. Urban development; habitat loss for tourism development; disturbance; and illegal killing.

#### Status under international instruments

- Class A - African Convention on the Conservation and Natural Resources (1968).
- Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats (1979).
- Appendix II - Convention on the Conservation of Migratory Species of Wild Animals (1979).
- Annex I - European Union Directive on the Conservation of Wild Birds (79/409/EEC/1979).
- European Union Regulation laying down certain technical measures for the conservation of fishery resources in the Mediterranean (1626/94 (EC) 1994).
- Listed in the AEWPA Action Plan (Column B Category 2a)

#### Current Action Plans

None

#### Action Plan objectives and target

31. To maintain healthy breeding populations and maintain wetlands where the species overwinter.

**Proposed action**

- Confer strictly protected status on the species.
- Prohibit all types of disturbance to breeding colonies.
- Monitor and warden breeding colonies.
- Create SPAs where breeding colonies exist.
- Plan, regulate and/or manage activities and processes of coastal and infrastructure development near to known colonies.
- Restore wetlands where the species used to breed.
- Maintain wetlands where the species overwinter.

**7.2. European Storm-petrel (*Hydrobates pelagicus ssp. Melitensis*)**

**Current status**

32. This pelagic colonial species breeds in small to very large colonies mainly on islets and in caves along the coast. Subspecies *melitensis* is endemic to the Mediterranean. Important breeding colonies are found in Malta, Sardinia and Sicily. Breeding surveys are totally lacking for the Adriatic and eastern Mediterranean. A general decline has been recorded.

**Current factors causing loss or decline**

33. Loss of habitat; disturbance; predation by *Rattus* sp. and Yellow-legged Gull *Larus cachinnans*; possibly contamination by oil pollutants of the sea.

**Status under international instruments**

- Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats(1979).
- Annex I - European Union Directive on the conservation of wild birds (79/409/EEC/1979).
- European Union Regulation laying down certain technical measures for the conservation offishery resources in the Mediterranean (1626/94 (EC) 1994).

**Current Action Plans**

None

**Action Plan objectives and target**

34. To halt the decline and maintain healthy breeding colonies.

**Proposed action**

- Compile an inventory of breeding sites and map critical habitats supporting the colonies, particularly in the eastern part of the Mediterranean.
- Confer strictly protected status on the species.
- Prohibit all types of disturbance to the breeding colonies.
- Monitor and warden colonies under threat.

- Create SPAs where breeding colonies exist.
- Plan, regulate and/or manage activities and processes, which may result in loss of habitat and the introduction and/or spread of invasive species, particularly mammals (*Rattus* sp.) and Yellow-legged Gull *Larus michahellis*.
- Control and/or eradicate rats at all breeding colonies.
- Prevent the introduction of alien predatory species.
- Prevent oil spills and chemical pollution of the sea.
- Identify areas at sea important for the species.

### 7.3. Scopoli's Shearwater (*Calonectris diomedea*)

#### Current status

35. This pelagic, colonial species is restricted to the Mediterranean, nesting in sea-cliffs, on rocky islands and islets. Breeds in Algeria, Croatia, France, Greece, Italy, Malta, Spain, Turkey and Tunisia where the breeding population has been recently estimated at 140,000 pairs. The majority of the population spends the non-breeding season in the Atlantic. Its recent conservation status according to IUCN is of Least Concern (LC) but its population is thought to be in slow decline overall, although more research is required particularly in the eastern part of the Mediterranean and in the Adriatic.

#### Current factors causing loss or decline

36. Introduced mammals, such as *Rattus* sp., which affect breeding success; illegal hunting; taking of eggs and/or chicks; mortality from bycatch (longlines); development close to colonies and disturbance, and possibly oil spills and chemical pollution of the sea.

#### Status under international instruments

- Annex I - European Union Directive on the Conservation of Wild Birds (79/409/EEC/1979).
- Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats (1979).
- European Union Regulation laying down certain technical measures for the conservation of fishery resources in the Mediterranean (1626/94 (EC) 1994).

#### Current Action Plans

None

#### Action Plan objectives and target

37. To halt the decline of the population and maintain healthy colonies.

#### Proposed action

- Compile an inventory of breeding sites and map critical habitats supporting the colonies, particularly in the eastern part of the Mediterranean. Confer strictly protected status on the species.

- Prohibit all types of disturbance to breeding colonies, including the taking of eggs and young.
- Monitor and warden colonies under threat of disturbance.
- Create SPAs where breeding colonies exist.
- Plan, regulate and/or manage activities and processes of coastal and infrastructure development near to known colonies.
- Prevent oil spills and chemical pollution of the sea.
- Monitor levels of mercury and chlorinated hydrocarbons in populations.
- Develop and implement management projects targeting the conservation of the breeding habitat and strict control of introduced mammals, as well as preventing the introduction of alien predatory species.
- Identify important bird areas at sea for the species.
- Develop an Action Plan to reduce mortality at sea especially from bycatch (longlines, gear nets).
- Reduce fishing harvest (small pelagic fishes)

#### **7.4. Yelkouan Shearwater (*Puffinus yelkouan*)**

##### **Current status**

38. This pelagic colonial species breeds on rocky islands and islets. Population estimated at less than 33,000 pairs, with 95% of the population breeding along the Mediterranean shores of South European countries, with main breeding colonies in Greece Italy and Malta. Some pairs breed along the North African coast. Breeding surveys in the eastern Mediterranean are lacking and for a number of countries the population is very poorly known.

##### **Current factors causing loss or decline**

39. Lack of food resources; lack of protection of breeding colonies; predation by Rats *Rattus* sp, Yellow-legged Gulls *Larus michahellis*, and locally by feral cats and dogs; disturbance and illegal hunting; some mortality from bycatch (longlines, gear nets); and possibly contamination by oil pollutants at sea.

##### **Status under international instruments**

- Annex I - European Union Directive on the Conservation of Wild Birds (79/409/EEC/1979).
- Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats (1979).
- EU European Union Regulation laying down certain technical measures for the conservation of fishery resources in the Mediterranean (1626/94 (EC) 1994).

##### **Current Action Plans**

40. National action plan is in place and is being implemented in France. BirdLife International partners are currently working on a LIFE project to produce an action plan.

##### **Action Plan objectives and target**

41. To halt the decline of the species, to restore its numbers to former status and to increase the knowledge about its biology.

#### **Proposed action**

- Compile an inventory of breeding sites and map critical habitats supporting the colonies.
- Confer strictly protected status on the species.
- Prohibit all types of disturbance to the breeding colonies.
- Monitor the population dynamics of the species and warden colonies.
- Control and if possible, eradicate rats in breeding colonies.
- Prevent the introduction of alien predatory species.
- Ensure the protection of the breeding habitat and create SPAs where breeding colonies exist. Plan, regulate and/or manage activities and processes of coastal and infrastructure development near to known colonies.
- Promote adequate fishing practices, which take into account the conservation of the species.
- Reduce fishing harvest (small pelagic fishes)
- Prevent oil spills and chemical pollution of the sea.
- Undertake surveys of colonies and research on the conservation biology of the species.
- Identify areas at sea important for the species.
- Develop an Action Plan to reduce mortality at sea especially from bycatch.

### **7.5. Balearic Shearwater (*Puffinus mauretanicus*)**

#### **Current status**

42. This pelagic, colonial species is restricted to the Balearic Islands; breeding on rocky islands and islets. It is the most threatened species in Europe. Current official population is estimated at 1989-2883 breeding pairs, but recent research at sea shows a much larger population of individual birds.

#### **Current factors causing loss or decline**

43. Predation by introduced carnivores (Genet, Pine Marten and feral cats); bycatch; and possibly oil spills and chemical pollution of the sea.

#### **Status under international instruments**

- Annex I - European Union Directive on the Conservation of Wild Birds (79/409/EEC/1979).
- Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats (1979).
- European Union Regulation laying down certain technical measures for the conservation of fishery resources in the Mediterranean (1626/94 (EC) 1994).

#### **Current Action Plans**

44. A national Action Plan is in place and is being implemented in Spain. A National Action Plan (PNA) was launched in 2021 by the Ministry of Ecology (MTE) for a period of 5 years. It is led by the French Office for Biodiversity. (Website: <https://oiseaux-marins.org/accueil/projets/pna-puffin>)

### **Action Plan objectives and target**

45. To halt the decline of the species and restore its numbers to former status.

### **Proposed action**

- Compile an inventory of breeding sites and map critical habitats supporting the colonies.
- Confer strictly protected status on the species.
- Prohibit all types of disturbance to the breeding colonies.
- Monitor the population dynamics of the species and warden colonies.
- Control and if possible, eradicate rats and predators in the colonies and prevent any introduction of terrestrial mammals in breeding colonies.
- Ensure the protection of the breeding habitat and create SPAs where breeding colonies exist.
- Plan, regulate and/or manage activities and processes of coastal and infrastructure development near to known colonies.
- Promote adequate fishing practices, which take into account the conservation of the species.
- Prevent oil spills and chemical pollution of the sea.
- Undertake surveys of colonies and research on the conservation biology of the species.
- Identify the marine important areas for the species.
- Reduce fishing harvest (small pelagic fishes)
- Develop an Action Plan to reduce mortality at sea especially from bycatch.

## **7.6. Pygmy Cormorant (*Microcarbo pygmaeus*)**

### **Current status**

46. The main breeding populations in the Mediterranean of this globally threatened species are found in Montenegro, Serbia, Greece, and Turkey, with some pairs in Albania, Bosnia and Herzegovina, Israel and Italy. It is restricted to lowland freshwater and brackish habitats, and in winter frequents coastal lagoons, deltas, rivers and riparian forests. The whole population of the Mediterranean countries probably numbers 11,000-13,000 breeding pairs.

### **Current factors causing loss or decline**

47. Degradation and loss of wetland habitat; disturbance and illegal hunting; destruction of breeding colonies and bycatch with abandoned fish nets.

### **Status under international instruments**

- Annex I - European Union Directive on the Conservation of Wild Birds (79/409/EEC/1979).
- Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats(1979).
- Appendix II - Convention on the Conservation of Migratory Species of Wild Animals (1979).
- European Union Regulation laying down certain technical measures for the conservation of fishery resources in the Mediterranean (1626/94 (EC) 1994).
- Listed in the AEWA Action Plan (Column B Category 1)



### **Current Action Plans**

- Action Plan for the Pygmy Cormorant *Phalacrocorax pygmeus* in Europe prepared by BirdLife International on behalf of the European Commission (February 1996).
- Globally threatened birds in Europe Action Plans. Council of Europe – BirdLife International EU Life-Nature (1996).
- Italy has a national Action Plan.

### **Action Plan objectives and target**

48. To maintain the recent increase of the species' population size and distribution.

### **Proposed action**

- Afford strict protection to the species and its habitat, particularly from hunting, disturbance and development.
- Manage wintering and breeding sites in order to meet the species' requirements.
- Monitor breeding and wintering populations.
- Monitor water levels and quality at breeding sites.
- Create SPAs where breeding colonies exist.
- Research its feeding and dispersal ecology.
- Develop education campaigns for hunters.
- Restore degraded wetlands used by the species.

## **7.7. European Shag (*Gulosus aristotelis ssp.desmarestii*)**

### **Current status**

49. This Mediterranean endemic subspecies of the European Shag *Phalacrocorax aristotelisdesmarestii* is present in the western Mediterranean (Balearic Islands, Corsica and Sardinia), and the Adriatic, Aegean and Black Seas, breeding along the coast on rocky islands and islets. The Mediterranean population numbers less than 9,000 pairs.

### **Current factors causing loss or decline.**

50. Human disturbance; oil pollution; habitat loss; mortality from bycatch; Seine net fishing and long-line hauling close to colonies and moulting areas.

### **Status under international instruments**

- Annex I - European Union Directive on the Conservation of Wild Birds (79/409/EEC/1979).
- Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats (1979) (79/409/EEC/1979).
- European Union Regulation laying down certain technical measures for the conservation of fishery resources in the Mediterranean (1626/94 (EC) 1994).

### **Current Action Plans**

No national action plans, but a Species Action Plan for the Mediterranean Shag *Phalacrocorax aristotelis desmarestii* in Europe was prepared by BirdLife International on behalf of the European Commission (final draft December 1999).

### **Action Plan objectives and target**

51. To ensure the survival of Mediterranean populations.

### **Proposed action**

- Compile an inventory of breeding sites and map critical habitats.
- Confer strictly protected status on the species.
- Prohibit all types of disturbances to the breeding colonies.
- Carry out rat-eradication programmes at breeding colonies.
- Monitor populations.
- Create SPAs where the species breeds, and encourage buffer zones surrounding breeding areas including adjacent sea area.
- Plan, regulate and/or manage activities and processes of coastal and infrastructure development near to breeding sites.
- Take measures to influence fishing policies in order to avoid negative effects on food stocks and food availability, and to avoid mortality from bycatch.
- Prevent oil spills and chemical pollution of the sea.
- Identify important bird areas at sea for the species.

## **7.8. Dalmatian Pelican ( *Pelecanus crispus* )**

### **Current status**

52. This species is vulnerable and globally threatened. In the Mediterranean, small populations (totalling 2500-2700 breeding pairs) are found mainly in Albania, Montenegro, Greece and Turkey. Breeds on inland and coastal wetlands and nests on floating islands of reeds and on bare ground on islands, isolated from mainland to be safe from mammalian predators. Up to about 3000 birds winter in Albania, Greece, Syria and Turkey.

### **Current factors causing loss or decline**

53. Wetland drainage resulting in a sharp decline of available breeding sites; collisions with electric wires; persecution due to competition with commercial fisheries; illegal hunting and disturbance.

### **Status under international instruments**

- Class A - African Convention on Conservation and Natural Resources (1968).
- Annex I - European Union Directive on the Conservation of Wild Birds (79/409/EEC/1979).
- Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats(1979).
- Appendix I & II - Convention on the Conservation of Migratory Species of Wild

Animals(1979).

- Appendix I - Convention on International Trade in Endangered Species of Wild Fauna and Flora (1973).
- European Union Regulation laying down certain technical measures for the conservation of fishery resources in the Mediterranean (1626/94 (EC) 1994).
- Listed in the AEWa Action Plan (Column A Category 1a/1c).

### **Current action plans**

Action Plan for the Dalmatian Pelican *Pelecanus crispus* prepared by BirdLife International on behalf of the European Commission (April 1996).

Globally threatened birds in Europe Action Plans. Council of Europe – BirdLife International – EU Life-Nature (1996).

A new Species Action Plan is under development through EU funded LIFE Euro SAP Project 2014-2018.

Albania has a NAP, but it is only partly implemented, while a NAP is in preparation in Turkey.

### **Action plan objectives and target**

54. To prevent any declines and to increase the population size to a level at which it can be regarded as safe.

### **Proposed action**

- Confer strictly protected status on the species and its habitats during breeding and wintering periods in all range states.
- Establish supervised buffer zones around breeding colonies.
- Prohibit all types of disturbance to the breeding colonies.
- Create SPAs where breeding colonies exist.
- Plan, regulate and/or manage activities and processes of coastal and infrastructure development near to known colonies.
- Manage in a sustainable way or restore where necessary all wetlands where the species occurs.
- Replace overhead electricity wires by thick cables or lay them underground.
- Monitor continually the breeding and wintering populations.
- Develop education campaigns for local fishermen and hunters, and decision-makers.

## **7.9. Great White Pelican ( *Pelecanus onocrotalus* )**

### **Current status**

55. In the Mediterranean this species breeds in Turkey and Greece. Numbers have declined in the last thirty years, and now the breeding population in the Mediterranean is down to less than 1000 pairs (810-940bp). It nests on the ground in large reedbeds, bare earth or rocky islands, in isolation from the mainland to be safe from mammalian predators.

### **Current factors causing loss or decline**

56. Habitat loss and destruction; depletion of fish stocks; persecution and disturbance;

pollution;flooding; disease; illegal killing, and collision with electric power lines.

#### **Status under international instruments**

- Class A - African Convention on Conservation and Natural Resources.
- Annex I - European Union Directive on the Conservation of Wild Birds (79/409/EEC/1979).  
Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats(1979).
- Appendix I (Pal.) II (Western Pal.) - Convention on the Conservation of Migratory Species of Wild Animals (1979).
- European Union Regulation laying down certain technical measures for the conservation offishery resources in the Mediterranean Current Action Plans (1626/94 (EC) 1994).
- Listed in the AEWA Action Plan (Column A Category 1a/3c).

#### **Current Action Plans**

57. National action plan is in place and is being implemented in Israel.

#### **Action Plan objectives and target**

58. To reverse the decline of the breeding populations in the Mediterranean.

#### **Proposed action**

- Confer strictly protected status on the species.
- Prohibit all types of disturbance to breeding colonies and their habitat.
- Monitor and supervise breeding colonies.
- Create SPAs where breeding colonies exist.
- Plan, regulate and/or manage activities and processes of (a) coastal development and infrastructure that impacts and/or fragments habitats; (b) pollution; and (c) overexploitation of fish stocks.
- Develop education campaigns aimed at local fishermen.
- Restore degraded wetlands used by the species.
- Create artificial nesting sites close to foraging sites.

### **7.10 Kentish Plover (*Charadrius alexandrinus*)**

#### **Current status**

59. This predominantly coastal small wader species has an extremely large global range and hence is evaluated by IUCN as of Least Concern. However the overall population trend is decreasing. It prefers sparsely vegetated, sandy or dry mud areas when breeding. While some populations of this species are sedentary or only disperse short distances, most inland and northern coastal populations have distinct separate breeding and wintering ranges. Small breeding populations breed in most Mediterranean countries with some 5000 pairs in Tunisia, up to nearly 2000 pairs in Spain, Greece, and Italy, and 'several thousands' in Morocco.

### **Current factors causing loss or decline**

60. Disturbance of coastal habitats; degradation and loss of wetland habitat; land reclamation; declining river flows; urbanisation and predation by foxes, feral cats and dogs.

### **Status under international instruments**

- Annex I - European Union Directive on the Conservation of Wild Birds (79/409/EEC/1979).
- Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats(1979).
- Appendix II - Convention on the Conservation of Migratory Species of Wild Animals (1979).

### **Current Action Plans**

61. National action plan is in place and is being implemented in Slovenia.

### **Action Plan objectives and target**

62. To reverse the decline of the breeding populations and of the number of migrant birds in theMediterranean.

### **Proposed action**

- Control of recreation activities and human disturbance at breeding sites.
- Reduce/ban debris removal from beaches during the breeding season (February-July)
- Reverse the abandonment of salt pans.
- Promote the traditional management of saltpans (as opposed to industrial management), including the permanence of stable water levels and of small sand banks in parts of salt pans suitable for breeding
- Stop pollution of wetland habitats, land reclamation, and infrastructure development at breeding sites.

## **7.11 . Greater SandPlover (*Charadrius leschenaultii* ssp. *Columbinus*)**

### **Current status**

63. This species has an extremely large global range and population size. According to IUCN criteria it is of Least Concern. However, in the Mediterranean the subspecies *columbinus* is known to breed only in Turkey (probably 800-1200bp) and Syria (400-1000bp). As a migrant it is fairly common in Israel, and very scarce or vagrant in some other eastern Mediterranean countries. During the breeding season this species is predominantly found in open, dry, treeless areas and rocky plains. In Turkey the species frequents heavily grazed saline steppe and usually breeds near water but exceptionally also some kilometres away from it.

**Current factors causing loss or decline**

64. Hunting & disturbance.

**Status under international instruments**

- Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats(1979).
- Appendix II - Convention on the Conservation of Migratory Species of Wild Animals (1979).

**Current Action Plans**

None

**Action Plan objectives and target**

65. To ensure the safeguarding and to prompt an increase of the present few breeding populations in the Mediterranean, as well as to provide it with safe passage and wintering grounds where it occurs in other Mediterranean countries.

**Proposed action**

- Confer strictly protected status on the species and on its “lookalike” species, where it occurs on passage and during winter.
- Prohibit all types of disturbance to breeding areas and their surroundings.
- Monitor, warden and afford appropriate protection and management of all breeding, passage and wintering grounds.
- Train wardens, unexperienced ornithologists and hunters in the identification of the species to assist in recording it.
- Increase public awareness of the species’ rare status in the Mediterranean.

**7.12 Slender-billed Curlew (*Numenius tenuirostris*)**

**Current status**

66. This is a globally threatened species, which is possibly extinct. Once described as common in the Mediterranean region, it is now one of the rarest and least known species in the Western Palearctic. Used to migrate from Siberia across eastern and southern Europe to winter in North Africa. On passage, occurs in a wide range of habitats: salt marshes, saltpans, brackish lagoons, dry fishponds, steppe and freshwater marshes. Last confirmed documented record in the Mediterranean was in Greece in 1999

**Current factors causing loss or decline**

67. Habitat loss at migrating and wintering areas. Other factors unknown.

**Status under international instruments**

- Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats (1979).
- Appendix I - Convention on the Conservation of Migratory Species of Wild Animals (1979).
- Appendix I - Convention on International Trade in Endangered Species of Wild Fauna and Flora (1973).
- Annex I - European Union Directive on the Conservation of Wild Birds (79/409/EEC/1979).
- European Union Regulation laying down certain technical measures for the conservation of fishery resources in the Mediterranean (1626/94 (EC) 1994).
- Memorandum of Understanding concerning Conservation Measures for the Slender-billed Curlew under the Bonn Convention (CMS) (1994).
- Listed in the AEWA Action Plan (Column B Category 1a/1b/1c).

#### **Current Action Plans**

International Action Plan for the Slender-billed Curlew prepared by BirdLife International on behalf of the European Commission (February 1996).

Globally threatened birds in Europe Action Plans. Council of Europe – BirdLife International – EU Life-Nature (1996).

Italy has a national action plan.

#### **Action Plan objectives and target**

68. To provide safe passage and wintering grounds in the Mediterranean.

#### **Proposed action**

- Confer strictly protected status on the species and on its “lookalike” species, where it occurs on passage and during winter.
- Monitor and warden wintering sites
- Afford appropriate protection and management of all passage and wintering grounds.
- Plan, regulate and/or manage activities and processes of development near wintering sites.
- Train wardens, unexperienced ornithologists and hunters in the identification of the species to assist in recording it.
- Increase public awareness of the species’ critically threatened status amongst politicians, decision-makers and hunters.
- Ratify the AEWA Agreement by those countries which have not yet done so.

### **7.13 Slender-billed Gull (*Larus genei*)**

#### **Current status**

69. This gull is both resident and/or migratory in the Mediterranean. It breeds colonially on sandy islands in salt pans at the coastal zone but also (as in Tunisia) in inland wetlands including salt lakes. It is found breeding at widely isolated scattered localities in some countries. It is presently known to breed in Spain (1650-1950bp), France (ca.1000bp), Italy (3000-5000bp), Greece (100-130bp) and Turkey (2000-3000bp). In Tunisia, up to 4000bp have been recorded breeding in Thyna salt-pans, and 10,560bp have been recorded breeding in the Golfe of Bou Grara, apart from other scattered sites. It also breeds in Egypt but numbers are unknown; formerly bred in Morocco; and there is no evidence of breeding in Algeria. The European population seems to be decreasing.

**Current factors causing loss or decline**

70. Disturbance of coastal habitats; degradation and loss of wetland habitats; human disturbance and illegal hunting; predation by feral dogs; eggs and chicks of this species are preyed upon by other gull species especially where colonies are frequently disturbed by humans; subsistence egg collecting by local people; pollution and flooding.

**Status under international instruments**

- Annex I - European Union Directive on the Conservation of Wild Birds (79/409/EEC/1979).  
Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats(1979).
- Appendix II of the Convention on Migratory Species and listed under the African Eurasian Waterbird Agreement.

**Current Action Plans**

None. Regional management plans for seabirds including this species are in place and implemented in Spain.

**Action Plan objectives and target**

71. To maintain and increase a healthy breeding population and increase the number of its colonies.

**Proposed action**

- Compile an inventory of breeding sites and map critical habitats supporting the colonies, particularly in the North African Mediterranean countries.
- Increase management in breeding areas.
- Prevent disturbance from tourism and recreational activities.
- Develop education campaigns for decision makers.
- Confer strictly protected status on the species.
- Prohibit all types of disturbance to breeding colonies, including the taking of eggs and young.
- Monitor and supervise colonies under threat.
- Create SPAs where breeding colonies exist.
- Plan, regulate and/or manage activities and processes of coastal and infrastructure development near to known colonies.
- Control or eradicate invasive competitive species and terrestrial mammals at colonies.
- Prevent oil spills and chemical pollution of the sea.
- Identify marine important areas for the species.
- Develop an Action Plan to reduce mortality at sea especially from bycatch.



#### **7.14 Mediterranean Gull (*Larus melanocephalus*)**

##### **Current status**

72. This gull breeds in dense colonies at lagoons, estuaries, coastal as well as inland saltmarshes, and on large steppe lakes and marshes in open lowland areas. It breeds mainly on the Black Sea coast of Ukraine and at scattered localities throughout Europe. In the Mediterranean it breeds in Spain, southern France, Italy, Greece, and Turkey. The Mediterranean also hosts in winter a substantial number of the European population. The Mediterranean breeding population is estimated to be 9400-15,700 pairs

##### **Current factors causing loss or decline**

73. Tourist disturbance at breeding colonies; habitat loss resulting from development; possibly contamination by oil spill and chemical discharges at sea; bycatch from long-line fishing; and the taking of adults and eggs by fishermen.

##### **Status under international instruments**

- Annex I - European Union Directive on the Conservation of Wild Birds (79/409/EEC/1979).
- Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats (1979).
- Appendix II of the Convention on Migratory Species and listed under the African Eurasian Waterbird Agreement.

##### **Current Action Plans**

None

##### **Action Plan objectives and target**

74. To maintain and increase a healthy breeding population; increase the number of its colonies; and give total protection to the wintering population

##### **Proposed action**

- Compile an inventory of breeding sites and map critical habitats supporting the colonies.
- Identify site-based threats and necessary management actions of protected areas.
- Increase existing management in breeding areas.
- Prevent disturbance from tourism and recreational activities.
- Confer strictly protected status on the species.
- Prohibit all types of disturbance to breeding colonies, including the taking of eggs and young.
- Monitor and supervise colonies under threat.
- Create SPAs where breeding colonies exist.
- Plan, regulate and/or manage activities and processes of coastal and infrastructure development near to known colonies.
- Create where possible artificially constructed nesting sites in coastal locations.

## 7.15 Audouin's Gull (*Larus audouinii*)

### Current status

75. This is an endemic Mediterranean species, with its main breeding populations occurring in the western Mediterranean in coastal and island sites; an average of 16,800 breeding birds in Spain in the years 2004-2016 being the largest. Other colonies occur in other parts of the Mediterranean including Greece, Turkey, Tunisia and Sardinia. It was close to extinction in the 1970s, but better enforcement of protection measures has resulted in an increase in the breeding population. In 2020, this species relapsed and was moved by Birdlife from LC to NT, based on information that it had a sharp decline in Spain.

### Current factors causing loss or decline

76. Habitat alterations at breeding sites; changes in fishing practices in reference to fishing waste management policies; bycatch from fishing gear; competition with the Yellow-legged Gull *Larus michahellis*; egg collection; rat predation; human persecution and disturbance; and possibly depletion of food resources and contamination by oil pollutants.

### Status under international instruments

- Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats (1979).
- Appendix I & II - Convention on the Conservation of Migratory Species of Wild Animals (1979).
- Annex I - European Union Directive on the Conservation of Wild Birds (79/409/EEC/1979). European Union Regulation laying down certain technical measures for the conservation of fishery resources in the Mediterranean (1626/94 (EC) 1994).
- Listed in the AEWA Action Plan (Column A Category 1a/3a).

### Current Action Plans

International Action Plan for Audouin's Gull *Larus audouinii* prepared by BirdLife International on behalf of the European Commission (March 1996).

Globally threatened birds in Europe Action Plans. Council of Europe – BirdLife International – EU Life-Nature (1996).

Action Plan to restore the Audouin's Gull *Larus audouinii* by Government Committee of Palm Islands Nature Reserve in Lebanon.

Official Working Group in Spain (Ministry of Environment) to review status and propose conservation actions for *Larus audouinii*.

A national action plan is in place and implemented in Italy; another is in preparation in Turkey and regional implemented management plans are on-going for a number of colonies in Spain.

### Action Plan objectives and target

77. To halt the decline of the species and maintain a healthy breeding population and increase the number of colonies.

**Proposed action**

- Conduct research to understand the reason for the recent sharp decline in population.
- Compile an inventory of breeding sites and map critical habitats supporting the colonies, particularly in the eastern part of the Mediterranean.
- Confer strictly protected status on the species.
- Prohibit all types of disturbance to breeding colonies, particularly the taking of eggs and young.
- Monitor and supervise colonies under threat.
- Create SPAs where breeding colonies exist.
- Plan, regulate and/or manage activities and processes of coastal and infrastructure development near to known colonies.
- Set an Action plan to reduce the dominance of the Yellow-legged Gull over the Audouin's Gull to restore the latter.
- Control or eradicate invasive competitive species and terrestrial mammals at colonies.
- Prevent oil spills and chemical pollution of the sea.
- Identify marine important areas for the species.
- Reduce fishing harvest (small pelagic fishes)
- Develop an Action Plan to reduce mortality at sea especially from bycatch and the illegal use of poison for fishing by fishermen.

**7.16 Armenian Gull (*Larus armenicus*)****Current status**

78. This species nests colonially in huge aggregations. Its European population has declined rapidly and it was listed by IUCN as Near Threatened. In 2021, the BirdLife International changed the rank of the species from NT to LC following a genuine increase in numbers of individuals of the Armenian Gull (BirdLife International, 2023). In the Mediterranean it breeds in western Turkey where it is resident, with a breeding population of 8000-10,000 pairs. In the Mediterranean it winters in the eastern part but numbers are not known. It is a common winter visitor and passage migrant to Israel where numbers have also decreased drastically. The species inhabits both coastal and inland waters, frequenting lakes, reservoirs, ponds and rivers. It breeds along the stony and grassy shores of mountain lakes, nesting and foraging in reed-beds and on beaches. In its winter range the species may also forage in agricultural fields and on fish-ponds.

**Current factors causing loss or decline**

79. Persecution (due to the damage it inflicted to fisheries); egg harvesting; and loss of habitat quality.

**Status under international instruments**

- Appendix II of the Convention on Migratory Species and is covered by the African Eurasian Waterbird Agreement.

**Current Action Plans**

None

### **Action Plan objectives and target**

80. To maintain the conservation status of the species and maintain a healthy breeding population.

### **Proposed action**

- Identification and designation of important sites for this species.
- Education programmes to fishers to reduce persecution.
- Carry out studies to understand its ecology, including its diet and population trends.
- Compile an inventory of breeding sites and map critical habitats supporting the colonies, in the eastern part of the Mediterranean.
- Confer strictly protected status on the species.
- Prohibit all types of disturbance to breeding colonies, including the taking of eggs and young.
- Monitor and supervise colonies under threat.
- Create SPAs where breeding colonies exist.
- Plan, regulate and/or manage activities and processes of coastal and infrastructure development near to known colonies.
- Develop an Action Plan to halt the decline of the species and maintain a healthy breeding population.

## **7.17 Little Tern (*Sternula albifrons*)**

### **Current status**

81. This coastal seabird is a strongly migratory species which usually fishes in very shallow water. It has the most inshore distribution of all terns. It breeds in solitary pairs or in very small groups sometimes amidst colonies of other terns. Its European breeding population is estimated at 36,000-53,000 pairs. However the breeding population in all the Mediterranean countries is estimated at 11,000-14,500 breeding pairs with the highest populations in Turkey (3000-5000bp), Spain 2641-2691bp), Italy (2000-3500bp), Greece (1500-2000bp), France (700bp), Albania (200-500bp), and Israel (300bp). The overall global population trend is decreasing.

### **Current factors causing loss or decline**

82. Habitat loss and destruction of breeding sites; human disturbance; and predation (feral cats and dogs and foxes).

### **Status under international instruments**

- Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats(1979).
- Appendix II - Convention on the Conservation of Migratory Species of Wild Animals (1979).
- Annex I - European Union Directive on the Conservation of Wild Birds (79/409/EEC/1979).
- European Union Regulation laying down certain technical measures for the conservation offishery resources in the Mediterranean (1626/94 (EC) 1994).

- Listed in the AEW Action Plan (Column A Category 3/a).

### **Current Action Plans**

None; but national implemented action plans exist in Israel & Slovenia.

### **Action Plan objectives and target**

83. To maintain healthy breeding colonies and to fill the gaps of knowledge in quantitative data of breeding populations in a number of countries.

### **Proposed action**

- Compile an inventory and map critical habitats supporting the colonies, particularly in the eastern Adriatic and eastern Mediterranean countries where quantitative data are lacking.
- Confer strictly protected status on the species.
- Prohibit all types of disturbance to the breeding colonies.
- Eliminate predation.
- Monitor and warden colonies under threat of disturbance.
- Create SPAs where breeding colonies exist.
- Plan, regulate and/or manage activities and processes of coastal and infrastructure development near to known colonies.
- Establish population size and trends.
- Restore wetlands where the species is known to breed.

## **7.18 Common Gull-billed Tern (*Gelochelidon nilotica*)**

### **Current status**

84. This species has an extremely large global range, but its breeding population in the Mediterranean is only 5800-7150 pairs: Spain (3185-3435bp), Turkey (1000-2000bp), France (873bp), Italy (550bp), Greece (180-280bp), Tunisia (150-350bp) and Libya (12bp). It breeds in a variety of locations not only in coastal areas, but also at inland lakes, rivers, marshes and swamps.

### **Current factors causing loss or decline**

85. Deterioration and loss of habitat, e.g. through wetland drainage, agricultural intensification, pesticide pollution and fluctuating water levels; Development close to breeding and/or at foraging sites; and human disturbance at breeding colonies.

### **Status under international instruments**

- Annex I - European Union Directive on the Conservation of Wild Birds (79/409/EEC/1979).
- Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats (1979).
- Appendix II - Convention on the Conservation of Migratory Species of Wild Animals (1979).

### **Current Action Plans**

None

### **Action Plan objectives and target**

86. To safeguard the breeding areas; maintain a healthy breeding population and possibly increase it.

### **Proposed action**

- Compile an inventory and map critical habitats supporting the colonies.
- Ensure breeding sites protection from disturbance, development and modification.
- Confer strictly protected status on the species.
- Eliminate predation.
- Monitor and warden colonies under threat of disturbance.
- Prevent erosion of islet complexes,
- Create SPAs where breeding colonies exist.

## **7.19 Caspian Tern (*Hydroprogne caspia*)**

### **Current status**

87. This species has an extremely large cosmopolitan but scattered distribution. Some populations are sedentary while others are strongly migratory. It prefers nesting on sandy, shell-strewn or shingle beaches, sand-dunes, flat rock-surfaces, sheltered reefs or islands. In the Mediterranean the breeding population is less than 500 breeding pairs, and is restricted to a few countries in the eastern part: Turkey (150-300bp), Syria (100-200bp), Greece (up to 10bp). It is said that it breeds in Egypt, but no numbers are given.

### **Current factors causing loss or decline**

88. Loss and deterioration of breeding habitat, human disturbance at nesting colonies, contamination by oil spills and marine pollution and bycatch in fishing gears.

### **Status under international instruments**

- Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats (1979).
- Appendix II - Convention on the Conservation of Migratory Species of Wild Animals (1979).
- Annex I - European Union Directive on the Conservation of Wild Birds (79/409/EEC/1979).

### **Current Action Plans**

None, but it is listed in the AEWPA Action Plan (Column A Category 1a/3a).

**Action Plan objectives and target**

89. To strictly protect the small breeding population and possibly to increase it.

**Proposed action**

- Compile an inventory and map critical habitats supporting the colonies.
- Ensure breeding sites protection from disturbance, development and modification.
- Confer strictly protected status on the species.
- Eliminate predation.
- Monitor and warden colonies under threat of disturbance.
- Prevent erosion of islet complexes,
- Create SPAs where breeding colonies exist.

**7.20 Lesser Crested Tern (*Thalasseus bengalensis ssp. Emigratus*)**

**Current status**

90. This Mediterranean endemic subspecies is currently confined to Libya, at 4 colonies: Garah Island (2000 pairs), Ftiha Island (12 pairs) Ulbah Island (16 pairs) and Sabkhat Julyanah (70 pairs). Occasional breeding was recorded in former years in France, Greece, Italy and Spain.

**Current factors causing loss or decline**

91. Occasional disturbance by fishermen; probably predation by Yellow-legged Gull *Larus cachinnans*; and possibly contamination by oil pollutants and toxic chemicals.

**Status under international instruments**

- Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats(1979).
- Appendix II - (African pops.) Convention on the Conservation of Migratory Species of Wild Animals (1979).
- European Union Regulation laying down certain technical measures for the conservation offishery resources in the Mediterranean (1626/94 (EC) 1994).
- Listed in the AEWPA Action Plan (Column A Category 1/c).

**Current Action Plans**

None. However, a national action plan is in place in Libya but it is not yet implemented.

**Action Plan objectives and target**

92. To safeguard the breeding areas; maintain a healthy population; and possibly increase its population.

**Proposed action**

- Confer strictly protected status on the species.
- Prohibit all types of disturbance to breeding colonies, including the taking of eggs and young.
- Monitor and supervise colonies regularly.
- Create SPAs where the species' breeding colonies exist and prohibit access to known sites except for scientific purposes.
- Investigate whether local fisheries impact on breeding success.
- Prevent oil spills and chemical pollution of the sea.
- Establish population size and trends.
- Provide small artificial islands at Sabkhat Julyanah to encourage an increase of the colony size in the lake.

**7.21 Sandwich Tern (*Thalasseus sandvicensis*)**

**Current status**

93. This species can be found in Europe, Africa, western Asia, and the southern Americas. Whilst the European population is estimated at 79,900-148,000 pairs, the breeding population in the Mediterranean is estimated to be 6300-8800 pairs, nesting in colonies mainly in river deltas, on sandbanks and in salinas. Also migrates from elsewhere into the Mediterranean for wintering.

**Current factors causing loss or decline**

94. Degradation and loss of habitat mainly due to coastal development; disturbance by humans, animals predation and hunting; and possibly reduction of small pelagic fish abundance.

**Status under international instruments**

- Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats (1979).
- Appendix II - Convention on the Conservation of Migratory Species of Wild Animals (1979).
- Annex I - European Union Directive on the Conservation of Wild Birds (79/409/EEC/1979).
- Listed in the AEWPA Action Plan (Column A Category 3a/3c).

**Current Action Plans**

None

**Action Plan objectives and target**

95. To maintain healthy breeding colonies and stop the loss of habitat.

**Proposed action**



- Compile an inventory and map critical habitats supporting the colonies, particularly in the eastern part of the Mediterranean, where breeding surveys are lacking.
- Confer strictly protected status on the species.
- Prohibit all types of disturbance to the breeding colonies.
- Monitor and supervise colonies under threat of disturbance.
- Create SPAs where breeding colonies exist.
- Plan, regulate and/or manage activities and processes of coastal and infrastructure development that impact on wetlands and other breeding habitats.
- Restore wetlands where the species breeds.

## 7.22 Osprey (*Pandion haliaetus*)

### Current status

96. This is a cosmopolitan species, which is vulnerable in several regions. Whilst the European population is estimated at 8,400-12,300 pairs, less than 120 pairs breed in the Mediterranean (mainly Balearic Islands, Corsica, Morocco and Algeria). Some local small populations have disappeared from other islands (e.g. Ibiza, Sicily & Sardinia). The newly established Italian population (<10 pairs) originates from Corsican individuals released in 2006-2010.

### Current factors causing loss or decline

97. Habitat destruction and disturbance at breeding sites related to tourism. Mortality occurs mainly from illegal poaching, electrocution and collisions.

### Status under international instruments

- Class B - African Convention on Conservation and Natural Resources (1968).
- Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats (1979).
- Appendix II - Convention on the Conservation of Migratory Species of Wild Animals (1979).
- Annex I - European Union Directive on the Conservation of Wild Birds (79/409/EEC/1979).
- European Union Regulation laying down certain technical measures for the conservation of fishery resources in the Mediterranean (1626/94 (EC) 1994).

### Current Action Plans

None; but a regional species action plan is in place in Spain. France submitted to CMS a National Action Plan for Osprey as an instrument on 30 October 2019.

### Action Plan objectives and target

98. Reverse the decline of the breeding population in the Mediterranean.

### Proposed action

- Make an inventory and map critical habitats supporting the remaining breeding pairs.
- Confer strictly protected status on the species.
- Prohibit the destruction of its habitat, disturbance, and the taking or trade of the species.

- Use area-based measures to protect and restore its habitats.
- Create SPAs where it breeds.
- Plan, regulate and/or manage activities and processes of coastal and infrastructure development near to known breeding sites.
- Research the causes of the decline of the species.

### 7.23 Pied Kingfisher (*Ceryle rudis*)

#### **Current status**

99. This species has an extremely large range. However in the Mediterranean it is restricted to a few countries and is only known to breed in Israel (2500bp), Turkey (100-200bp) and in Syria and Egypt where breeding numbers are unknown. Decreases in populations have been noted in Syria, Israel, and Egypt. It inhabits small and large lakes, large rivers, estuaries, coastal lagoons and sandy and rocky coasts, dams and reservoirs with either fresh or brackish water with available waterside perches. It is generally sedentary with some local movements due to changes in the supply of food.

#### **Current factors causing loss or decline**

100. Use of poisons and pesticides; water storage developments; and bioaccumulation of pollution and toxins in the fish they eat.

#### **Status under international instruments**

- Appendix II -Convention on the Conservation of European Wildlife and Natural Habitats(1979).

#### **Current Action Plans**

None

#### **Action Plan objectives and target**

101. Reverse the decline and maintain a healthy breeding population in the Mediterranean.

#### **Proposed action**

- Compile an inventory of the breeding areas and populations.
- Protect legally the species and all its key breeding sites.
- Carry out research on the species' range, ecology, habitat requirements and movements, to be used for the necessary conservation measures.
- Assess the potential threats and their impacts in order to develop appropriate response.
- Develop Regional Action Plans for the protection and management of the species' key sites.

## 7.24 White-breasted Kingfisher (*Halcyon smyrnensis*)

### Current status

102. This kingfisher has a very large global range. However, in the Mediterranean it is restricted to a few countries, and is only known to breed in Israel (15,000bp), Turkey (170-250bp) and Egypt (> 10,000bp, but no proper estimates). It inhabits various habitats ranging from water bodies to farmland and palm plantations.

### Current factors causing loss or decline

103. Use of pesticides; habitat degradation from various factors; gaps in knowledge of the species' ecology and behaviour and of the threats facing this species.

### Status under international instruments

- Appendix II -Convention on the Conservation of European Wildlife and Natural Habitats (1979).

### Current Action Plans

None

### Action Plan objectives and target

104. Reverse the decline and maintain a healthy breeding population in the Mediterranean.

### Proposed action

- Compile an inventory of breeding areas and populations.
- All breeding sites should be strictly protected and supervised.
- Prohibit any development that would degrade the species' breeding sites.
- Carry out research on species ecology and habitat needs for future conservation measures.
- Assess the potential threats and their impacts in order to develop appropriate responses.
- Develop Regional Action Plans for the protection and management of the species' key sites.

## 7.25 Eleonora's Falcon (*Falco eleonora*)

### Current status

105. This falcon breeds in colonies along the coast of the mainland or on rocky islands, which are often uninhabited. In Europe, which covers >95% of the breeding range, the population has been estimated recently at 14,300-14,500 pairs – the largest number of breeding pairs are found in Greece (12,360), followed by Italy (638-704), Spain (655), Cyprus (90-145) and Turkey (35-50). The North African population has been estimated at approximately 250 pairs (ca.72% of which are found in Tunisia). The current population trend is increasing. Almost all the entire population

breeds on rocky Mediterranean islands.

**Current factors causing loss or decline**

106. Predation by cats and rats; human disturbance in colonies; habitat degradation; taking of eggs and young; hunting; and accidental poisoning from pest control methods.

**Status under international instruments**

- Class B - African Convention on Conservation and Natural Resources (1968).
- Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats (1979).
- Appendix II - Convention on International Trade in Endangered Species of Wild Fauna and Flora (1973).
- Annex I European Union Directive on the Conservation of Wild Birds (79/409/EEC/1979).

**Current Action Plans**

International Species Action Plan Eleonora's Falcon *Falco eleonora* prepared by BirdLife International on behalf of the European Commission (final draft December 1999).

A regional implemented species action plan for the Balearics, which host most of the breeding population in Spain, is in place.

**Action Plan objectives and target**

107. To safeguard the present colonies and encourage the increasing trend, through preserving the breeding sites particularly the uninhabited islands and eliminating any negative impacts on the species.

**Proposed action**

- Confer strictly protected status on the species.
- Prohibit all types of disturbance to the breeding colonies, including the taking of eggs and young.
- Monitor and warden colonies under threat.
- Create SPAs where breeding colonies exist.
- Plan, regulate and/or manage activities and processes, which may result in loss of habitat and the introduction/spread of invasive species.
- Control and/or eradicate species that have become invasive.
- Carry out breeding surveys in eastern Mediterranean countries. Prevent poisoning through awareness campaigns and cooperation with farmer.

**Annex IV**

**Draft updated Action Plan concerning species introductions  
and invasive species in the Mediterranean Sea**

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## I. Introduction

1. In 1975, 16 Mediterranean countries and the European Community adopted the Mediterranean Action Plan (MAP), the first-ever Regional Seas Programme under UN Environment's umbrella. In 1976 these Parties adopted the Convention for the Protection of the Mediterranean Sea Against Pollution (Barcelona Convention). Seven Protocols addressing specific aspects of Mediterranean environmental conservation complete the MAP legal framework.

2. Currently, MAP has been adopted by 21 countries bordering the Mediterranean Sea, and the European Union. The Contracting Parties to the Barcelona Convention give priority to the conservation of the marine environment and to the components of its biological diversity. This has been confirmed on several occasions, particularly by the adopting (Barcelona, 1995) of the new Protocol concerning specially protected areas and biological diversity in the Mediterranean (SPA/BD Protocol) and of its Annexes. The SPA/BD Protocol invites the Contracting Parties to take "all appropriate measures to regulate the intentional or non-intentional introduction of non-indigenous or genetically modified species into the wild and prohibit those that may have harmful impacts on the ecosystems, habitats or species" (Article 13.1). For established alien species, the SPA/BD Protocol stipulates that "the Parties shall endeavour to implement all possible measures to eradicate species that have already been introduced when, after scientific assessment, it appears that such species cause or are likely to cause damage to ecosystems, habitats or species" (Article 13.2).

3. To that effect, the Contracting Parties adopted in 2003 the first Regional Action Plan concerning species introductions and invasive species in the Mediterranean Sea, which was further updated in 2017. The main objective of the 2017 NIS Action Plan was to promote the development of coordinated efforts and management measures throughout the Mediterranean region in order to prevent as appropriate, minimise and limit, monitor, and control marine biological invasions and their impacts on biodiversity, human health, and ecosystem services, through a series of actions to be carried out between 2017 and 2020. Coinciding with the adoption of the Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria (IMAP), which aims to assess the status of the Mediterranean sea and coast as a basis for enhanced action, the focus of the 2017 Action Plan was to strengthen the capacity, and the institutional and legislative framework of Mediterranean countries so that they can deal with issues of alien species, conduct baseline studies and establish monitoring programmes, foster regional co-operation and data sharing infrastructure and produce guidelines and other necessary technical documentation; goals which have been achieved to a large extent.

4. As our baseline knowledge and understanding of marine bioinvasions has been increasing and the regulatory and institutional framework to combat NIS are continuously developing, the post-2020 international and regional policy framework is moving towards more concrete actions for the management of pathways and the drastic reduction in invasive alien species populations and their impacts.

5. The first draft of the Post-2020 Global Biodiversity Framework (GBF) addresses alien species with Target 6: Manage pathways for the introduction of invasive alien species, preventing, or reducing their rate of introduction and establishment by at least 50 per cent, and control or eradicate invasive alien species to eliminate or reduce their impacts, focusing on priority species and priority sites.

6. Similar stipulations are reflected in the Draft Post-2020 Strategic Action Programme for the Conservation of Biodiversity and Sustainable Management of Natural Resources in the Mediterranean Region" (Post-2020 SAPBIO), which aims to reduce the threats to biodiversity by alien species with its Target 1.2 on alien invasive species, by sharing databases and controlling introduction pathways and impacts in the most vulnerable areas. Furthermore, it stipulates that "Invasive alien species and pathways must be regularly identified in all countries, listing priority species to be controlled or eradicated".

7. The EU Biodiversity Strategy for 2030, calls for an enhanced implementation of NIS-relevant legislation aiming to minimise, and where possible eliminate, the introduction and establishment of alien species in the EU environment. One of the Strategy's key commitments is the management of established invasive alien species and a 50% reduction in the number of Red List species they threaten (EC, 2020)

8. The Mediterranean Sea, with about 1000 alien species reported in its waters up to now, is one of the most invaded ecosystems in the world. The trend of new introductions of alien species, which exhibited a steep increase after the mid-1990s, shows no sign of decline and is moreover accompanied by an accelerating rate of spread and establishment in the last decade, with almost seventy percent of the species being considered established (Zenetos & Galanidi, 2020; Zenetos et al., 2022a). Some of these species have become invasive with serious negative impacts on biodiversity, human health, and ecosystem services. The main pathways by which human actions have introduced alien invasive species into the Mediterranean Sea are shipping (by means of ballast waters and hull fouling), corridors, aquaculture, trade in live marine organisms (aquarium trade and live food trade) and others (e.g. fishing activities and aquarium exhibits).

9. Elaborating and implementing action plans to confront the threats to biological diversity is an effective way of guiding, coordinating and stepping up the efforts made by the Mediterranean countries to safeguard the region's natural heritage. In the 2022-2027 period, significant actions for the management of shipping vectors are planned within the framework of the Ballast Water Management Strategy for the Mediterranean Sea and its Action Plan. The present NIS Action Plan takes this into consideration with complementary actions addressing the remaining important pathways, as well as a focus on the impacts of priority invasive species on priority native species and habitats, in line with existing regional and international policies; it will be adapted and updated, if necessary, to reflect the latest policies on invasive species and new data available.

10. The actions advocated by the present Action Plan are to be carried out over a five-year period, starting from when the Action Plan is adopted by the Contracting Parties. At the end of this period, SPA/RAC will prepare a report on the progress so far made in implementing the advocated actions and will submit it to the National Focal Points for SPAs, who will make follow-up suggestions to the Parties.

11. Considering the world-wide scope of the issue of alien species introduction, it is important that the implementation of the present Action Plan be done in consultation and collaboration with the initiatives undertaken in this field in other regions and/or by other international organisations.



## II. Objectives of the Action Plan

12. The main objective of the present Action Plan is to promote the development of coordinated efforts and management measures throughout the Mediterranean region in order to make progress towards Good Environmental Status in relation to non-indigenous species. These efforts can be organized along two main axes corresponding to the two main operational objectives of the Ecosystem Approach (EcAp) and IMAP with respect to Ecological Objective 2 (EO2) and Common Indicator 6 (CI6).

13. Operational objective 2.1 requires that “Introduction and spread of NIS linked to human activities are minimised, in particular for potential IAS” and addresses trends in temporal occurrence, spatial distribution, and abundance of NIS, as well as preventative measures for introduction and spread. Here, the main goals of the Action Plan for the next five years should be:

- Continuing to support the implementation of IMAP and the operationalization of its indicators
- Developing a regional early-warning system within the framework of MAMIAS
- Continuing to elaborate guidelines and technical documentation
- Strengthening the institutional and legislative framework for pathway management, allowing for synergies with the Mediterranean BWM Strategy (2022-2027)
- Supporting the implementation of the Mediterranean BWM Strategy (2022-2027), through technical cooperation and capacity building activities
- Promoting voluntary codes of conduct for pathways where a mandatory legal framework is not yet in place

Operational objective 2.2 states that “The impact of non-indigenous, particularly invasive species, on ecosystems is limited” and requires prioritization and impact quantification that can be achieved in a three-step process of:

- Risk assessment and prioritization with an emphasis on prevention and mitigation.
- Identification of invasive population levels that elicit unacceptable effects
- Elaborating and executing rapid response plans and management plans for the most invasive NIS

## III. Priorities

### 1. At National level

14. Considering the lack of the data and knowledge necessary for impact and risk assessments, horizon scanning, and the implementation of management actions for prevention, control and eradication, priority at national level should be given to:

- Conducting regular NIS monitoring as specified in their monitoring programmes
- Supporting the regional Digital Data infrastructure by providing updated baselines and any other new information to MAMIAS and by submitting yearly monitoring data to the IMAP Info System
- Focusing on invasive species impacts through systematic prioritization, risk assessment and targeted species impact research
- Performing data-based assessments of the NIS introduction and spread risks associated with the aquaculture, ornamental trade and live food trade sectors
- Elaborating an early warning system and rapid response plans
- Developing training and raising awareness programmes on risks, legal issues, best practices, and management actions for prevention and mitigation of impacts.
- Ratify and implement the BMW convention and enact the BMW strategy for the Mediterranean and its Action Plan

## 2. At Regional level

15. Considering the existing progress in monitoring and baseline information and the activities planned under the BWM Action Plan concerning ballast water and fouling management, priority at the regional level should be given to:

- Further develop criteria for the identification and prioritization of pathways based on international standards and assess their economic impact
- Further refinement of IMAP targets and development of impact related aspects of CI6 indicator
- Supporting cooperation at international level and ensuring harmonization with related policies
- Activating the updated version of MAMIAS and developing an early warning system
- Co-ordinating the application of risk assessment methodologies for priority species
- Training and capacity building for status assessments of the aquaculture, ornamental trade and live food trade sectors
- Training as needed and co-ordination of targeted NIS impact studies
- Support the implementation of the Ballast Water Management Strategy for the Mediterranean and its Action Plan, in cooperation with REMPEC

## IV. Actions required to attain the objectives of the Action Plan

### 1. At National level

#### a. IMAP implementation

- Consolidate/implement IMAP compliant monitoring programmes (if not already in place) and adapt as necessary as new data emerges and IMAP refinement progresses;
- Regularly update the national baselines, informed by national monitoring, research projects and the literature.
- Endeavour to increase the level of confidence in pathways and vectors of introduction and spread and refine relevant baseline information to support the BWM Action Plan.

#### b. Prioritisation and planning

- Conduct Horizon Scanning for existing NIS and potential future introductions at the national level in order to compile priority lists of high-risk species and to inform an early warning system. High-risk species should be prioritized for spatial distribution and abundance monitoring.
- Perform risk assessments of priority species following well established protocols and taking into account the potential for management
- Quantify and map impacts of priority species at the national level by employing CIMPAL. Such analysis allows the identification of hotspots of highly impacted areas, and augments the prioritization of sites, pathways and species for management actions.
- Perform risk analysis and status assessments of sectors (aquaculture operations, ornamental trade and live food trade)
- Conduct Environmental Impact Assessments before actions on pathways that could increase NIS

#### c. Initiate and support research on NIS impacts

- Focused impact studies (field and laboratory experiments, modelling studies) for priority species to identify acceptable abundance levels

d. Support the regional Digital Data Infrastructure

- Regularly submit monitoring data to the IMAP Info System, following the designated procedures and Data Standards
- Support MAMIAS with updated baselines, pathway information, results of impact studies and any other new information.

e. Legislation

16. Those Contracting Parties which have not yet enacted national legislation for controlling the introduction of marine species must do so as quickly as possible. All the Contracting Parties are strongly recommended to take the necessary steps to express in their national laws the provisions of the pertinent international treaties, especially the IMO Convention on the management of ballast waters, and guidelines and codes adopted on the subject within the context of international organisations.

f. Institutional framework

- Set up reporting mechanisms for NIS sightings, especially among actors and stakeholder groups most likely to first notice new species introductions (e.g. fishers, divers, aquaculture operators, border officials, etc.). Disseminate information about species anticipated to arrive in the near future. Provide links of this early warning system to the regional MAMIAS system and cooperate with the concerned authorities in neighbouring states regarding new NIS detections;
- Elaborate rapid response and management plans for invasive NIS, including eradication or population control measures as appropriate; it is important that such plans are specific with clear procedures, jurisdictions and resource allocation;
- Conduct research on methods to mitigate invasions through existing pathways.
- Develop and disseminate best practice guidelines and codes of conduct for pathways not already covered by the BWM Action Plan
- Strengthen and where necessary set up systems to control the intentional import and export of alien marine species;
- Promote citizen science programmes for data collection;
- Undertake awareness raising activities for targeted stakeholder groups and the general public.

**2. At Regional level**a. IMAP implementation/refinement and operationalization of its indicators

17. Evaluation of CI6 is currently based on operational objective 2.1 (“Invasive non-indigenous species introductions are minimized”), addressing trends in abundance, temporal occurrence and spatial distribution of NIS, notably in risk areas; however due to the lack of suitable data, significant progress has only been made in assessing trends in temporal occurrence. With national monitoring programmes being increasingly implemented and making data available, further elaboration of CI6 elements will be possible, more specifically:

- Setting reference conditions and threshold values for trends in temporal occurrence, in collaboration with other Regional Seas Conventions and the EU
- Elaborating methodologies and quantitative targets for trends in spatial distribution
- Elaborate quantitative targets for trends in abundance, in conjunction with operational objective 2.2 (“The impact of non-indigenous, particularly invasive species on ecosystems is limited) and its state target “Abundance of NIS introduced by human activities reduced to levels giving no detectable impact.
- Elaborate scales of aggregation for CI6 assessment and integration with other Ecological Objectives and Common Indicators
- Furthermore, develop an early warning system within MAMIAS and link with national early warning systems.

Finally, liaise with REMPEC on monitoring and data collection in ports and baseline surveys in ports to ensure integration with IMAP monitoring programs.

b.Implementation of the BWM Strategy (2022-2027)

18. SPA/RAC is already committed in its PoW for 2024-2025 to provide assistance to Contracting Parties to implement target measures to control and manage ships' ballast water and biofouling in order to minimize the transfer of invasive aquatic species, as an active participant in the implementation of the BWM Strategy. This can be achieved through:

- Participation in the regional online BWM Working Group, established and coordinated in cooperation with REMPEC, to drive the process towards harmonization of BWM measures in the region;
- Liaising with REMPEC regarding monitoring and data collection at ports and port baseline surveys to ensure integration with IMAP monitoring programmes.
- Assisting, with data and methodological approaches, in developing and implementing port risk assessments and a comprehensive Regional Procedure for the Granting of Exemptions under the BWM Convention as stipulated in the BWM Action Plan;
- Co-ordinating, together with REMPEC, the preliminary activities to address the threat of biofouling on ships and provide assistance to Contracting Parties in implementing them, as stipulated in the BWM Action Plan (i.e., organize a regional workshop, conduct National Status Assessments and national strategies and action plans to manage biofouling)

c.Training and Capacity Building

- Produce an updated guide for risk analysis to assess NIS impacts. Organise a training session focusing on the application of risk analysis, risk assessment for priority species and for pathways and environmental impact assessments and co-ordinate the systematic application of region-wide agreed methodologies. Considering that a regional risk assessment of key ports in the Mediterranean Sea as well as National Status Assessments for biofouling are planned to be undertaken within the framework of the BWM Action plan, the focus should be on species, as well as risk analyses of other contributing pathways, most notably corridors, aquaculture, the ornamental trade and live food trade. Collaborate with Contracting Parties on data requirements and availability and with REMPEC to support ballast and biofouling management with NIS related data.
- Provide guidance and training as needed for experimental field studies and modelling studies and translating results into policy targets, co-ordinate pilot studies for specific NIS in order to elucidate their density-impact relationships.

d.Public education and awareness

19. With particular focus on stakeholders and decision-makers, prepare and circulate guidelines with best practices for activities and sectors that exert strong pressure as vectors of introduction and particularly spread of NIS

## V. Regional Coordination

20. Regional coordination of the implementation of the present Action Plan will be guaranteed by the Mediterranean Action Plan's (MAP) Secretariat through the Regional Activity Centre for Specially Protected Areas. The main functions of the coordinating structure shall consist in:

- taking in hand the implementation of those actions required at regional level to attain the present Action Plan's objectives (Section C.2 above);
- insofar as its means permit, assisting the Contracting Parties in implementing the actions required at national level to attain the present Action Plan's objectives (Section C.1 above);
- regularly reporting to the National Focal Points for SPAs about the implementation of the present Action Plan, and preparing a report on the progress made in reaching its objectives at the end of the 5-year implementation period;
- collaborating with the concerned organisations and endeavouring to ensure that the Mediterranean region is involved in the pertinent international and/or regional initiatives;
- promoting exchanges among Mediterranean specialists.

## VI. Participation in the Implementation

21. Implementing the present Action Plan is the province of the national authorities of the Contracting Parties. The concerned international organisations and/or NGOs, laboratories and any organisation or body are invited to join in the work necessary for implementing the Action Plan. At their ordinary meetings, the Contracting Parties may, at the suggestion of the meeting of National Focal Points for SPAs, grant the status of «Action Plan Partner» to any organization or laboratory which so requests, and which carries out, or supports (financially or otherwise) the carrying out of concrete actions (conservation, research, etc.) likely to facilitate the implementation of the present Action Plan, taking into account the priorities contained therein.

22. In addition to collaborating and coordinating with the Secretariats of the relevant Conventions, SPA/RAC should invite other MAP components and RACs to join and contribute to the implementation of the present Action Plan, in particular REMPEC and INFO/RAC. It will set up a mechanism for regular dialogue between the participating organisations and, where necessary, organise meetings to this effect.

**VII. Implementation timetable**

Action (* in tandem with the BWM Action Plan)	Deadline	Responsible
1. establish a working group nominated by Contracting Parties to Further develop criteria for the identification and prioritization of pathways based on international standards and assess their economic impact	2024	SPA/RAC & Contracting Parties
2. Consolidate/implement IMAP compliant monitoring programmes	2024	Contracting Parties
3. Increase the level of confidence in pathways and vectors of introduction and spread	2024	Contracting Parties
4. Prepare and circulate guidelines with best practices for activities and sectors that exert strong pressure as vectors of introduction	2024	SPA/RAC
5. Produce an updated guide for risk analysis to assess NIS impacts	2024	SPA/RAC
6. Organise a training session for risk assessment of species and pathways	2024	SPA/RAC
7. Develop and adopt a regional protocol for sampling of ballast water for purposes of Port State Control*	2024	REMPEC & SPA/RAC
8. Develop a regional protocol for port baseline surveys *	2024	REMPEC& SPA/RAC
9. Review and adapt the IMAP Guidance Fact Sheet for CI 6 under EO 2 to ensure integration of data in the IMAP Info System*	2024	REMPEC& SPA/RAC
10. Develop and adopt a regional protocol for port risk assessment *	2024	REMPEC& SPA/RAC
11. Undertake a regional risk assessment of key ports in the Mediterranean Sea *	2025	REMPEC& SPA/RAC
12. Develop, adopt, and implement a comprehensive Regional Procedure for the Granting of Exemptions under the BWM Convention *	2025-2028	REMPEC& SPA/RAC
13. Develop an early warning system in the framework of MAMIAS	2025	SPA/RAC
14. Conduct Horizon Scanning for existing NIS and potential future introductions taking into consideration the increased risk of establishment of IAS due to climate change	2025	Contracting Parties
15. Perform risk assessments of priority species	2025	Contracting Parties
16. Map impacts of priority species with CIMPAL	2025	SPA/RAC, Contracting Parties
17. Workshop to initiate biofouling-related activities in the region *	2024	REMPEC& SPA/RAC
18. Undertake National Status Assessments of Biofouling *	2025	Contracting Parties
19. Develop national strategies and action plans to manage biofouling *	2025-2028	Contracting Parties
20. Perform risk analysis and status assessment of aquaculture, ornamental trade and live food trade sectors	2026	Contracting Parties
21. Set up a mechanism to promote and coordinate the actions listed in section C.1.6. (Institutional framework)	2025	Contracting Parties
22. Launch the procedures for enacting or strengthening national legislation governing the control of alien species introduction	2026	Contracting Parties
23. Develop national early warning and reporting systems	2026	Contracting Parties

24. Elaborate rapid response and management plans for invasive NIS	2026	Contracting Parties
25. Preparation of material for public education and awareness	2025-2028	SPA/RAC, Contracting Parties
26. Develop programmes to raise the awareness of the general public and target groups, including decision-makers, concerning the risks associated with species introduction and disseminate best practice guidelines	2028	Contracting Parties
27. Strengthen and where necessary set up systems to control the intentional import and export of alien marine species	2027	Contracting Parties
28. Support the regional Digital Data Infrastructure as set out in section C.1.4	2024-2028 (annually)	Contracting Parties
29. IMAP CI6 target refinement, setting of thresholds, further indicator development regarding impacts	2024-2028	SPA/RAC
30. Organise a symposium every 3 years	From 2024	SPA/RAC

## **Annex V**

**Conclusions and recommendations of the Multidisciplinary group of experts nominated by the Contracting Parties to define parameters allowing to use phytoplankton and zooplankton for relevant IMAP biodiversity indicators and elaborate the List of Reference of Pelagic Habitat Types in the Mediterranean Sea**



## **Conclusions and recommendations of the online meeting of the Multidisciplinary group of experts (5 of April 2023)**

### **Definition of parameters allowing to use phytoplankton and zooplankton for relevant IMAP biodiversity indicators**

1. Overall, while there has been progress in developing indicators based on phytoplankton and zooplankton, continued research and development are needed to define these indicators and improve their usefulness for assessing and managing pelagic habitats.

2. First, the relationships between changes in these organisms and broader ecosystem health can be complex and variable depending on the pressure and the considered spatial and temporal scales. For example, in some cases, high phytoplankton abundance may be indicative of eutrophication and poor water quality, while in other cases, it may simply reflect natural seasonal variability and associated processes (e.g., winter convection in the north-western Mediterranean Sea). Therefore, more research is needed to define specific indicators that are the most informative for different types of pressures, to better understand and study how these indicators reflect to different pressures (at different spatio-temporal scales) and how they should be interpreted. In addition, there is a strong need for collaboration among experts from different scientific fields and marine regions to define common indicators and thresholds and, finally, to investigate the links between indicators, environmental variables, and anthropogenic pressures.

3. The main pressures identified so far on pelagic habitats are:

- hydroclimatic conditions and shifts that should be considered in light of climate change;
- Eutrophication;
- Biological invasions;
- Contaminants (chemicals and marine litter);
- Overfishing;
- Aquaculture;
- Physical disturbance due to the influence of man-made structure (wind farms, desalination plants, hydrocarbon drilling, marinas etc.);
- Acidification;
- Maritime traffic.

4. As pelagic habitats are closely linked to several Ecological Objectives of the EcAp like EO5 Eutrophication and EO9 Pollution, it is important to enhance synergy and better integration among Ecological objectives (by improving data collection and sharing, data harmonization and interoperability, etc.)

5. Monitoring and assessing phytoplankton and zooplankton communities can be logistically challenging. Therefore, there is a need to develop efficient, harmonised and cost-effective monitoring methods that can be applied across the region. Specific workshops should be organised for harmonizing sampling strategies and protocols. Ensuring parameter comparability is also crucial and can be achieved through the use of comparable acquisition methods and/or intercomparison/intercalibration exercises. This is necessary to evaluate whether and how the results obtained are influenced by the acquisition methods used.

6. Long-term series of data are critical for using indicators based on phytoplankton and zooplankton effectively. Without sufficient long-term data, it is impossible to distinguish between natural variability and anthropogenic impacts, making it challenging to identify trends or changes. It is also critical to provide associated metadata wherever available in to ensure the quality and comparability of the data collected over

time to validate whether observed changes are not explainable by changes in acquisition techniques (e.g., to verify whether observed changes are not explainable by changes in methodologies (sampling techniques, sample processing, different analysts)).

7. ABIOMMED project, and in particular the Activity 2, is related to pelagic habitat and the use of the plankton communities to properly address the status of pelagic habitat and relevant spatio-temporal scales and pressures. Under this concept, ABIOMMED is expected to provide a comprehensive input and the essential resources to contribute to the development of relevant IMAP biodiversity indicators based on phytoplankton and zooplankton.

8. The following parameters can be used to effectively use these organisms as indicators:

- Biomass [Chla, Carbon]
- Abundance (per species/genus or groups)
- Size and biovolume

9. Setting thresholds is a difficult task and could be challenging (Varkitzi et al. 2018<sup>1</sup>). Using trends, i.e., considering plankton indicators as surveillance indicator (e.g., Shephard et al. 2015<sup>2</sup>; Bedford et al. 2018<sup>3</sup>) with the addition of expert knowledge following indicator computation, could be a reasonable alternative and was recently proposed by McQuatters-Gollop et al. (2022)<sup>4</sup> for biodiversity assessment.

10. Monitoring frequency should be adapted to integrate Seasonal and long-term temporal variability and rely on existing data.

11. Abiotic parameters could be measured at the relevant space and time to interpret the changes in plankton communities:

- Water Temperature
- Salinity
- Transparency
- Oxygen
- Turbidity
- pH
- Nutrients concentration
- Meteorological data (air temperature, precipitation, wind intensity and direction, etc.)

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<sup>1</sup> Varkitzi, I., Francé, J., Basset, A., Cozzoli, F., Stanca, E., Zervoudaki, S. et al. (2018). Pelagic habitats in the Mediterranean Sea: A review of Good Environmental Status (GES) determination for plankton components and identification of gaps and priority needs to improve coherence for the MSFD implementation. *Ecological indicators*, 95, 203-218.

<sup>2</sup> Samuel Shephard, Simon P. R. Greenstreet, GerJan J. Piet, Anna Rindorf, Mark Dickey-Collas, Surveillance indicators and their use in implementation of the Marine Strategy Framework Directive, *ICES Journal of Marine Science*, Volume 72, Issue 8, September/October 2015, Pages 2269–2277, <https://doi.org/10.1093/icesjms/fsv131>

<sup>3</sup> Jacob Bedford, David Johns, Simon Greenstreet, Abigail McQuatters-Gollop, Plankton as prevailing conditions: A surveillance role for plankton indicators within the Marine Strategy Framework Directive, *Marine Policy*, Volume 89, 2018, Pages 109-115, ISSN 0308-597X, <https://doi.org/10.1016/j.marpol.2017.12.021>.

<sup>4</sup> A. McQuatters-Gollop, L. Guérin, N.L. Arroyo, A. Aubert, L.F. Artigas, J. Bedford, E. Corcoran, V. Dierschke, S.A.M. Elliott, S.C.V. Geelhoed, A. Gilles, J.M. González-Irusta, J. Haelters, M. Johansen, F. Le Loc'h, C.P. Lynam, N. Niquil, B. Meakins, I. Mitchell, B. Padegimas, R. Pesch, I. Preciado, I. Rombouts, G. Safi, P. Schmitt, U. Schückel, A. Serrano, P. Stebbing, A. De la Torre, C. Vina-Herbon, Assessing the state of marine biodiversity in the Northeast Atlantic, *Ecological Indicators*, Volume 141, 2022, 109148, ISSN 1470-160X, <https://doi.org/10.1016/j.ecolind.2022.109148>.

12. The measurement of weather conditions cannot be considered only on the day of collection of the plankton community. Conditions that prevailed prior to data collection (t-1) can explain the structure and dynamics of the communities at time t.

### **Elaboration of the List of Reference of Pelagic Habitat Types in the Mediterranean Sea**

13. The meeting confirmed that the modified classification of pelagic habitat types in the epipelagic layer (0-200 m) proposed in UNEP/RAC/SPA (2013)<sup>5</sup>, can be used, where necessary, as a basis for identifying reference pelagic habitats to be monitored and assessed at the national level under IMAP. This reference list could be further developed at national level to consider national features and specificities.

14. The group of experts did not reach a conclusion concerning whether the typology defined for pelagic habitats will be computed at seasonal scale or more frequently over a given period (i.e., 6-year cycle) and recommended that the point be discussed in the future.

15. It will be necessary to phase the typology definition for pelagic habitats with the areas of assessment defined for other Ecological Objectives (EO 5 Eutrophication – EO 9 Pollution) given eutrophication and pollution can act as pressures that should be considered in coherent spatial scales.

16. Frequency of the sampling depends on the proposed typology, on the resources available and on plankton dynamics and should be adapted at a minimum to the temporal scale of the typologies used.

17. Satellite-derived products for chlorophyll-a are valuable tools for acquiring data offshore because they are regularly validated and calibrated with in-situ data and account for reprocessing phases undertaken by NASA and ESA. These products rely on look-up tables to convert satellite measurements into estimates of chlorophyll-a concentrations, making them an effective way to complement in-situ data collection. However, it is important to note that satellite-derived products have limitations, such as limited spatial and temporal resolution, and should be used in combination with in-situ data to provide a more comprehensive understanding of pelagic habitats. Different products developed for Eutrophication (Common Indicator 14) were provided for the QSR Med Assessment 2023. They concern distinct contracting parties and rely on CMEMS product, French products developed by Argans and Spanish products (for the Alboran Sea). Ongoing works aim to compare the results given by these different products on eutrophication assessment (Chl a – Common Indicator 14).

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<sup>5</sup> UNEP/RAC/SPA, 2013: [http://www.rac-spa.org/nfp11/nfpdocs/working/WG\\_382\\_11\\_ENG\\_1706.pdf](http://www.rac-spa.org/nfp11/nfpdocs/working/WG_382_11_ENG_1706.pdf)

18. The Draft reference list of pelagic Habitat Types for the epipelagic layer (0-200m) is as follows:

Draft reference list of pelagic Habitat Types for the epipelagic layer (0-200m) \*

	Pelagic Habitat Types	Water mass	Comments**
A.1.	Reduced salinity water	coastal lagoons	WFD correspondence <sup>6</sup>
A.2.	Variable salinity water – high surface or subsurface CHL (>3 mg/m <sup>3</sup> )	estuaries, river plumes	Transitional waters with WFD correspondence <sup>7</sup> (Values should be revised)
A.3.	Marine water: neritic - medium surface or subsurface CHL (0.5-3 mg/m <sup>3</sup> )	upwellings, re-suspension in shallow waters and outskirts of river plumes, winter mixing areas	WFD water type II, type III
A.4.a	Marine water: oceanic - medium surface or subsurface CHL (0.5-3 mg/m <sup>3</sup> )	Upwellings, and winter mixing areas	WFD water type III
A.4.b	Marine water: oceanic - low to medium surface CHL (~0.1-1.0 mg/m <sup>3</sup> )	Hydrological features (fronts and gyres)	WFD water type III
A.5.a.	Marine water: oceanic - very low surface CHL (<0.1 mg/m <sup>3</sup> ) with deep CHL maximum	euphotic depth > mixed layer depth	WFD water type III
A.5.b.	Marine water: oceanic - very low surface CHL (<0.2 mg/m <sup>3</sup> ) without deep CHL maximum	euphotic depth < mixed layer depth	WFD water type III

\* This list can be used, where necessary, as a basis for identifying reference pelagic habitats to be monitored and assessed at the national level under IMAP. This reference list could be further developed at national level to consider national features and specificities.

\*\*Each country should specify the range of CHLa, Salinity, depth and if annual/seasonal values are used

<sup>6</sup> European Commission Decision 2018/229/EU establishing, pursuant to Directive 2000/60/EC of the European Parliament and of the Council, the values of the Member State monitoring system classifications as a result of the intercalibration exercise, and repealing Commission Decision 2013/480/EU (notified under document C (2018) 696) <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018D0229&from=PL>

<sup>7</sup> WFD Annex 2 part 1.2.3. defines Transitional waters. see also Guidance document n.o 5 , Transitional and Coastal Waters, Typology, Reference Conditions and Classification Systems and Water Framework Directive Intercalibration Technical Report - Part 3: Coastal and Transitional Waters

## **Annex VI**

**Conditions and criteria for the award of the title of regional action plan partner**

## BACKGROUND

1. In accordance with its mission, the Specially Protected Areas Regional Activity Centre (SPA/RAC) of the Mediterranean Action Plan (UNEP/MAP) is assisting the Contracting Parties to the Barcelona Convention in fulfilling their obligations under the SPA/BD Protocol, the Post-2020 Strategic Action Programme for the Conservation of Biological Diversity and Sustainable Management of Natural Resources in the Mediterranean Region (Post-200 SAPBIO) and the regional Action Plans and strategies to protect vulnerable habitats, endangered species, and areas of conservation interest.

2. Elaborating and implementing regional action plans to address threats to biological diversity within a common framework, namely the Barcelona Convention, is an effective way to step up efforts by the Mediterranean countries to safeguard the region's natural heritage. Although they do not have a binding legal character, these action plans set out the priorities and activities to be undertaken as defined and agreed with the Contracting Parties.

3. In all the action plans, coordination of efforts, cooperation and solidarity are a fundamental point. This approach has indeed proved necessary to ensure the conservation and sustainable management of biodiversity in the Mediterranean as a whole.

4. The Contracting to Barcelona Convention adopted the following Regional Action Plans:

- Action Plan for the management of the Monk Seal
- Action Plan for the conservation of marine turtles
- Action Plan for the conservation of cetaceans
- Action Plan for the conservation of marine vegetation
- Action Plan for the conservation of bird species registered in Annex II of the SPA/BD Protocol
- Action Plan for the conservation of cartilaginous fishes (Chondrichthyans) in the Mediterranean Sea
- Action Plan concerning species introduction and invasive species
- Action Plan for the conservation of the coralligenous and other calcareous bio-concretions in the Mediterranean Sea
- Action Plan for the conservation of habitats and species associated with seamounts, underwater caves and canyons, aphotic hard beds and chemo-synthetic phenomena in the Mediterranean Sea

5. To encourage and reward contributions to the work of applying the Action Plans, the Contracting Parties may at their ordinary meetings grant the title of "Action Plan Partner" to any organization (governmental, NGO, economic, etc.) that has to its credit concrete actions likely to help the conservation and the protection of the species/group of species in question.

6. Within the PoW 2022-2023, SPA/RAC is requested to develop conditions and criteria for the award of the title of Regional Action Plan Partner (Activity 5.4.4.a). These Conditions and criteria for the awarding of the Partner title are submitted for review by the sixteenth SPA/BD Focal Points meetings, the MAP Focal Points and adoption by the 23<sup>rd</sup> Ordinary Meeting of the Contracting Parties to the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean and its Protocols (COP 23).

7. The following draft criteria take into consideration the decision on MAP/Civil society cooperation and Partnership (UNEP(DEPI)/MED WG 337/8) adopted by 16<sup>th</sup> meeting of the Contracting Parties to the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean and its Protocols (COP 16).

## **CONDITIONS AND CRITERIA FOR THE AWARD OF THE TITLE OF REGIONAL ACTION PLAN PARTNER**

The present conditions and criteria will apply to the evaluation of proposals for the awarding and the renewal of the awarding of the title of Regional Action Plan Partner.

No limit is set on the total number of the Partner to the Regional Action Plan. However, Parties agree that the awarding will be based the following criteria. Any Organization can request the title of Partner for more than one Action Plan.

### **1. General conditions and criteria**

#### **1.1. Types of organizations eligible for the title of Regional Action Plan Partner:**

- International and regional organizations
- International and regional NGOs
- National organisations
- National and local NGOs from Mediterranean riparian states.
- Research institutions/Laboratories
- Private organizations/ companies (environmental responsibility)
- Any other organization which so requests, and which carries out, or supports (financially or otherwise) the carrying out of concrete actions (conservation, research, etc.) likely to facilitate the implementation of the concerned Action Plan, taking into account the objectives and priorities contained therein.

#### **1.2. General conditions of candidate partners:**

- a) be representative in the field(s) of their competence and fields of action related to the concerned Action Plan(s)
- b) be able, through their work and specific project or programme, to support the achievement of the objectives and the implementation of the concerned Action Plan(s)
- c) be able to make known the concerned Action Plan(s) in the region and/or their respective countries and to contribute, through a specific event or manifestation linked to public awareness-raising.
- d) be able to provide, through their specific activity or experience, expert advice and/or best practices on the definition of objectives, priorities and actions for the concerned Action Plan(s)
- e) be able to provide information or views related to their own area(s) of expertise, either on their own initiative or at the SPA/RAC request.

## **2. Specific conditions and criteria**

### **2.1. Awarding criteria:**

Candidate partners at the time of submitting request to become an action plan partner should fulfil the following criteria:

1. to have legal status; terms of reference, objectives and scope of activities related to one or more SPA/RAC areas of activity and objectives and the scope genuinely related to the concerned Action Plan(s)
2. to have existed for at least 5 years.
3. to submit financial and activity reports from the last two years.
4. to have their regional office or headquarters in a Mediterranean country.
5. to demonstrate proof of general or specialized, technical or scientific competence on issues related to the activities of SPA/RAC and the concerned Action Plan(s)
6. to demonstrate what contributions the partner could make the concerned Action Plan(s).

### **2.2. Awarding procedure:**

- a) The concerned organization should send a request to SPA/RAC, using the form in Annex 1, at least 90 days before the Meeting of SPA/BD Focal Points. The proposal must be submitted either in English or in French.
- b) SPA/RAC will consult with the concerned focal point about the received request of National organisations, National and local NGOs and research institutions/laboratories
- c) SPA/RAC will then forward a copy of the proposal in its original version with the recommendation of the concerned focal Point, to the MAP Coordinator.
- d) SPA/RAC will proceed to the translation of the original version so that the proposal may be submitted in English and French at least a month before the Focal Points meeting, which will proceed to evaluate it in the light of the above agreed criteria using the table in annex II.
- e) The meeting of SPA/BD Focal Points will examine the request accompanied by the evaluation by the Centre and will decide where to award or not the Regional Action Plans Partner title.
- f) Once approved by meeting of SPA/BD Focal Points, the candidate partner will be notified by official communication from SPA/RAC, including duration of the award and a request to nominate a contact person to ease coordination with the Centre.

### **2.3. Renewal of awarding:**

- a) Award will be renewed every five years, when the implementation of the concerned Action Plan (s) is assessed and the Action Plan updated, the partner organisation should request the Centre to renew their awarding of the Regional Action Plan Partner title.
- b) The request should show what contribution the partner organisation has made to the implementation of the concerned Action Plan (s)



#### **2.4. Awarding Renewal procedure:**

The same procedure as the initial awarding applies.

#### **2.5. Effects of awarding**

- a) SPA/RAC shall draw up a list of Action Plan's partners and update it for each meeting of SPA/BD Focal Points, drawing a distinction between the category of the organisation.
- b) SPA/RAC shall set up a mechanism for regular dialogue between the Partners and, where necessary, organize meetings to this effect. Dialogue should be made mainly by email and tele-conference.
- c) Selected partners can be invited to attend expert meetings to update an action plan, and/ or invited to the meetings of SPA/BD Focal Points to provide expert inputs with status of observers in the meeting.

#### **2.6. Partner title award levels**

- a) **Bronze partner:** A partner of regional action plan, during the first 5 years of partnership,
- b) **Silver partner:** A partner who completed the bronze partner period, for the implementation of respective Action Plan. The silver badge should be granted for 5 years.
- c) **Golden partner:** A partner who completed the silver partner period for the implementation of respective Action Plan. The Golden badge should be granted for 10 years, with progress assessment at the 5th year.
- d) **Associate/Affiliate partner:** is the final level that granted to a Golden Action Plan partner, who successfully maintained a continuous commitment in action plan implementation for 10 consecutive years.

#### **2.7. Withdrawal of awarding**

A Total lack of participation in the implementation of the concerned Action Plan (s) over a period of 5 years will lead to the awarding being automatically cancelled following a hearing with the concerned Partner.

Following a formal request from the partner organisation in question if it deems that the partner organisation is no longer meets the accreditation criteria or has shown no further interest in Action Plan implementation related activities, the meeting of SPA/BD Focal may withdraw the awarding of title. The concerned organization should send the request to SPA/RAC, at least 90 days before the Meeting of SPA/BD Focal Points

**Annex I : Application form for the Action Plan Partner title**

<b>Part A</b>	<b>Select an Action Plan</b>	
<input type="checkbox"/>	Action Plan for the management of the Monk Seal	<input type="checkbox"/> Action Plan for the conservation of marine turtles
<input type="checkbox"/>	Action Plan for the conservation of bird species registered in Annex II of the SPA/BD Protocol	<input type="checkbox"/> Action Plan for the conservation of marine vegetation
<input type="checkbox"/>	Action Plan concerning species introduction and invasive species	<input type="checkbox"/> Action Plan for the Conservation of the Coralligenous and Other Calcareous Bio-concretions in the Mediterranean Sea
<input type="checkbox"/>	Action Plan for the conservation of habitats and species associated with seamounts, underwater caves and canyons, aphotic hard beds and chemo-synthetic phenomena in the Mediterranean Sea (Dark Habitats Action Plan)	<input type="checkbox"/> Action Plan for the conservation of cartilaginous fishes (Chondrichthyans) in the Mediterranean Sea
		<input type="checkbox"/> Action Plan for the conservation of cetaceans
<b>Part B</b>	<b>General Information</b>	
<b>1.</b>	<b>Name and acronym of the organization (in English and French)</b>	
<b>2.</b>	<b>Organization HQ address</b>	
	Street	
	City & Zip Code	
	Country	
	Tel	
	Email	
	Web site	
<b>3.</b>	<b>Year of foundation</b>	
<b>4.</b>	<b>Type of organization (Association; federation, foundation, professional organization, umbrella organization)</b>	
<b>5.</b>	<b>Organizational status</b>	
	President of the organization Name: Surname: Address: Tel: Email:	
	Secretary General of the organization Name: Surname: Address: Tel: Email:	
	Structure and functioning of directing bodies	
	Staff	

	Number of members	
<b>6.</b>	<b>Funding</b>	
a)	Membership fees	
b)	Public funding	
c)	Private donations	
d)	Other, please specify	
<b>7.</b>	<b>Purpose</b> <i>Please describe briefly the goals, mandate or mission of your organization</i>	
<b>8.</b>	<b>Activities of your organization</b> <i>Please describe activities of your organization</i>	
<b>9.</b>	<b>Constituency</b> <i>Please describe briefly the support base (members/supporters/donors) of your organization</i>	
<b>10.</b>	<b>Accreditations</b> <i>Accreditation with other international intergovernmental organizations</i>	
<b>11.</b>	<b>Publications</b>	
	<i>Titles/Numbers</i>	
	Does your organization publish an annual report?	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Does your organization produce a list of available publications and or educational matters?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<b>Part C</b>	<b>Areas of possible cooperation with SPA/RAC</b>	
	Please indicate the areas of your organization's activities which correspond to the SPA/RAC programme of activities and Action Plans	
	<input type="checkbox"/> Governance for environment and development	
	<input type="checkbox"/> Integrating environment in development	

	<input type="checkbox"/> Legal aspects of implementation of the Barcelona Convention and its Protocols	
	<input type="checkbox"/> Pollution control and prevention	
	<input type="checkbox"/> Biodiversity conservation	
	<input type="checkbox"/> Integrated coastal zone management/Ecosystem management	
	<input type="checkbox"/> Scientific Research	
	<input type="checkbox"/> Sustainable management of natural resources and efficient use of resources	
	<input type="checkbox"/> Public participation and awareness	
<b>Part D</b>	<b>Modalities of Cooperation with SPA/RAC</b>	
1.	In what ways does your organization think it can support SPA/RAC activities and the objectives of the selected Action Plan? <i>(Please describe: Studies, reports, previous work in the field concerned, expertise of its members, etc)</i>	
2.	What practical cooperation has already been established with SPA/RAC and/or other RACs?  <i>(Please describe joint activities, comments on draft documents, exchange of information, participation as experts, participation at SPA/RAC meeting and events, etc)</i>	
3.	In what ways and audiences will your organization promote the work and development of the SPA/RAC?	

Name: .....

Position in the Organization: .....

Date: .....

Stamp & Signature: .....

\*\*\*\*\*

Please send your completed form and required documents by email to: [car-asp@spa-rac.org](mailto:car-asp@spa-rac.org)

Please enclose all the documents required to support your application for action plan partner title:

Submission checklist:

- Cover letter addressed to the SPA/RAC Director
- Read and endorsed the action plan partner conditions and criteria
- Completed application form
- Copy of the statute
- Financial reports of the past two years
- Annual reports of the past two years, highlighting the activities
- Copies of the organization's publications

**Annex II : Evaluation table for applications to Action Plan partner title status**

	<b>Requirement</b>	<b>Check</b>
<b>Part A</b>	<b>One Action Plan is selected</b>	<input type="checkbox"/>
<b>Part B</b>	<b>General Information</b>	
<b>1.</b>	<b>Name and acronym of the organization (in English and French)</b>	<input type="checkbox"/>
		<input type="checkbox"/>
<b>2.</b>	<b>Organization HQ address</b>	<input type="checkbox"/>
<b>3.</b>	<b>Year of foundation</b>	<input type="checkbox"/>
<b>4.</b>	<b>Type of organization (Association; federation, foundation, professional organization, umbrella organization)</b>	<input type="checkbox"/>
<b>5.</b>	<b>Organizational status</b>	<input type="checkbox"/>
	President of the organization details provided	<input type="checkbox"/>
	Secretary General of the organization details provided	<input type="checkbox"/>
	Structure and functioning of directing bodies	<input type="checkbox"/>
	Staff details provided	<input type="checkbox"/>
<b>6.</b>	<b>Funding details provided</b>	<input type="checkbox"/>
<b>8.</b>	<b>Activities of your organization provided</b>	<input type="checkbox"/>
<b>9.</b>	<b>Constituency information provided</b>	<input type="checkbox"/>
<b>10.</b>	<b>Proof of other Accreditations provided</b>	<input type="checkbox"/>
<b>11.</b>	<b>Publication's list provided</b>	<input type="checkbox"/>
	Copies of the organization's annual reports provided?	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Copies of the organization's publications provided?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<b>Part C</b>	<b>The organization provided enough information on areas of possible cooperation with SPA/RAC</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No
<b>Part D</b>	<b>The organization provided enough information modalities of Cooperation with SPA/RAC</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No

**Annex VII**  
**Draft Restoration Programme of *Pinna nobilis***

## FOREWORD

1. Elaborating and implementing action plans to conserve one species or group of species and or restoration programme is an effective way of guiding, coordinating and strengthening the efforts that the Mediterranean countries are making to safeguard the natural heritage of the region and fulfil their obligation under the new 1995 Barcelona Convention Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean (SPA/BD Protocol).

2. *Pinna nobilis* is a long-lived Mediterranean endemic species, considered one of the biggest bivalve molluscs in the Mediterranean Sea. It has a wide distribution across coastal areas, occurring mainly in seagrass meadows, but also present in other habitats such as rocky bottoms, coarse sand or rhodoliths beds.

3. A mass mortality event affecting *Pinna nobilis* populations was first detected in 2016 along the Spanish coast. The still ongoing mortality outbreak has been found to be caused by a pathogen, which rapidly spread throughout the Mediterranean Sea causing mortality rates of 80-100% across many regions.

4. In 2018, a First online meeting of 33 researchers and representatives from the public administrations from 13 Mediterranean countries to coordinate a response to *Pinna nobilis* crisis, facilitated by IUCN-Med, to present the latest mortality data and progress to recover the Critically Endangered (CR) populations of *Pinna nobilis*, now included on the IUCN Red List of Threatened Species. The role of unaffected populations for a potential recovery, established with a network of larval collector stations to enhance larval dispersal from unaffected sites and potential recolonization through recruitment of resistant juveniles was also discussed.

5. In this context, the Specially Protected Areas Regional Activity Centre (SPA/RAC) of the United Nations Environment Programme / Mediterranean Action (UNEP/MAP) Barcelona Convention, implemented a project funded by the UNEP Regional Seas Programme - 2021 Swedish International Development Cooperation Agency (SIDA) allocation in the Mediterranean sub-basin, to contribute to the restoration of *Pinna nobilis* a species of the Annex II “List of endangered or threatened species” of the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean of the Barcelona Convention.

6. This project had two major actions. The first was related to the elaboration of draft restoration programme for *Pinna nobilis* and its discussion and validation during a two-day regional workshop (Tunisia, 20-21 June 2022). The second action was related to the organisation of a regional hands-on training on juveniles’ collection from identified sites and their transportation in rearing sites (Kerkennah Islands, Tunisia, 28-30 June 2022).

7. In the implementation of its project, SPA/RAC in partnership with the Life Pinna Project consortium “Conservation and re-stocking of the *Pinna nobilis* in the western Mediterranean and Adriatic Sea” coordinated by the regional agency for the protection of the Ligurian environment (Italy) and supported by the European Union (EU) Life Programme, drafted a proposal for a restoration programme for *Pinna nobilis*, which was discussed during the regional workshop, held in Tunis, Tunisia from 20 to 21 of June 2022.

8. During the two-day regional workshop, the participants made an overview of the situation of *Pinna nobilis* in their respective countries and shared information on some restoration activities implemented in few countries confirming the regional alarming situation and the need and urgency to act for monitoring, studying and the restoration of the species as soon as possible in a coordinated manner with proven scientific approach.

9. The workshop urged the establishment of the Pan-Mediterranean task force to implement, propose and assess the translocation of potentially resistant individuals and any other matters in relation with the restoration of *Pinna nobilis*.

10. Due the alarming situation of *Pinna nobilis*, the participants recommend that SPA/RAC, the Contracting Parties, and relevant partners such as IUCN, research institutions and NGOs contribute to the implementation of the draft restoration programme as appropriate.

11. The Participants also call upon the relevant donors and national and international funding agencies to support the restoration programme of *Pinna nobilis* due to the urgency of its situation.

12. Participants thoroughly discussed the proposed draft *Pinna nobilis* restoration programme, main objectives, national and regional priority actions as well as timetable implementation. A final version has been validated, and participants have agreed/recommend submitting the amended version to the Barcelona convention Contracting Parties for consideration.



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## INTRODUCTION

1. The fan mussel *Pinna nobilis* (Linnaeus, 1758) is the largest endemic bivalve of the Mediterranean Sea. *P. nobilis* occurs in soft-bottom habitats of transitional water ecosystems and in marine coastal zones at depths between 0.5 and 60 m, mostly in seagrass meadows of *Posidonia oceanica* or *Cymodocea nodosa* (Zavodnik et al. 1991, Richardson et al. 1999, García March et al. 2007, Orfanidis et al. 2007, Coppa et al. 2010; 2013, Prado et al. 2014), but also in bare sandy bottoms (Katsanevakis 2005). This species is an important benthic filter feeder contributing to water clarity, and a “conservation species”, playing the roles of flagship, key and umbrella species.
2. The *Pinna nobilis* facies that could characterize the infralittoral sands or muddy sands is part of the reference list of species and habitats to be monitored in the framework of the Barcelona Convention’s Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria (Decision IG.22/7).
3. Due to its ecological relevance, *P. nobilis* has recently been suggested as being a reliable bioindicator for benthic coastal ecosystems according to the Descriptor 1 “Biological diversity” and 4 “Status of the single structural components of ecosystems” of the EU Marine Strategy Framework Directive (MSFD 2008/56/EC).
4. In addition, the fan mussel represents the host for two crustacean symbionts (i.e., *Pontonia pinnophylax* and *Nepinnotheres pinnotheres*) (Rabaoui et al. 2008) and it is also predated by other species, such as for instance *Octopus vulgaris* and or other small molluscs (e.g., *Hexaples trunculus*), playing a key role in the trophic web.
5. During the 80s, populations of *P. nobilis* greatly declined due to several human activities (i.e., fishing, ornamental harvesting, anchoring, and trawl nets). Therefore, *P. nobilis* is nowadays a protected species under Annex II “List of endangered or threatened species” to the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean of the Barcelona Convention and. the Annex IV of the EU Habitats Directive 92/43/EEC (EEC 1992).
6. In a few decades, this full regime protection led to a complete recovery of the species in the whole Mediterranean, as it was also evidenced by molecular analyses (Sanna et al. 2013; 2014). Unfortunately, in early autumn 2016 a mass mortality event (MME) impacted *P. nobilis* populations in the south-western Mediterranean Sea (Vázquez-Luis et al. 2017). Since then, the situation has worsened, gradually affecting the coasts of many Mediterranean countries. In Italy for example, from Sardinia to Sicily, from Apulia to Tuscany, fan mussels are dying. The protozoan *Haplosporidium pinnae*, a pathogenic micro-organism that affects the digestive system of the mollusk progressively reducing the feeding of the animal and causing its death, was initially imputed as the main cause of this mass mortality (Catanese et al. 2018, Panarese et al. 2019). However, recently several bacteria species have been also invoked as pathogens involved in the mass mortality of this species (Carella et al. 2019, Prado et al. 2020, Scarpa & Sanna et al. submitted) suggesting that the real causes of the mortality are not completely understood and that a multifactorial disease may be the most probable responsible factor.

## RESTORATION PROGRAMME

7. The restoration programme aims to establish the main steps to be followed to start a recovery process for the pen shell. The difficulties of operating with distances that are too great for actions such as transporting individuals make it necessary for the programme to have focal points that can carry out the main actions in each of the regions where it is intended to operate. The technical-scientific expertise also required for some of the proposed analyses makes it appropriate to identify one or more competent structures that can carry out this task for the benefit of the peripheral locations and stand in for the lacking these skills. For all actions also, it will be necessary to initiate training, perhaps available online on a shared e-learning platform, to school the personnel who will be dedicated to operations such as the setup of the collectors, their placement, and the sorting of the collected material, as well as the collection and translocation of individuals in a practical and safe way that could meet the criteria required for authorization under each state's implementation of the 92/43/CEE directive.

8. Considering the analysis of all the projects (see annexe I: case studies & state of the art) and the preliminary results of some of the most recent research, it is not possible to indicate a unique solution to facilitate the restoration of *Pinna nobilis*. The experimental trials conducted so far, as well as the evolving knowledge on the causes of mass mortality, warn us against illusory solutions and suggest going step by step on a precautionary approach under continuous monitoring and assessment.

9. The actions implemented by the different projects have some shared points that deserve to be considered as priorities in the *Pinna nobilis* Restoration programme; in particular, these are actions concerning the setup of collectors for collecting larvae, environmental assessments of the health conditions of sites with live Pinna, monitoring of implanted juveniles (when replanting from the project is envisaged), continuous updating of all the methodologies used, growth of juveniles in aquaria and/or in facilities also at sea, transport of individuals to 'safe' sites and extensive monitoring actions also through Citizen Science. On some actions to be taken, on the other hand, there does not seem to be total agreement; however, these are choices determined by whether or not to have provided for translocating individuals between different sites: in fact, where it has been decided to implement only collector collection practices, replanting has been favoured in places such as lagoons where individuals, not necessarily resistant, nevertheless seem to survive because of unfavourable conditions for pathogens. In these places, it would not make sense to implement monitoring techniques with environmental sentinels as envisaged when individuals are to be transferred between even very distant sites whose suitability must be evaluated in advance to avoid wasting valuable time and biological resources.

10. The proposed programme is based on what was developed under the LIFE Pinna project and supplemented with the support of documentation collected from the other existing projects.

### Objectives:

11. The main objective aimed at by the present Restoration programme are to reduce threats and promote the conservation and restoration of *Pinna nobilis* populations particularly by:

- Reducing the threats impacting this species through the implementation of sustainable fishing practices, reduce pollution and protect its habitat
- The conservation of the seagrass meadows, and of other vegetal assemblages of importance for the marine environment, as marine habitats that are essential to the survival of many Mediterranean species and in particular *Pinna nobilis*, and keeping them in favourable conservation status;
- Improving the knowledge on the status of *Pinna nobilis*
- Ensuring conservation of genetic diversity of Mediterranean populations of *Pinna nobilis* as the primary source for the species' resilience

- The recovery of *Pinna nobilis* according to their specificities and best available science and by addressing the identified threats
- The restocking is a possible solution only when ensuring at the same time good environmental condition of the receiving sites as well as genetic diversity of the reintroduced individuals. This implies ensuring that the habitat and ecological processes necessary for the species' survival are present and properly functioning, as well as minimizing or eliminating threats.

**Priorities and action required to attain the objective of the restoration programme:**

12. At National Level:

- Continuous mapping and monitoring of the situation to determine the population's status and whether any recruitment is taking place even after mortality has occurred.
- Precise mapping of existing populations, implementation of systematic monitoring with sampling campaigns for diseases detection, genetic studies, systematic marking campaigns for fan mussels in shallow areas and establishment of protective cages around the most exposed individuals
- Establish maps/catalogue of hotspots and sites with favourable environmental conditions for repopulation and assess their sustainability.
- Promote localised translocation of individual from sites of low survival probability to more protected sites in line with most recent and approved procedures.
- Identification and mitigation of anthropic pressures experienced by existing populations.
- Establish of marine protected areas or expansion of existing ones with effective management and enforcement of measures to aid in the preservation of new *Pinna nobilis* individuals that appear to be resistant to the parasite's impact if certain protective measures are applied.
- Update the management Plan of existing MPA where *Pinna nobilis* is present by taking into consideration specific management measures for the species.
- Exclude boating or establish ecological mooring systems in areas frequented by boaters to limit the impact of anchors on fan mussel populations and seagrass beds, where juveniles and sub-adults settle.
- Elaboration and implementation of appropriate legislation
- Develop public and professional awareness actions on the status of the species and promote citizen science
- Establish national network of all relevant actors including national task force with legal expertise to establish procedure for captive breeding and other restoration activities
- Creation a directory of institutions working on captive breeding to promote implementing project
- Establish national DNA bank and database

13. At Regional Level :

- Establish a Pan-Mediterranean task force coordinated by SPA/RAC to implement the present restoration programme (focal point for *Pinna nobilis*/by theme who will establish the national network, propose, and assess the translocation of resistant individuals)
- make sure updated information on the status of populations is well circulated at real-time
- Elaborate guidelines, recommendations and standardised Protocol to monitor, study populations, for translocation and/or rescue ex-situ and captive breeding.
- setting up reproductive broodstocks for captive breeding, and take register with genetic record (DNA fingerprinting)
- Promote the installation of larval collectors in strategic locations.
- Organise regional/national training and exchange visit as appropriate.
- Strengthening cooperation and exchange of cooperation between Contracting Parties, concerned actors and project.

- Establish a new pan-Mediterranean type of protection called “important area for *Pinna nobilis*” and create a coordinated network of these sanctuaries for the species.
- Invite countries to include *Pinna nobilis* in the implementation of national monitoring programme of habitat component of their national IMAP (Integrated monitoring and assessment Programme)
- Assist Mediterranean countries to establish national DNA bank/database and promote sharing of information.
- Establish a regional directory of Experts/institutions working on *Pinna nobilis* to promote networking.

#### 14. At population level:

- The programme envisages development in phases and has two main targets for action: *Pinna nobilis* adult individuals and juveniles obtained by collectors or through searching actions in places such as marinas or transition water, zones where the chance of finding them seems to be greater. For each of the actions to be taken, it is considered appropriate to evaluate carefully and always whether it is preferable to leave the individuals in place or to relocate them based always on scientific analysis that justifies the move for safety reasons (the place for example might be subject to hazards such as mechanical threats due to anchoring) or for the improvement of the individual's health status: the individual is in a place that still has a high presence of pathogens and therefore would benefit from being moved to a place that is pathogen-free. This type of action must be carried out with great care as it may accidentally introduce the parasite into healthy areas and encourage its spread. Especially since it is not possible to decontaminate an area or to ensure with certainty the absence of the parasite in the environment.
- A priority should be given to study the pathogens responsible of the mass mortality, their life cycles, propagation and possible treatments for the diseases.
- Study in deep the resistance of the individuals to pathogens and the natural hybridization between *Pinna rudis* and *Pinna nobilis*<sup>1</sup> and promoting the establishment of genetic diversity database of resistant individuals.

#### Target ONE - juveniles

The main strategy and efforts of the restoration programme should be devoted to identifying locations free of the pathogens identified so far as causes of the mass mortality and collecting juvenile individuals and larvae also in order to increase the chances of restoration.

The actions to be taken, after checking that you are following the latest protocols<sup>2</sup>, are as listed below:

##### 1. Search for juveniles

- Extensive action to search for juveniles; this involves initiating, also with the help of citizen science, an effective and extensive search for juvenile individuals that might be found in estuarine areas but also in places such as marinas and harbors where calm sea conditions seem to be favorable for settlement.

##### 2. Collectors

- Recruitment and collection of fan mussel juveniles using artificial devices following the methodologies from Kersting & Hendriks (2019) or new published protocols.

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<sup>1</sup> M. Vázquez-Luis, E. Nebot-Colomer, S. Deudero, S. Planes, et E. Boissin, « Natural hybridization between pen shell species: *Pinna rudis* and the critically endangered *Pinna nobilis* may explain parasite resistance in *P. nobilis* », Mol. Biol. Rep., vol. 48, no 1, p. 997-1004, 2021.

<sup>2</sup> If more updated protocols will be available in the future, or more relevant ones, Parties should follow,

- After the collection of juveniles there is two ways forward, the first is transport and rearing if facilities are available and the second one is directly put into water after assessment of the juveniles conditions with use of cages or exclusions of predators and mechanical damages

### 3. Transport and rearing if needed and facilities are available

- Once juvenile individuals have been collected, they must be immediately placed in a box filled with seawater to be transported, in the safest way, to the location prepared for their growing and rearing. Before moving juveniles in tanks, operators will check the integrity of the shell and byssus. Whether byssus can regrow, big damages on the shell will affect *P. nobilis* ability to close itself. This is important in the next phases, where fan mussel specimens will have to be transferred to other sites and they'll need to close their valves to avoid stress and the loss of inner water. Checked *P. nobilis* individuals will be set in aquarium tanks, where they will spend the initial period of growth. Due to the stressful condition individuals may be in, they will be kept under observation for a first period (about 1 month). This is necessary to restore organism optimal conditions and to rebuild the byssus. It is necessary to proceed very carefully during the insertion of the juvenile specimens in the aquarium, paying attention to the physical and chemical conditions of the water in which specimens will be placed (acclimation phase). According to dimension and conditions, individuals can be placed directly in sediment-free support, in the soft bottom or in small support such as Petri dishes filled with coarse sediment or on small, open jute bags. Once ready, the organisms can be placed in baskets attached to the mussel farm's longline and will thus remain suspended in the aquatic medium for a period necessary for the growth and rear of fan mussel specimens. Operators will conduct periodic monitoring (twice a month) to check the state of health of individuals. Also, the correct location of the lantern-nets will be checked, since some extreme marine phenomena could affect the right attachment of the basket to the longline rope. At the end, *P. nobilis* specimens will be transported to the restocking sites, after having reached the escape size (6, 12 and 18 months).

### 4. Identification of receiving sites<sup>3</sup>

- Priority receiving sites should be the sites that are naturally healthy due to environmental conditions that are unfavourable for the parasite [temperature and Salinity]
- Additional receiving sites will be identified after a careful analysis of the environmental characteristics of the receiving areas that display suitable environmental conditions for the survival of restocked individuals and where the pressure regime (both natural and human-induced) is as low as possible and with low hydrodynamics. The receiving pilot sites must be selected, where possible, in the habitat of *Posidonia oceanica* seagrass meadows or *Cymodocea nodosa/Zostera spp.* beds. Prior an action for monitoring the presence of pathogens also will have to be conducted through one of the most recent, scientifically proved analysis to verify presence of parasites in the donor and receiving sites. Genetic characterisations must be conducted in each donor and receiving site to avoid/exclude genetic erosion. As probably there are no more individuals in the receiving site, assessment should be based to the closer geographical population and/or on past sampling, retrievable from the DNA banks and database. To assess the best sites where fan mussels can be restocked within the seagrass meadows or on coarse sandy bottoms, field activities through underwater scuba diving must be performed by scientific divers. The best areas of the meadows, or of the sandy bottom, that will be likely to support a successful restoration will be chosen according to the occurrence of a mat substrate or a proper substrate, according to the ecological condition of the meadow, which must show high ecological quality (assessed through the adoption of ecological indices as requested by the D.Lgs. 152/2006 that has received the European Directive 2000/60/EC), high coverage of the bottom and high shoot density. According to MERCES results the presence of seagrass meadows and density of *Pinna nobilis*

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<sup>3</sup> the deliverable A2 of PINNARCA project compiled the criteria of optimal receiving sites.

specimens will cooperate in best results. The sites need to meet the characteristics of safety from physical damage (anchoring extreme weather conditions etc), and absence of pathogens. Therefore, sites such as protected areas that guarantee through their prohibitions the highest degree of safety at least for mechanical hazards will be preferred.

## 5. Translocation of juveniles

- Once at the destination sites, *P. nobilis* specimens will be placed into the marine environment. The most critical phase, after the transport is the transplantation in the aquatic environment characterized by different water values of salinity and temperature, respect of those one occurs in the transport (and even earlier, with respect to biophysical and chemical parameters in the growth and reproduction tanks). Particular attention must be paid to the handling of specimens. It's very important to not damage the byssus and to not break the shell of the specimens. In fact, *P. nobilis* needs byssus to anchor itself to the seabed, while the intact shell permits the tightly closing of the organism and preserves the internal water, held between the valves, during the installation operations. Before any transplanting operations, between the transport and the installation, there will be an intermediate phase, to avoid as much stress as possible to the organisms and to facilitate their acclimation to the new site. This adaptive step involves the storage of the organisms in specific tanks that reproduce the chemical and biophysical conditions of the transplant site. With the aim of transplanting as many juveniles as possible and keeping them alive during installation operations, the group of juveniles to translocate will be splitted in different sub-groups. In this way, different sessions of acclimation will be carried out. Therefore, it is of fundamental importance to be able to transplant as many juveniles as possible in at least one protected area, to support the division of the group to be transplanted into different sub-groups and then into different receiving sites. After the acclimation phase, the organisms will be placed by experienced dive operators in the receiving sites placing them in the different types of substrates, either *Posidonia* matte, *Cymodocea* meadows or coarse sand. The specimens of *P. nobilis* will be placed at a certain distance from each other, to avoid external criticalities that could ruin the transplantation experiment, such as abusive nets, emergency anchoring, presence of pelagic large animals etc. Cages/devices for the exclusion of predators and damages must be set up. Each transplanted organism will be tagged in order to ensure monitoring operations and the geographical location (geographic coordinates) will be recorded via GPS.

## Target TWO - Adults

The search for adults is aimed at finding spawners and verifying their health conditions to ensure that they are not in potentially dangerous and pathogen-free locations. Mapping and a geographic analysis of the data may also provide insight into whether or not they should be transplanted or not to a single location at a distance that facilitates fertilization. The actions to be pursued will therefore be aimed at finding and protecting live individuals and assessing their health conditions. This will require:

### 1. Search for adults

- Extensive action to search for live adults; The research activities of adult individuals conducted in many places in recent years have proven how effective citizen science actions are that succeed in guaranteeing a large number of observers who, if properly trained, can provide very precise indications, greatly reducing the effort of researchers engaged therefore in the sole actions of verification of the species and monitoring of health conditions.

### 2. Molecular characterization of surviving individuals of *Pinna nobilis*

Molecular analysis of surviving individuals of *Pinna nobilis* are carried out in order to:

- i. Acquire the proper knowledge of the genetic make-up of the species and their possible correlation with diseases resistance.
- ii. Assess their population genetics parameters and compare them with the already existing data on scientific literature also to help in the choice of the most compatible receiving site from genetical point of view
- iii. Search for possible etiological agents in the fan mussel analysed

This last step represents a crucial point, since the introduction of “pathogens-free” recruited specimens is the critical condition that allows to increase the chances of success for restocking activities and avoid any unintentional spread of pathogens as explicitly recommended by the IUCN conservation measures for the species<sup>4</sup>.

### 3. Mapping of surviving individuals of *Pinna nobilis*

- Mapping is a crucial aspect in order to be able to properly assess the appropriateness of moving the specimens; a comparative analysis of the distances between individuals, possible risks from mechanical damage, and the main oceanographic features of the sites will in fact be able to provide the best guidance on how to proceed. If the condition of the individuals is sufficiently safe and the site conditions good one can simply mark the individuals and maintain their monitoring over time. If, on the other hand, it is appropriate to move the individuals, it will be necessary to proceed with the steps of receiving site identification and transplantation.

### 4. Identification of receiving sites

- Priority receiving sites should be the sites that are naturally healthy due to environmental conditions that are unfavourable for the parasite [temperature and Salinity]
- Additional receiving sites will be identified after a careful analysis of the environmental characteristics of the receiving areas that display suitable environmental conditions for the survival of restocked individuals and where the pressure regime (both natural and human-induced) is as low as possible. The receiving pilot sites must be selected considering previous information on the occurrences of *Pinna nobilis*, where possible, in the habitat of *Posidonia oceanica* seagrass meadows or *Cymodocea nodosa/Zostera spp.* beds. To assess the best sites where fan mussels can be restocked within the seagrass meadows or on coarse sandy bottoms, field activities through underwater scuba diving have to be performed by scientific divers. The best areas of the meadows, or of the sandy bottom, that will be likely to support a successful restoration will be chosen according to the occurrence of a matte substrate or a proper substrate, according to the ecological condition of the meadow, which must show high ecological quality (assessed through the adoption of ecological indices as requested by the D.Lgs. 152/2006 that has received the European Directive 2000/60/EC), high coverage of the bottom and high shoot density. According to MERCES results the presence of Seagrass meadows and density of *Pinna nobilis* specimens will cooperate in best results. The sites need to meet the characteristics of safety from physical damage (anchoring, extreme weather conditions etc) and absence of pathogens. Therefore, sites such as protected areas that guarantee through their prohibitions the highest degree of safety at least for mechanical hazards will be preferred. An action for monitoring the presence of pathogens also will have to be conducted through one of the most recent, scientifically proved analysis to verify presence of parasites in the donor and receiving sites. Genetic characterisations have to be conducted in each donor and receiving site to avoid/exclude genetic erosion. As probably there are no

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<sup>4</sup> Kersting, D., Benabdi, M., Čižmek, H., Grau, A., Jimenez, C., Katsanevakis, S., Öztürk, B., Tuncer, S., Tunesi, L., Vázquez-Luis, M., Vicente, N. & Otero Villanueva, M. 2019. *Pinna nobilis*. The IUCN Red List of Threatened Species 2019: e.T160075998A160081499. <http://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T160075998A160081499.en>



more individuals in the receiving site, assessment should be based to the closer geographical population and/or on past sampling, retrievable from the DNA banks and database.

## 5. Transport and transplantation of adults<sup>5</sup>

- Collected individuals have to be immediately placed in a box filled with seawater in order to be conducted, in the safest way, to the destination site. Before moving, operators will check the integrity of the shell and byssus. Any storage phase between adult collection and transfer should be of short duration and carried out in such a way as not to expose the animals to stressful conditions and should be carried out by keeping the removed organisms in a water environment with sufficient exchange of water. Replanting should take place within two days of harvesting the animals and in the shortest possible time. Once at the destination sites, *P. nobilis* specimens will be placed into the marine environment. The most critical phase, after the transport, is the transplantation in the aquatic environment characterized by different water values of salinity and temperature, respect of those that occur in the transport (and even earlier, with respect to biophysical and chemical parameters in the growth and reproduction tanks). Particular attention must be paid to the handling of specimens. It's very important to not damage the byssus and to not break the shell of the specimens. In fact, *P. nobilis* needs byssus to anchor itself to the seabed, while the intact shell permits the tightly closing of the organism and preserves the internal water, held between the valves, during the installation operations. Before any transplanting operations<sup>6</sup>, between the transport and the installation, there will be an intermediate phase, in order to avoid as much stress as possible to the organisms and to facilitate their acclimation to the new site. This adaptive step involves the storage of the organisms in specific tanks that reproduce the chemical and biophysical conditions of the transplant site. With the aim of transplanting as many individuals as possible and keeping them alive during installation operations, the group of individuals to transplant will be splitted in different sub-groups. In this way, different sessions of acclimation will be carried out. Therefore, it is of fundamental importance to be able to transplant as many individuals as possible in at least one protected area, to support the division of the group to be transplanted into different sub-groups and then into different receiving sites. After the acclimation phase, the organisms will be placed by experienced dive operators in the receiving sites placing them in the different types of substrates, either *Posidonia* matte, *Cymodocea* meadows or coarse sand. The specimens of *P. nobilis* will be placed according to MERCES outcomes with density of maximum 1ind/m<sup>2</sup>. Each transplanted organism will be tagged in order to ensure monitoring operations and the geographical location (geographic coordinates) will be recorded via GPS.

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<sup>5</sup> Several protocols for transplantation of adults *Pinna nobilis* already exists, also knowledge on surviving percentage of translocated individuals

<sup>6</sup> Pilot study case of translocation of resistant individuals performed in Spain, 2018:  
<https://www.youtube.com/watch?v=hQbIYak1gQk&t=6s>

**WORK PROGRAMME AND TIMETABLE FOR 2023-2028**

<b>Action</b>	<b>Deadline</b>	<b>To be implemented by</b>
Elaboration and implementation of appropriate legislation	First year	Contracting Parties & SPA/RAC
Continuous mapping and monitoring of the situation to determine the population's status and whether any recruitment is taking place even after mortality has occurred.	Continuous	SPA/RAC, Contracting Parties, research institutions, NGOs,
Develop a publicly available repository of all relevant documents regarding <i>Pinna nobilis</i>	Continuous	SPA/RAC & Pan-Mediterranean Task force
Establish national/regional network and a mailing list of all relevant actors including national task force with legal expertise to establish procedure for captive breeding and other restoration activities and create a directory of institutions/researchers working on captive breeding to promote implementing project	First Year	Contracting Parties, research institutions & SPA/RAC
Precise mapping of existing populations, implementation of systematic monitoring with sampling campaigns for diseases detection, genetic studies, systematic marking campaigns for fan mussels in shallow areas and establishment of protective cages around the most exposed individuals	Continuous	Contracting Parties, research institutions and NGOs, <del>diving centres</del>
Define criteria to assess populations and sites with favourable conditions and identify the sites which shelter high population numbers of the species	First Year	SPA/RCA, relevant Partners and research institutions
Establish maps/catalogue of hotspots and sites with favourable environmental conditions for repopulation and assess their sustainability	First year Establishment and updated yearly	Contracting Parties, research institutions and SPA/RCA
Promote localised translocation of individual from sites of low survival probability to more protected sites in line with most recent and approved procedures.	Continuous with the establishment of the procedure the first year	Contracting Parties, research institutions & SPA/RAC
Establish of marine protected areas or expansion of existing ones with effective management and enforcement of measures to aid in the preservation of new <i>Pinna nobilis</i> individuals that appear to be resistant to the parasite's impact if certain protective measures are applied and update the management Plan and regulations of existing MPA where <i>Pinna nobilis</i> is present by taking into consideration specific management measures for the species in line with the relevant strategies (Post 2020 SAPBIO, 2030 European Strategy etc...)	Continuous	Contracting Parties,
Avoid any disturbance and establish ecological systems (ie mooring etc.) in areas frequented by boaters to limit the human impact on fan mussel populations and seagrass beds, where juveniles and sub-adults settle;	Continuous	Contracting Parties and NGOs

Develop public and professional awareness actions and advocacy on the status of the species and promote citizen science	Continuous	Contracting Parties, research institutions & NGOs
Establish a Pan-Mediterranean task force coordinated by SPA/RAC to implement and assess the implementation/update of the present restoration programme, propose, and assess the translocation of resistant individuals (Genetic, translocation, ecotoxicology, parasitology, benthic and Ecology, MPA management, captive breeding)	First year	SPA/RAC & Contracting Parties
Organise a special session for <i>Pinna nobilis</i> during the Mediterranean Key habitats and NIS symposia	Each 3 years	SPA/RAC & Pan-Mediterranean Task force
Elaborate guidelines, recommendations, and standardised Protocol to monitor, study populations, for translocation and/or rescue ex-situ and captive breeding.	First year - Continuous	SPA/RAC, Pan-Mediterranean Task force & research institutions
Promote the installation of larval collectors in strategic locations	Continuous	SPA/RAC, Pan-Mediterranean Task force & research institutions
Organise regional/national training and exchange visit as appropriate	Continuous	SPA/RAC & Contracting Parties
Organise and promote academic studies for students through master type courses, encouraging post graduate studies on <i>Pinna nobilis</i> biology and restoration	Continuous	Contracting Parties and academic institutions
Invite countries to include <i>Pinna nobilis</i> in the implementation of national monitoring programme of habitat component of their national IMAP (Integrated monitoring and assessment Programme) and in projects relevant to the species or habitats related to <i>Pinna nobilis</i>	First Years	SPA/RAC & Contracting Parties
Invest in studies of the Pathogens responsible of the Mass mortality, its life cycle and propagation as priority	First year and Continuous	Pan-Mediterranean Task force & Research institutions
Study in deep the resistance of the individuals to pathogens and using of innovative approach such as modelling	Continuous	Research Institutions
Promoting the establishment of genetic diversity database of <i>Pinna nobilis</i> populations including resistant individuals	First year – continuous	SPA/RAC, Pan-Mediterranean Task force & research institutions
Actions devoted to <i>Pinna nobilis</i> restoration at “population level” both for juveniles and adults. Some actions focused on assessing connectivity and identifying sink/source area is very important.	Continuous	SPA/RAC, Pan-Mediterranean Task force & research institutions, MPA and NGOs

**BIBLIOGRAPHY**

- CARELLA, F., et al. A mycobacterial disease is associated with the silent mass mortality of the pen shell *Pinna nobilis* along the Tyrrhenian coastline of Italy. *Scientific reports*, 2019, 9.1: 1-12.
- CATANESE, Gaetano, et al. Haplosporidium pinnae sp. nov., a haplosporidan parasite associated with mass mortalities of the fan mussel, *Pinna nobilis*, in the Western Mediterranean Sea. *Journal of invertebrate pathology*, 2018, 157: 9-24.
- COPPA, Stefania, et al. Density and distribution patterns of the endangered species *Pinna nobilis* within a *Posidonia oceanica* meadow in the Gulf of Oristano (Italy). *Journal of the Marine Biological Association of the United Kingdom*, 2010, 90.5: 885-894.
- COPPA, Stefania, et al. The effect of hydrodynamics on shell orientation and population density of *Pinna nobilis* in the Gulf of Oristano (Sardinia, Italy). *Journal of Sea Research*, 2013, 76: 201-210.
- GARCÍA-MARCH, José R., et al. Population structure, mortality and growth of *Pinna nobilis* Linnaeus, 1758 (Mollusca, Bivalvia) at different depths in Moraira bay (Alicante, Western Mediterranean). *Marine Biology*, 2007, 150.5: 861-871.
- KATSANEVAKIS, Stelios. Population ecology of the endangered fan mussel *Pinna nobilis* in a marine lake. *Endangered species research*, 2005, 1: 51-59.
- KRALIK, Petr; RICCHI, Matteo. A basic guide to real time PCR in microbial diagnostics: definitions, parameters, and everything. *Frontiers in microbiology*, 2017, 8: 108.
- ORFANIDIS, Sotiris, et al. Benthic macrophyte communities as bioindicators of transitional and coastal waters: relevant approaches and tools. *Transitional Waters Bulletin*, 2007, 1.3: 45-49.
- PANARESE, Rossella, et al. Haplosporidium pinnae associated with mass mortality in endangered *Pinna nobilis* (Linnaeus 1758) fan mussels. *Journal of invertebrate pathology*, 2019, 164: 32-37.
- PRADO, Patricia; CAIOLA, Nuno; IBÁÑEZ, Carles. Habitat use by a large population of *Pinna nobilis* in shallow waters. *Scientia Marina*, 2014, 78.4: 555-565.
- PRADO, Patricia, et al. Presence of *Vibrio mediterranei* associated to major mortality in stabled individuals of *Pinna nobilis* L. *Aquaculture*, 2020, 519: 734899.
- RABAOUI, Lotfi; TLIG-ZOUARI, Sabiha; BEN HASSINE, Oum Kalthoum. Distribution and habitat of the fan mussel *Pinna nobilis* Linnaeus, 1758 (Mollusca: Bivalvia) along the northern and eastern Tunisian coasts. *Cahiers de Biologie Marine*, 2008, 49.1: 67.
- RICHARDSON, C. A., et al. Age and growth of the fan mussel *Pinna nobilis* from south-east Spanish Mediterranean seagrass (*Posidonia oceanica*) meadows. *Marine Biology*, 1999, 133.2: 205-212.
- SANNA, Daria, et al. Mitochondrial DNA reveals genetic structuring of *Pinna nobilis* across the Mediterranean Sea. *PLoS One*, 2013, 8.6: e67372.
- SANNA, Daria, et al. New mitochondrial and nuclear primers for the Mediterranean marine bivalve *Pinna nobilis*. *Mediterranean Marine Science*, 2014, 15.2: 416-422.
- SCARPA, Fabio, et al. Multiple non-species-specific pathogens possibly triggered the mass mortality in *Pinna nobilis*. *Life*, 2020, 10.10: 238.
- VAZQUEZ-LUIS, Maite, et al. SOS *Pinna nobilis*: a mass mortality event in western Mediterranean Sea. *Frontiers in Marine Science*, 2017, 4: 220.

ZAVODNIK, Dusan; HRS-BRENKO, M.; LEGAC, Mirjana. Synopsis on the fan shell *Pinna nobilis* L. in the eastern Adriatic Sea. *Les espèces marines à protéger en Méditerranée*, 1991, 169-178.

## ANNEX I - CASE STUDIES & STATE OF THE ART

### MERCES project – Croatia, Italy, Turkey

1. MERCES project “Marine Ecosystem Restoration in Changing European Seas”, coordinated by the Università Politecnica delle Marche (Italy), has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No-689518. The project was focused on the restoration of different degraded marine habitats, with the aim of 1) assessing the potential of different technologies and approaches; 2) quantifying the returns in terms of ecosystems services and their socio-economic impacts; 3) defining the legal-policy and governance frameworks needed to optimize the effectiveness of the different restoration approaches. Specific aims include a) improving existing, and developing new, restoration actions of degraded marine habitats; b) increasing the adaptation of EU degraded marine habitats to global change; c) enhancing marine ecosystem resilience and services; d) conducting cost-benefit analyses for marine restoration measures; e) creating new industrial targets and opportunities. To achieve these objectives, MERCES created a multi-disciplinary consortium with skills in marine ecology, restoration, law, policy and governance, socioeconomics, knowledge transfer, dissemination and communication. MERCES started from the inventory of EU degraded marine habitats (WP1), conducted pilot restoration experiments (WP2, WP3, WP4), and assessed the effects of restoration on ecosystem services (WP5).

2. MERCES Work Package 2 (WP2) focuses on shallow soft-bottom habitats, especially seagrass meadows and bivalve reefs. Using a combination of field surveys, aquarium and field experiments, and case studies, WP2 aimed to:

- (a) determine the factors affecting seagrass restoration success,
- (b) test whether integrating feedbacks and interactions in restoration increases success rates, and
- (c) provide recommendations for managers and policymakers.

3. MERCES WP2 included 9 research groups in 7 countries (Croatia, Estonia, Finland, Italy, Netherlands, Norway, Turkey). In Northern European seas (Baltic Sea, North Sea, Wadden Sea), test species include eelgrass (*Zostera marina*), dwarf eelgrass (*Z. noltii*), blue mussels (*Mytilus edulis*) and Baltic clams (*Macoma balthica*). In Southern Europe (Adriatic Sea, Eastern Mediterranean), researchers are restoring the seagrasses *Cymodocea nodosa* and *Posidonia oceanica* and the endangered noble pen shell *Pinna nobilis*.

4. Considering the Southern Europe pilot actions several activities have been conducted. Among them very interesting was the Seagrass-bivalve co-restoration using *Pinna nobilis*, *Cymodocea* and *Zostera*. The main question was if planting seagrass and *P. nobilis* together could increase the survival and growth of either or both species? Can transplantation of *P. nobilis* in existing meadows increase the growth/survival of the seagrasses? The experiments were conducted in two different sites (Italy and Croatia).

5. In Italy, *P. nobilis* transplanting was performed using U-shaped stainless-steel rods. First of all, a housing for the transplanting bivalve was prepared in the seabed using a corer. After that, the hole was partially filled with pebbles and the bivalve was anchored with the steel rod. Nine *P. nobilis* specimens have been transplanted in three experimental plots (1x1m): three specimens in bare sediments, three specimens in natural seagrass meadows and three specimens in transplanted seagrasses. *P. nobilis* abundance: 1 ind./m<sup>2</sup> per each experimental plot. Seagrass transplantation using biodegradable bags. The experimental treatments included transplanting seagrass, transplanting seagrass and *P. nobilis* and existing seagrass as a control. Each experimental plot (1x1 m, n=3). The presence of seagrass favoured the survival of *P. nobilis* specimens while the severe hydrodynamic conditions occurred immediately after the beginning of the experiment have limited the success of the seagrass transplanting. The proposed method of anchorage for *P. nobilis*

specimens resulted to be efficient. Plots with *P. nobilis* into existing seagrass meadows showed higher organic matter concentrations immediately after the translocation of bivalves. No differences among experimental plots in terms of meiofaunal abundance and diversity were observed immediately after the beginning of the experiment. Environmental conditions immediately after translocation play a key role in the survival of *P. nobilis* and transplanted seagrasses. The presence of natural seagrass acts as a barrier for *P. nobilis* reducing the severe hydrodynamic conditions and avoiding possible burial effects. The presence of *P. nobilis* may increase the availability of food for benthic fauna associated with seagrasses meadows. Considering the results of Croatian site transplanting *P. nobilis* within seagrass meadow enhances its survival in exposed areas, given that transplantation is (ideally) carried out during early summer, thus providing enough time for pen shells to regenerate byssus and anchor well, prior to winter storms. Furthermore, transplanting pen shells in high density (e.g., 5 ind./m<sup>2</sup>) may enhance *C. nodosa* growth through a putative fertilization effect.

6. A further question was addressed by the project: Can covering with cage help *Pinna* establish after translocation? For the experiment conducted in Turkey, *P. nobilis* translocation was done by collecting small individuals from the vicinity and digging out with 50 cm radius and 50-60 cm deep sediment to protect the byssus as much as possible. All individuals were then transferred by covering the attached sediment with a plastic bag and carried underwater. They were placed and covered with their original sediment, and no support was used. After 1x1x0.5 m cages were used to cover the individuals. Transplanted *P. nobilis* individuals were alive and healthy after the winter and spring periods. Some new individuals were observed in spring on both cage covered and uncovered plots and few on the frame of the cages. However, in July 2018, due to parasite infection all individuals were either looking unhealthy (slowly closing their shell) or even dead. It was observed that cages help pen shells to anchor after translocations and promote recruitment of new individuals, but a solid conclusion cannot be made due to disease outbreak that wiped out a large portion of the Mediterranean *P. nobilis* population.

7. Main conclusion for MERCES (Manual of restoration measures in soft bottoms based on surveys and experiments WP2 Deliverable 2.1) was that in southern European habitats (Mediterranean), mutual facilitation of *P. nobilis* and a seagrass was observed and transplanting *P. nobilis* within seagrass meadow enhances seagrass survival, especially in exposed areas. Furthermore, transplanting *P. nobilis* at a density of 5 ind./m<sup>2</sup> may enhance *C. nodosa* growth through fertilization. The presence of natural seagrass acts as a barrier reducing the severe hydrodynamic stress for *P. nobilis* and avoiding possible burial effects. Conversely, the presence of *P. nobilis* may increase the availability of food for benthic fauna associated with seagrasses meadows. In other words, bivalve facilitation may not only enhance seagrass restoration, but the interactions between bivalves and seagrass proved positive for both species.

### **RESTORFAN project – Italy**

8. Thanks to the MedPAN Small Projects financial contribution, in 2019 the RESTORFAN project was carried out within the Miramare Marine Protected Area (MPA), in Italy. All the specific objectives of the project were based on the currently available information and the experts knowledge gathered during several meetings; the proposal aimed to satisfy all the IUCN recommendations and results of the first meeting of Mediterranean partners to coordinate a response to *Pinna nobilis* crisis (online, February 2021), as the Northern Adriatic Sea and particularly the Gulf of Trieste (Italy) represent key areas for early action and rapid implementation of conservation measures.

9.The specific objectives were:

1. Increasing international scientific knowledge (by means of new research and papers) on the species.
2. Test of an experimental hatchery/culture, with specimens coming from mussel farms, finalized to the organization of a Rescue Programme as requested by IUCN Guidelines. Indeed, according to IUCN guidelines, the development of a rescue programme close to the affected areas is paramount and it should be developed as soon as possible in areas where there is an important density of *Pinna nobilis* and the parasite has confirmed not arrived.
3. According to the goal - “raise the issue at national level and advocate for the development of a rescue programme”, Miramare MPA was proponent of several meetings among all the local main actors, to promote the development of a rescue programme. Within this context RESTORFAN developed a protocol, in compliance with IUCN guidelines, for the local/basin rescue programme for *Pinna nobilis*.
4. “Collaborate in the identification of *Pinna nobilis* hotspots” in the entire region. A density map has been prepared to represent the most relevant hotspots at Friuli Venezia Giulia scale to support the future evaluations. A proposal of a monitoring programme for these “hot sites” has been produced and delivered to regional authorities (Friuli Venezia Giulia, Italy).

10.Among the main results of the project is certainly the development of the protocol for the recovery and transplantation of the juvenile specimens collected in the mussel farmers' longlines. The arrival of mass mortality during the project strongly influenced the actions by pushing for a strong action of awareness raising and search for survivors. The data collected were used for the realization of thematic maps of the gulf of Trieste. A further result of the project was the network of relationships with researchers and MPAs that led to the preparation of the LIFE Pinna project, which was then financed by the LIFE programme.

#### **LIFE IP INTEMARES project**

11.LIFE IP INTEMARES project, coordinated by the Biodiversity Foundation of the Ministry for the Ecological Transition and the Demographic Challenge. It receives financial support from the European Union's LIFE programme (LIFE15 IPE ES 012).

12.In this project the Spanish Ministry has been involved through RESCUE actions and elaborating the Conservation Strategy of *Pinna nobilis*. Moreover, the research institution IEO has developed several actions in the sanctuary populations of *Pinna nobilis* in the Mar Menor lagoon.

#### **LIFE PINNA project – Italy, Slovenia**

13.Funded by the contribution of the LIFE programme, the European Union's financial instrument supporting environmental, nature conservation and climate action projects. The aim of the LIFE PINNA 7project is to repopulate the areas identified in the project with healthy individuals, survivors of the mass die-off that started in 2016. In particular, the areas involved are the Gulf of Trieste, as a donor site, the MPA of Bergeggi (Liguria, Italy) and the MPA of Asinara (Sardinia, Italy) as recipient sites. Survivors are likely to be characterized by natural resistance to the pathogens responsible for the disease outbreak. Some analysis of the level of pathogenic infection in the tissues of surviving or dying individuals will be conducted to identify microorganisms that are involved in the disease. In addition, considering that proper identification

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<sup>7</sup> website: <http://lifepinna.eu/>



of the pathogens causing mass mortality is a crucial point in setting up adequate recovery plans for this species, it is also important to assess the level of contamination/infection occurring where the mussels died and where they survived. Repopulation actions will be carried out with transplantation of juvenile organisms, and in parallel protocols for captive breeding of adult organisms will be developed. The organisms derived from this artificial insemination will be used to repopulate the affected areas.

14. The specific objectives include:

- Analysis and selection of marine or transitional areas appropriate for restocking.
- Molecular characterisation of surviving specimens and selection of the best candidates to be reproduced.
- Development and implementation of the most suitable repopulation techniques, through translocation of self-recruited juveniles and captive breeding of *P. nobilis* in order to release a large number of specimens into the wild in a few years;
- Maintenance of a good level of genetic variation among the individuals used for restocking in order to obtain offspring that will be the founders of new future populations with good fitness in the long term;
- Monitoring of donor sites to evaluate the status of *P. nobilis* (including citizen science actions);
- Monitoring of “sentinel” organisms for the infection level of pathogens responsible for mass mortality of *P. nobilis*, to quickly detect anomalous values that are potentially dangerous for the species’ survival.
- Public engagement to increase awareness on *P. nobilis* and influence sea users’ behavior; and
- Transfer and replication of skills and methodologies to areas where the fan mussel is decreasing.

#### **LIFE PINNARCA project – France, Greece, Italy, Spain**

15. LIFE PINNARCA<sup>8</sup> is a European project devoted to the protection and restoration of the fan mussel *Pinna nobilis* populations in the Mediterranean Sea. It has been conducted with the contribution of the LIFE programme, the European Union’s financial instrument supporting environmental, nature conservation and climate action projects.

16. To project team focus on three main objectives:

- 1) Increasing awareness on a global scale, to reduce the possibility of vandalism and illegal collection of the remaining fan mussels, but also to call for broad public collaboration. Actions will be oriented at schools and the general public, including the production of a video, international workshops and volunteering actions.
- 2) Gathering all existing information on the remaining populations and resistant individuals into a database integrated within the project’s website, to provide information to other countries planning mitigation and recovery actions. This objective will be achieved by implementing a comprehensive census of areas where resistant individuals or unaffected populations are found, as well as installing larvae collectors to assist successful recruitment.
- 3) Developing active recovery actions, focused both on resistant individuals and the remaining non-resistant populations, to increase the probabilities of recovery of the species. This objective involves efforts to aggregate resistant individuals, translocate vulnerable individuals to safer areas, exchange genetic information among remaining populations, identify locations with optimal conditions to repopulate with healthy fan mussels, maintain individuals in indoor facilities, and develop active measures to improve the environments where healthy non-resistant individuals are still found.

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<sup>8</sup> website: <https://www.lifepinnarca.com/>

17. All project selected areas host habitats appropriate for *Pinna nobilis* populations, including from healthy *Posidonia oceanica* meadows (in all of them except the Columbretes Islands, Spain) to enclosed bays with gentle hydrodynamic conditions or deeper maërl beds, with optimum substrate and conditions for maintaining fan mussels. These areas also hosted dense fan mussel populations before the mass mortality event (MME) and had some permanent monitoring stations that were periodically surveyed. Therefore, a priori information about the distribution of fan mussels is available and the probability of finding resistant fan mussels in these areas is higher than in other sites not considered Special Areas of Conservation (SAC).

#### **The “Conservation of *P. nobilis* in the Adriatic Sea” – A Croatian national project**

18. Nowadays, in the Mediterranean the most far-reaching national project is the one currently being carried out in Croatia: “Conservation of *Pinna nobilis* in the southern part of the Adriatic Sea”. The project was launched in late 2020 harmonizing actions carried out by institutions involved in the protection of the mollusc along the Croatian Adriatic. The project is implemented within the framework of the national programme for the conservation of *Pinna nobilis* in the Adriatic Sea, coordinated by the Institute for Environmental and Nature Protection of the Ministry of Economy and Sustainable Development of the Republic of Croatia. The total value of the project is HRK 335325,00 €, of which the Fund for Environmental Protection and Energy Efficiency co-finances 80%, while 20% of funding is provided by project partners. Main partners are public institution “National Park Brijuni”, Public institution “Nature Park Telašćica” and public institution for the management of protected parts of nature in the Split-Dalmatia County “Sea and Karst”). The estimated duration of the project was until 2022 when it was extended until 2025. Total value of the new upcoming period of this project is 368,000 €.

19. The funds of past and upcoming period are intended for the implementation of in situ activities, such as setting up larvae collectors, protection of larvae and adult living individuals from predators and anthropogenic impact, marking sites for protection, monitoring of survivors' positions, maintenance of adult individuals and larvae in controlled conditions (ex-situ) and raising public awareness through various educational activities. Activities in the upcoming period also include: Control of the marine environment of *Pinna nobilis* habitat, scientific research and activities for the recovery of the *Pinna nobilis* population; reintroduction/repopulation of the *Pinna nobilis*

20. The coordinator Institute for Environmental and Nature Protection of the Ministry of Economy and Sustainable Development of the Republic of Croatia. Project is implemented through three subprojects, coordinated by three main partners: Public institution “National Park Brijuni”, Public institution “Nature Park Telašćica” and Public institution for the management of protected parts of nature in the Split-Dalmatia County “Sea and Karst”. Project partners are Croatian Veterinary Institute, Institute of Oceanography and Fisheries, Public Institution for the Management of Protected Areas of Nature of the Dubrovnik-Neretva County, Public Institution “Lastovo Islands Nature Park”, Public Institution “National Park Mljet”, Public institution Lokrum Reserve, Natural History Museum and Zoo of the City of Split, University of Dubrovnik. Public institution “Natura Histrica”, Public institution for protected area management “Natura” of Primorje-Gorski Kotar County, Public institution “Kamenjak”, Ruđer Bošković Institute, CROREEF Marine Aquaristic, University of Zadar, University of Zagreb Faculty of Science, Public institution “Natura” of Šibenik-Knin County, “20000 Leagues” Marine Explorers Society, Public institution “Natura Jaderna”, Public Institution “National Park Kornati”. All partners signed cooperation agreement, Aquarium of Pula officially became a partner of the project, as the main institution in Croatia in charge of maintaining juvenile and adult *Pinna nobilis* under controlled (ex-situ) conditions.

**Other relevant or recent activities/studies – Malta, Spain, Turkey**

21. The following other relevant or recent activities/studies are to be mentioned:

Country	Year	Activity / Title	Reference
Malta	2022	Ocean literacy and scientific data acquisition through citizen science campaigns: a mixed approach in the Maltese Islands to collect information on <i>Pinna nobilis</i> and <i>Pinna rudis</i> .	<a href="https://ejournals.epublishing.ekt.gr/index.php/hcmr-med-mar-sc/article/view/26623">https://ejournals.epublishing.ekt.gr/index.php/hcmr-med-mar-sc/article/view/26623</a>
Spain	2015	Embryological Development of <i>Pinna nobilis</i> in Controlled Conditions	<a href="https://link.springer.com/chapter/10.1007/978-3-319-13878-7_42">https://link.springer.com/chapter/10.1007/978-3-319-13878-7_42</a>
Spain	2021	Breeding, planktonic and settlement factors shape recruitment patterns of one of the last remaining major population of <i>Pinna nobilis</i> within Spanish waters	<a href="https://link.springer.com/article/10.1007/s10750-019-04137-5">https://link.springer.com/article/10.1007/s10750-019-04137-5</a>
Spain	2021	Natural hybridization between pen shell species: <i>Pinna rudis</i> and the critically endangered <i>Pinna nobilis</i> may explain parasite resistance in <i>P. nobilis</i>	<a href="https://pubmed.ncbi.nlm.nih.gov/33394229/">https://pubmed.ncbi.nlm.nih.gov/33394229/</a>
Greece	2021	Population, aquaculture and transplantation applications of critically endangered species <i>P. nobilis</i> (Linnaeus 1758) in the Mediterranean Sea	<a href="https://doi.org/10.33714/masteb.627562">https://doi.org/10.33714/masteb.627562</a>
Turkey	2011	Culture of fan mussel ( <i>Pinna nobilis</i> , Linnaeus 1758) in relation to size on suspended culture system in Izmir Bay, Aegean Sea, Turkey	<a href="https://vetdergikafkas.org/uploads/pdf/pdf_KVFD_1032.pdf">https://vetdergikafkas.org/uploads/pdf/pdf_KVFD_1032.pdf</a>
Turkey	2021	Population, Aquaculture and Transplantation Applications of Critically Endangered Species <i>Pinna nobilis</i> (Linnaeus 1758) in the Mediterranean Sea	<a href="https://dergipark.org.tr/en/pub/masteb/issue/64818/627562">https://dergipark.org.tr/en/pub/masteb/issue/64818/627562</a>

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22. The table below shows the main actions undertaken in the different projects in order to better evaluate in a comparative way which strategy is the most shared and therefore what should be focused on in order to propose common actions not only on a national scale but also on a Mediterranean scale.

<b>ACTION</b>	<b>MERCES</b>	<b>RESTORFAN</b>	<b>LIFE PINNA</b>	<b>PINNAR CA LIFE</b>	<b>HR Project</b>
Environmental status assessment of seagrass meadows and <i>Pinna nobilis</i> populations in donor and receiving areas	X	X	X	X	X
Molecular characterization of sentinel species in the putative pilot sites of restocking			X		
Molecular characterization of surviving individuals of <i>Pinna nobilis</i>		X	X	X	
Monitoring of pathogens in restocking sites by using sentinel species			X		X
Monitoring of implanted juveniles	X	X	X		
Monitoring of the project's impact on the <i>P. nobilis</i> status	X	X	X	X	X
Report with suggested correction measures that could be implemented	X	X	X	X	X
Location of optimum sites				X	
Collection and growth of <i>Pinna nobilis</i> self-recruited, collectors-recruited individuals		X	X	X	X
Adaptation, breeding and where possible reproduction for active restocking			X		X
Collection and transport (translocation) of specimens from self-capture to receptor sites	X	X	X	X	X
Installation of the specimens of <i>Pinna nobilis</i> at the pilot areas	X		X		
Exhaustive shallow and deep census		X	X	X	X
Actions for environmental improvement in fan mussel sanctuary areas				X	
Treatment assays and analysis				X	

23. The actions implemented by the different projects have some shared points that deserve to be considered as priorities in the *Pinna nobilis* Restoration programme; in particular, these are actions concerning the setup of collectors for collecting larvae, environmental assessments of the health conditions of sites with live

Pinna, monitoring of implanted juveniles (when replanting from the project is envisaged), continuous updating of all the methodologies used, growth of juveniles in aquaria and/or in facilities also at sea, transport of individuals to 'safe' sites and extensive monitoring actions also through Citizen Science. On some actions to be taken, on the other hand, there does not seem to be total agreement; however, these are choices determined by whether or not to have provided for transplanting individuals between different sites: in fact, where it has been decided to implement only collector collection practices, replanting has been favoured in places such as lagoons where individuals, not necessarily resistant, nevertheless seem to survive because of unfavourable conditions for pathogens. In these places, it would not make sense to implement monitoring techniques with environmental sentinels as envisaged when individuals are to be transferred between even very distant sites whose suitability must be evaluated in advance to avoid wasting valuable time and biological resources.

24. However, many things in common can be found in the harvesting, translocation and replanting protocols that are the result of the many completed or ongoing projects. Here are some of them that may be useful in the operational implementation phase of the Restoration Programme:

### **RESTORFAN protocol**

25. A protocol for the handling, capture, and restoration of *Pinna nobilis* was developed during the project. The protocol is attached to this document (Annex 1). Specifically, the protocol is divided into 4 parts that deal respectively for uptake (1), for collection and extraction from sediment (2), for the housing and growth of organisms (3) and for the re-implantation of organisms (4). During the project larval collectors have been successfully realized and tested according to IUCN Protocol.

### **A proposed protocol for larval collection (Kersting & Hendriks 2019)**

26. Larval collectors consisted of a series of plastic mesh bags containing entangled nylon filament or onion bags (see De Gaulejac et al., 2003; Cabanellas-Reboredo et al., 2009; Kersting and García-March, 2017; Vicente, 2020, for more details). Thus, covering the main reproduction and settlement period of the species (Cabanellas-Reboredo et al., 2009; Deudero et al., 2017; Kersting and García-March, 2017). Observation of *P. nobilis* recruits was undertaken with the naked eye, allowing the detection of recruits of sizes down to 0.3 cm antero-posterior length. Recruits extracted from the collectors were either installed in aquaria (García-March et al., 2020; Vicente, 2020) or in growth cages in the field following Kersting and García-March (2017). The complete protocol is attached to this document (Annex 2).

### **Paper on state of art in Greece, “Population, aquaculture and transplantation applications of critically endangered species *P. nobilis* (Linnaeus 1758) in the Mediterranean Sea“Acarli 2021**

27. The population of fan mussel, *Pinna nobilis* across the Mediterranean Sea has been affected by factors such as overfishing, fisheries processes, environmental pollution, destruction of habitat, tourism, etc. Therefore, the species *P. nobilis* was taken under protection by the Decisions of the Council of Europe and the Barcelona Convention. However, its mortality rates of 100% have been reported to be due to *Haplosporidium pinnae*, a parasite in different Mediterranean regions. The status of *P. nobilis* has thus been revised to increase its category of risk from “Vulnerable” to “Critically Endangered” and the importance of all the studies on the species further increased. The aim of the study is to present the current status of *P. nobilis*, the native to the Mediterranean, by combining the relevant studies on ecology, aquacultural process (larvae, spat settlement and rearing), culture methods and transplantation. The study has provided comprehensive knowledge on the current status of the *P. nobilis* population, aquaculture and transplantation activities. Except for studies to determine stocks, in particular, those on collecting young individuals from

nature and planting and growing them in predetermined sites as well as their production through various cultures from their larval phase onwards are of great importance in terms of rehabilitation and sustenance of the damaged *P. nobilis* population. Therefore, alternative, and potential habitats should be created thanks to transplantation and aquaculture. Marine protected areas should be determined to enable a healthy *P. nobilis* population to be sustained.

**ANNEX 2 – The RESTORFAN Protocol**



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***Pinna nobilis*,**  
**Protocols for manipulation, captation and restoration**  
**(2019)**

1. Protocol for uptake
2. Protocol for collection and extraction from sediment
3. Protocol for the housing and growth of organisms
4. Protocol for the re-implantation of organisms

**1. PROTOCOL FOR *PINNA NOBILIS* JUVENILE COLLECTION**

The populations of *Pinna nobilis* in the Gulf of Trieste reach a gonadal maturity in the period between August and November. During this period it is possible to observe the fans emitting gametes into the water column.

The operations of captation must be conducted during this period.

We then proceed with the preparation of the captation structure (Figure 1) consisting of 1 ballast, a rope with a maximum length of 2 meters, a float and the collector. Among the 2 collection systems tested (vertical and horizontal) the horizontal system was preferred. A circular lantern-net (plastic devices used in oyster maricultures) is therefore used on which it is possible to fix various types of textile material to increase the efficiency of collection. Simplest method is put inside the lanternet some textile material like potato-bag, jute bag, ropes etc. This method help juveniles to attached holding larvae.



*Figure 1* Horizontal collector

## 2. PROTOCOL FOR THE COLLECTION OF JUVENILES OF *PINNA NOBILIS* ORGANISMS

The juvenile organism is harvested as soon as it reaches a height of 1-2 cm (Figure 2) as it is slightly more resistant during the diver's harvesting operations.

Once collected, the organism is transported in a box paying particular attention to not stress it.

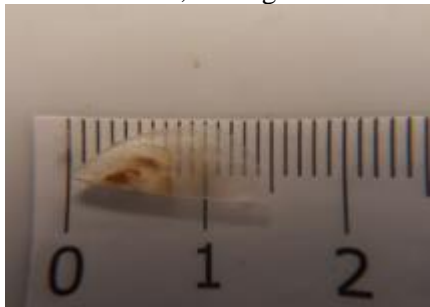


Figure 2 Juvenile *Pinna nobilis*

Harvesting operations are carried out in the same way on the longlines of mussel farms (Figure 3). After a careful analysis of the longline by the diver, once the individual is identified, the collection is carried out. Often the operation is not easy because the organisms are found among other specimens of *Mytilus galloprovincialis* or sponges and ascidians. In this case we try to remove first the organisms around the *Pinna nobilis* and then we try to cut the byssus without damaging the gland responsible for the production of byssus. Once collected the specimens should be placed in a closed rigid container (Figure 4) paying attention to not stress it.

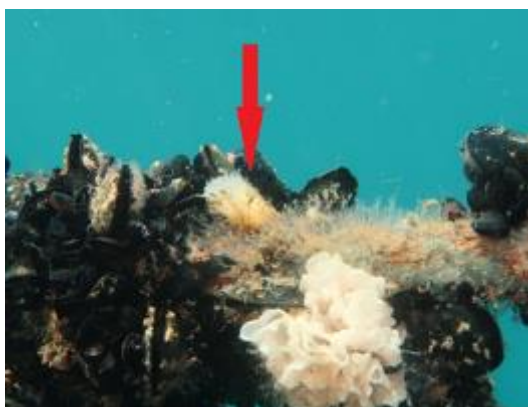


Figure 3 *Pinna nobilis* on longline



Figure 4 Plastic-box for collected organism

**IMP: Temperature and salinity data must be collected on site to reproduce them in laboratory.**

In case of extraction of organisms from the sediment, a small sorbonne is used (Figure 5), i.e., an instrument that is operated with air coming from a compressor or a scuba bottle allows to remove the sediment around the fin without damaging the organism. After removing most of the sediment around the



organism you should see the byssus attached to the solid substrate. Usually, the fin sticks to a few little solid bodies, which can be a rock or a very large rock. In case the byssus is attached to a removable stone we proceed with the extraction of the fin with the whole stone. If the fin is attached to a rock, then proceed by cutting the byssus in the proximity of the rock without damaging the byssus gland.



*Figure 5 Sorbonne*

### **3. PROTOCOL FOR BREEDING AND GROWTH OF *PINNA NOBILIS***

Once reached the laboratory in the shortest possible time, we proceed with the insertion of juvenile organisms in the enclosures.

First of all it is important to verify that the chemical-physical properties of the tanks-enclosure are equal to the conditions of the sampling area. Good practice for the insertion of organisms in the tanks is however to proceed gradually, inserting small amounts of water from the aquariums into the boxes with the collected organisms. This operation can be completed within half an hour.

Once you have inserted the organisms in the tanks you can choose whether to insert them in the free sediment or put some gross sediment inside a petri dish and then insert the organism (it is valid for very small ones), otherwise you can also use small open bags made with jute, inserting first the sediment and then the organism (Figure 6).

It is good practice together with the sediment to also insert a stone on which the juvenile of *Pinna nobilis* is able to fix the byssus. This practice helps the *Pinna nobilis* in a subsequent transplant operation as it would avoid a second splitting of the byssus. It should be remembered that the cutting of the byssus cloth brings anyway a stress to the organisms, debilitating it and reducing the chances of survival.



Figure 6 Jute bag and Petri dish

For stabling and growth operations, attention must be given above all to maintaining the optimal chemical-physical conditions. Although the *Pinna nobilis* is a very resistant and adaptable bivalve mollusc (it survives even for short periods out of the water) we try not to produce large fluctuations in the tanks during normal maintenance operations. The photoperiod should be adjusted according to the seasonality of collection and gradually varied according to the progress of the seasons. As far as the growth is concerned, it is possible to proceed with the insertion of nutrients or, if the tank already has a started ecosystem (at least 5 cm of sediment, different stones, vegetable and animal organisms present) then it is also possible not to insert nutrients for the fans. If the tanks instead are only filled with water without any kind of ecosystem started, then it is recommended to insert once a week a microalgal culture concentrate in the tank.

To choose the most suitable algal culture for feeding *P.nobilis* you can proceed with monocultures (i.e *Dunaliella tertiolecta*) or mix of algae monocultures available on the market. Usually available algae cultures are used because they are selected and free of other organisms. It is also possible to proceed with the culture starting from a sampling in seawater in the juvenile organisms sampling area, but this method does not guarantee the purity of the final result. Inside the taken water there are many predatory organisms of the seaweed and maybe even pathogenic organism for the fin, which in culture could even increase their population.

#### **4. PROTOCOL FOR THE RESTORATION OF THE *PINNA NOBILIS***

The organisms, once they reach 10 cm in size inside the tanks, can be re-implanted in the final site. For the re-implantation of both juveniles and transplanted adult organism, it is sufficient to proceed with the choice of a suitable site for the transplantation of the organisms. In particular, it is important to make sure that the turbulence is not excessive in case of sea storms, as it could undermine the newly planted organisms.

We proceed with the excavation of a hole in the sediment either with sorbonne or by hand that is at least 1/3 of the total length of the organism. If, on the other hand, the organism has passed the "growth phase" in a yute bag, you can proceed with the insertion of the whole bag in the sediment. Within a few weeks the yute degrades.

#### **5. PROTOCOL FOR THE COLLECTION OF MATERIAL FOR THE GENETIC ANALYSIS**

This kind of protocol is intended for the detection of *Haplosporidium pinnae* infection. The material detected for genetic analysis is the faeces and pseudofaeces of the organisms. A diver dives into the site where the organisms to be monitored are located, equipped with 60 mL syringes and tubes for the collected material (10 mL tubes are sufficient) (Figure 7). The diver moves slowly to the living organism so as not to provoke a reaction in the body and thus miss the opportunity to collect the material. Once the syringe and tube are prepared, the syringe can be brought closer to the body and the pseudo-faeces present on the edge of the valve opening opposite the hinge can be aspirated. At that point the gills secrete this mucus which serves as protection against excessive sedimentation. If you want to take the fecal pellets you will have to pay attention to the exit of the cloacal channel of the organism that is more or less near them. If the

organism does not emit, you can try knocking on a valve, in this way the organism will close and emit fecal pellets. After sampling, biological material are conserved in alcohol (90°) and put in freezer at -80°C, ready for the genetic analysis.



*Figure 7 Underwater operations*

**ANNEX 3 – SHORT GUIDANCE FOR THE CONSTRUCTION, INSTALLATION AND REMOVAL OF *PINNA NOBILIS* LARVAL COLLECTORS**



**SHORT GUIDANCE FOR THE  
CONSTRUCTION, INSTALLATION AND  
REMOVAL OF *PINNA NOBILIS* LARVAL  
COLLECTORS**



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## CONTEXT

An unprecedented mass mortality event is impacting *Pinna nobilis* populations throughout the Mediterranean Sea<sup>9</sup> (Vázquez-Luis et al. 2017). The eventual recovery of impacted populations will depend mainly on the existence of unimpacted populations, resistant individuals and recruitment. Therefore, it is extremely important to assess larval recruitment to evaluate if larvae coming from unaffected sites or resistant individuals are reaching the impacted areas, thus potentially contributing to eventual recoveries.

Larval collectors have been successfully used to assess *P. nobilis* recruitment in different contexts and areas (Cabanellas-Reboredo et al. 2009, Kersting & García-March 2017, Wesselmann et al. 2018). Additionally, if needed, this methodology might eventually be used to provide juveniles to restock populations (Kersting & García-March 2017).

Here we describe how to construct, install and remove larval collectors in order to assess larval settlement in *P. nobilis*.

## CONSTRUCTION

### Collector bags

The collector bags consist of entangled nylon filament, onion bags or any similar material composed of fine filaments that endure underwater, placed inside polyethylene (or similar plastic) mesh bags (Fig. 1). Different designs can be applied here, the important thing is to have entangled filaments (settlement substratum for larvae) and a plastic mesh bag containing that substratum that acts as a protection against predators (but allows larvae to access the inner filaments). The outer plastic mesh bag must be securely closed using cord or nylon cable ties. At one of the ends the same cord used to close the bag can be used to anchor the bag to the main rope (see next step).

Entangled nylon can be obtained by recycling old trammel nets (or similar); usually fishermen throw them away when old or broken. This material can be reused many times if rinsed in water and dried after each use as larval collector. Onion or vegetable nets/bags can be obtained by recycling used ones or can be bought in gardening or agriculture shops (as well in internet shops).

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<sup>9</sup> <https://www.iucn.org/news/mediterranean/201907/mediterranean-noble-pen-shell-crisis-pinna-nobilis-june-2019-update>



**Fig. 1.** Two different bag designs. Left. Entangled nylon (trammel net) inside plastic mesh bags. Right. A similar outer plastic bag but using onion nets as substrata inside. Photographs: D. K. Kersting, I. Hendriks.

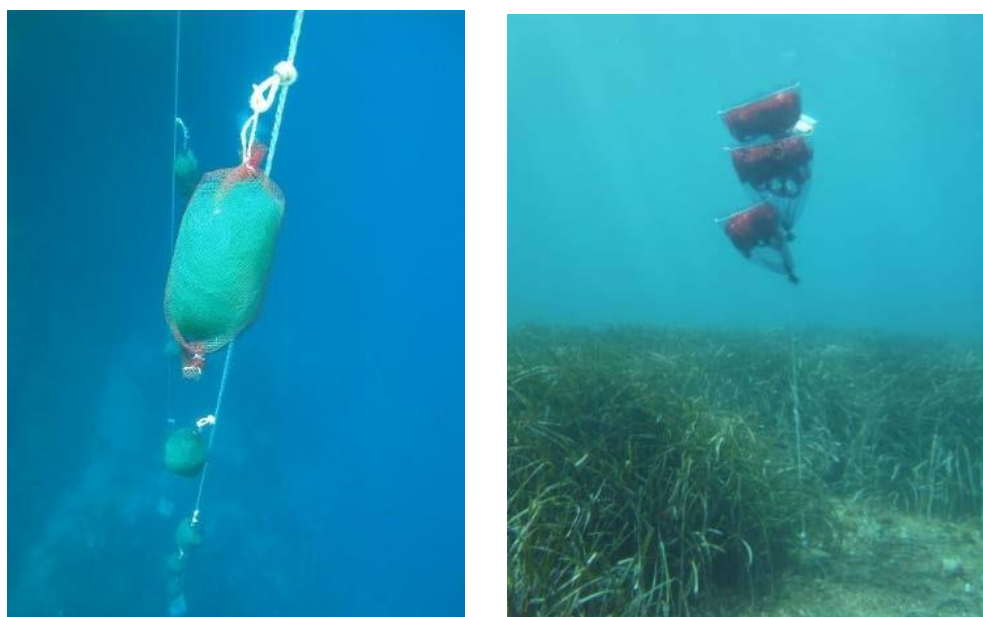
### **Main rope**

The bags are attached to a main rope (Fig. 2). The whole system is fixed to a small concrete mooring (or similar, but it must be heavy enough to prevent dislocation by waves and currents) and the rope is kept vertical by a submerged buoy. Submerged buoys (depth > 3m) prevent the whole system to be seen from the surface and potential entanglements with boats.



**Fig. 2.** Collectors' bags attached to the main rope and buoy ready to be deployed. Photograph: D. K. Kersting.

There are several ways to distribute the bags along the rope. In deeper sites the bags can be attached in approx. 1,5 m intervals throughout the rope (Fig. 3), thus covering a wider depth range. In shallow sites the bags can be attached in a single point (Fig. 3). It has been observed that *P. nobilis* larvae settle in collectors in a wide depth range, so both deeper (for example 15 m) and shallower (for example 5 m) collector installations are possible.



**Fig. 3.** Larval collector bags attached in 1,5 m intervals in a deep site (left) and a shallow site installation (right). Photographs: D. K. Kersting, I. E. Hendriks.

## INSTALLATION AND REMOVAL

### Where?

The collectors should be preferably placed in a location exposed to open waters, as *P. nobilis* larvae are transported by currents. Of course, they can be installed as well in other sites if needed, for example to check for potential recruitment in semi-enclosed lagoons.

The presence of adult *P. nobilis* populations is not a prerequisite to install the collectors. They can be installed in locations where the species is not present or in areas where the ongoing mass mortality event has killed all individuals. *Pinna nobilis* larvae can travel long distances transported by currents, therefore the larvae arriving to a certain site may come from distant areas.

## When?

The main reproduction period of *P. nobilis* is from May to August and the main settlement period is estimated to occur between July and September (in the W Mediterranean). These periods could change depending on environmental conditions (for example water temperature) in the different Mediterranean regions. We suggest installing the collectors in June and remove them in October-November. While this would be the ideal installation and removal period, later installations and removals are possible. It must be taken into account that later installations will lower the possibility of covering the whole main larval settlement period. While the main problem of a later removal of the collectors is a higher exposure to storms in some regions and the fact that at some point juveniles might not have enough room between the filaments to keep growing.

## How to remove settled juveniles?

The collectors should be carefully removed, avoiding crushing the bags. The bags should be preferably maintained underwater until the removal of the juveniles.

At the end of the installation period juveniles' sizes (antero-posterior length) may range approx. from 0,5 – 9 cm. In general, they can be seen by the naked eye inside the tangled fibers (Fig. 4). They have to be removed carefully in order not to break the fragile valves. Juveniles should be immediately placed in seawater after their extraction from the collector bag (Fig. 4).



**Fig. 4.** *Pinna nobilis* juveniles settled inside the collectors. Notice different morphologies and sizes. Juveniles have to be kept in seawater immediately after extraction from the bags. Photographs: D. K. Kersting.



### What to do with the juveniles?

Juveniles can be placed in protection cages in the field where they will continue growing, giving the possibility of re-implanting them in suitable substrata when a certain size is reached (Fig. 5). See Kersting & García-March (2017) for further information.



**Fig. 5.** Left. Juveniles just extracted from the collectors and placed in the protection cage (in the field). Right. *Pinna nobilis* individuals of approx. 2-3 years of age in the protection cage. Notice the photographs have been taken without the mesh protection covering the cages. Photographs: D. K. Kersting.

### Bibliography

Vázquez-Luis et al. (2017) S.O.S. *Pinna nobilis*: A mass mortality event in Western Mediterranean Sea. *Frontiers in Marine Science* doi: 10.3389/fmars.2017.00220.

Kersting DK, García-March JR (2017) Long-term assessment of recruitment, early stages and population dynamics of the endangered Mediterranean fan mussel *Pinna nobilis* in the Columbretes Islands (NW Mediterranean). *Marine Environmental Research* 130:282-292.

Cabanellas-Reboredo et al. (2009). Recruitment of *Pinna nobilis* (Mollusca: Bivalvia) on artificial structures. *Marine Biodiversity Records* 2:1e5.

Wesselmann et al. (2018) Genetic and oceanographic tools reveal high population connectivity and diversity in the endangered pen shell *Pinna nobilis*. *Scientific Reports* 8:4770.

**Citation:** Kersting D. K., Hendriks I. E. (2019) Short guidance for the construction, installation and removal of *Pinna nobilis* larval collectors. IUCN. 6pp.

## **Annex VIII**

### **Proposal for Amendment of Annexes II & III of the SPA/BD Protocol**

Note: The 16<sup>th</sup> Meeting of national SPA/BD focal points agreed to submit this proposal for Amendment to the MAP focal points meeting taking place in September 2023, while indicating that reservations were expressed by Algeria, Libya, Syria and Tunisia pending consultation with the relevant national instances in respective countries. According to the consultations the reservations could be confirmed or lifted.

The species proposed for inclusion in the Annexes II and III appear in red colour in the following tables.

**Proposal for Amendment of Annex II of the SPA/BD Protocol  
List of endangered and threatened species**

<b>Magnoliophyta</b>
<i>Cymodocea nodosa</i> (Ucria) Ascherson <i>Posidonia oceanica</i> (Linnaeus) Delile <i>Zostera marina</i> Linnaeus <i>Zostera noltii</i> Hornemann
<b>Chlorophyta</b>
<i>Caulerpa ollivieri</i> Dostál
<b>Heterokontophyta</b>
<i>Cystoseira</i> genus (except <i>Cystoseira compressa</i> ) <i>Fucus virsoides</i> J. Agardh <i>Laminaria rodriguezii</i> Bornet <i>Sargassum acinarium</i> (Linnaeus) Setchell <i>Sargassum flavifolium</i> Kützing <i>Sargassum hornschurchii</i> C. Agardh <i>Sargassum trichocarpum</i> J. Agardh
<b>Rhodophyta</b>
<i>Gymnogongrus crenulatus</i> (Turner) J. Agardh <i>Kallymenia spathulata</i> (J. Agardh) P.G. Parkinson <i>Lithophyllum byssoides</i> (Lamarck) Foslie (Synon. <i>Lithophyllum lichenoides</i> ) <i>Ptilophora mediterranea</i> (H. Huvé) R.E. Norris <i>Schimmelmannia schousboei</i> (J. Agardh) J. Agardh <i>Sphaerococcus rhizophylloides</i> J.J. Rodríguez Tenarea <i>Tenarea tortuosa</i> (Esper) Lemoine <i>Titanoderma ramosissimum</i> (Heydrich) Bressan & Cabioch (Synon. <i>Goniolithon byssoides</i> ) <i>Titanoderma trochanter</i> (Bory) Benhissoune et al.
<b>Porifera</b>
<i>Aplysina</i> sp. plur. <i>Asbestopluma hypogea</i> Vacelet & Boury-Esnault, 1995 <i>Axinella cannabina</i> (Esper, 1794) <i>Axinella polypoides</i> Schmidt, 1862 <i>Geodia hydronium</i> (Jameson, 1811) <i>Petrobiona massiliana</i> (Vacelet & Lévi, 1958) <i>Sarcotragus foetidus</i> Schmidt, 1862* (synon. <i>Ircina foetida</i> ) <i>Sarcotragus pipetta</i> (Schmidt, 1868)* (synon. <i>Ircinia pipetta</i> ) <i>Tethya</i> sp. plur.
<b>Cnidaria</b>
<i>Antipathella subpinnata</i> (Ellis & Solander, 1786) <i>Antipathes dichotoma</i> (Pallas, 1766) <i>Antipathes fragilis</i> (Gravier, 1918) <i>Astroides calycularis</i> (Pallas, 1766) <i>Callogorgia verticillata</i> (Pallas, 1766) <i>Cladocora caespitosa</i> (Linnaeus, 1767) <i>Cladocora debilis</i> (Milne Edwards & Haime, 1849) <i>Dendrophyllia cornigera</i> (Lamarck, 1816) <i>Dendrophyllia ramea</i> (Linnaeus, 1758) <i>Desmophyllum dianthus</i> (Esper, 1794) <i>Ellisella paraplexauroides</i> (Stiasny, 1936) <i>Errina aspera</i> (Linnaeus, 1767) <i>Isidella elongata</i> (Esper, 1788)

<p><i>Leiopathes glaberrima</i> (Esper, 1792)  <i>Lophelia pertusa</i> (Linnaeus, 1758)  <i>Madrepora oculata</i> (Linnaeus, 1758)  <i>Parantipathes larix</i> (Esper, 1790)  <i>Savalia savaglia</i> Nardo, 1844 (synon. <i>Gerardia savaglia</i>)</p>
<b>Bryozoa</b>
<p><i>Hornera lichenoides</i> (Linnaeus, 1758)</p>
<b>Mollusca</b>
<p><i>Charonia lampas</i> (Linnaeus, 1758) (= <i>Ch. Rubicunda</i> = <i>Ch. Nodifera</i>)  <i>Charonia tritonis variegata</i> (Lamarck, 1816) (= <i>Ch. Seguenziae</i>)  <i>Dendropoma petraeum</i> (Monterosato, 1884)  <i>Erosaria spurca</i> (Linnaeus, 1758)  <i>Gibbula nivosa</i> (Adams, 1851)  <i>Lithophaga lithophaga</i> (Linnaeus, 1758)  <i>Luria lurida</i> (Linnaeus, 1758) (= <i>Cypraea lurida</i>)  <i>Mitra zonata</i> (Marryat, 1818)  <i>Patella ferruginea</i> (Gmelin, 1791)  <i>Patella nigra</i> (Da Costa, 1771)  <i>Pholas dactylus</i> (Linnaeus, 1758)  <i>Pinna nobilis</i> (Linnaeus, 1758)  <i>Pinna rudis</i> (= <i>P. pernula</i>) (Linnaeus, 1758)  <i>Ranella olearia</i> (Linnaeus, 1758)  <i>Schilderia achatidea</i> (Gray in G.B. Sowerby II, 1837)  <i>Tonna galea</i> (Linnaeus, 1758)  <i>Zonaria pyrum</i> (Gmelin, 1791)</p>
<b>Crustacea</b>
<p><i>Ocypode cursor</i> (Linnaeus, 1758)  <i>Pachylasma giganteum</i> (Philippi, 1836)</p>
<b>Echinodermata</b>
<p><i>Asterina pancerii</i> (Gasco, 1870)  <i>Centrostephanus longispinus</i> (Philippi, 1845)  <i>Ophidiaster ophidianus</i> (Lamarck, 1816)</p>
<b>Pisces</b>
<p><i>Acipenser naccarii</i> (Bonaparte, 1836)  <i>Acipenser sturio</i> (Linnaeus, 1758)  <i>Aetomylaeus bovinus</i> (Geoffroy St. Hilaire, 1817),  <i>Alopias superciliosus</i> (Lowe, 1841)  <i>Aphanius fasciatus</i> (Valenciennes, 1821)  <i>Aphanius iberus</i> (Valenciennes, 1846)  <i>Bathytoshia lata</i> (Garman, 1880)  <i>Carcharias taurus</i> (Rafinesque, 1810)  <i>Carcharodon carcharias</i> (Linnaeus, 1758)  <i>Cetorhinus maximus</i> (Gunnerus, 1765)  <i>Dasyatis Pastinaca</i> (Linnaeus, 1758)  <i>Dipturus batis</i> (Linnaeus, 1758)  <i>Galeorhinus galeus</i> (Linnaeus, 1758)  <i>Gymnura altavela</i> (Linnaeus, 1758)  <i>Hippocampus guttulatus</i> (Cuvier, 1829) (synon. <i>Hippocampus ramulosus</i>)  <i>Hippocampus hippocampus</i> (Linnaeus, 1758)  <i>Huso huso</i> (Linnaeus, 1758)  <i>Isurus oxyrinchus</i> (Rafinesque, 1810)  <i>Lamna nasus</i> (Bonnaterre, 1788)</p>

*Lethenteron zanandreaei* (Vladykov, 1955)  
*Leucoraja circularis* (Couch, 1838)  
*Leucoraja melitensis* (Clark, 1926)  
*Mobula mobular* (Bonnaterre, 1788)  
*Myliobatis aquila* (Linnaeus, 1758)  
*Odontaspis ferox* (Risso, 1810)  
*Oxynotus centrina* (Linnaeus, 1758)  
*Pomatoschistus canestrini* (Ninni, 1883)  
*Pomatoschistus tortonesei* (Miller, 1969)  
*Pristis pectinata* (Latham, 1794)  
*Pristis pristis* (Linnaeus, 1758)  
*Rhinobatos cemiculus* (E. Geoffroy Saint-Hilaire, 1817)  
*Rhinoptera marginata* (Geoffroy St. Hilaire, 1817)  
*Rhinobatos rhinobatos* (Linnaeus, 1758)  
*Rostroraja alba* (Lacépède, 1803)  
*Sphyrna lewini* (Griffith & Smith, 1834)  
*Sphyrna mokarran* (Rüppell, 1837)  
*Sphyrna zygaena* (Linnaeus, 1758)  
*Squatina aculeata* (Dumeril, in Cuvier, 1817)  
*Squatina oculata* (Bonaparte, 1840)  
*Squatina squatina* (Linnaeus, 1758)  
*Valencia hispanica* (Valenciennes, 1846)  
*Valencia letourneuxi* (Sauvage, 1880)

#### Reptiles

*Caretta caretta* (Linnaeus, 1758)  
*Chelonia mydas* (Linnaeus, 1758)  
*Dermochelys coriacea* (Vandelli, 1761)  
*Eretmochelys imbricata* (Linnaeus, 1766)  
*Lepidochelys kempii* (Garman, 1880)  
*Trionyx triunguis* (Forskål, 1775)

#### Aves

*Calonectris diomedea* (Scopoli, 1769)  
*Ceryle rudis* (Linnaeus, 1758)  
*Charadrius alexandrinus* (Linnaeus, 1758)  
*Charadrius leschenaultii columbinus*  
 (Lesson, 1826) *Falco eleonora* (Géné,  
 1834)  
*Gelochelidon nilotica* (Gmelin, JF, 1789)  
*Halcyon smyrnensis* (Linnaeus, 1758)  
*Hydrobates pelagicus ssp. Melitensis* (Schembri, 1843)  
*Hydroprogne caspia* (Pallas, 1770)  
*Larus armenicus* (Buturlin, 1934)  
*Larus audouinii* (Payraudeau, 1826)  
*Larus genei* (Breme, 1839)  
*Larus melanocephalus* (Temminck, 1820)  
*Microcarbo pygmaeus* (Pallas, 1773)  
*Numenius tenuirostris* (Viellot, 1817)  
*Pandion haliaetus* (Linnaeus, 1758)  
*Pelecanus crispus* (Bruch, 1832)  
*Pelecanus onocrotalus* (Linnaeus, 1758)  
*Phalacrocorax aristotelis ssp. desmarestii* (Payraudeau, 1826)  
*Phoenicopterus roseus* (Pallas, 1811)  
*Puffinus mauretanicus* (Lowe, PR, 1921)

<i>Puffinus yelkouan</i> (Brünnich, 1764) <i>Sternula albifrons</i> (Pallas, 1764) <i>Thalasseus bengalensis</i> (Lesson, 1831) <i>Thalasseus sandvicensis</i> (Latham, 1878)
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<b>Mammalia</b>
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<i>Balaenoptera acutorostrata</i> (Lacépède, 1804) <i>Balaenoptera borealis</i> (Lesson, 1828) <i>Balaenoptera physalus</i> (Linnaeus, 1758) <i>Delphinus delphis</i> (Linnaeus, 1758) <i>Eubalaena glacialis</i> (Müller, 1776) <i>Globicephala melas</i> (Trail, 1809) <i>Grampus griseus</i> (Cuvier G., 1812) <i>Kogia simus</i> (Owen, 1866) <i>Megaptera novaeangliae</i> (Borowski, 1781) <i>Mesoplodon densirostris</i> (de Blainville, 1817) <i>Monachus monachus</i> (Hermann, 1779) <i>Orcinus orca</i> (Linnaeus, 1758) <i>Phocoena phocoena</i> (Linnaeus, 1758) <i>Physeter macrocephalus</i> (Linnaeus, 1758) <i>Pseudorca crassidens</i> (Owen, 1846) <i>Stenella coeruleoalba</i> (Meyen, 1833) <i>Steno bredanensis</i> (Cuvier in Lesson, 1828) <i>Tursiops truncatus</i> (Montagu, 1821) <i>Ziphius cavirostris</i> (Cuvier G., 1832)
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**Proposal for Amendment of Annex III of the SPA/BD Protocol  
List of species whose exploitation is regulated**

<b>Porifera</b>
<i>Hippospongia communis</i> (Lamarck, 1813) <i>Spongia (Spongia) lamella</i> (Schulze, 1872) (synon. <i>Spongia agaricina</i> ) <i>Spongia (Spongia) officinalis adriatica</i> (Schmidt, 1862) <i>Spongia (Spongia) officinalis officinalis</i> (Linnaeus, 1759) <i>Spongia (Spongia) zimocca</i> (Schmidt, 1862)
<b>Cnidaria</b>
<i>Antipathes</i> sp. plur. <i>Corallium rubrum</i> (Linnaeus, 1758)
<b>Crustacea</b>
<i>Homarus gammarus</i> (Linnaeus, 1758) <i>Maja squinado</i> (Herbst, 1788) <i>Palinurus elephas</i> (Fabricius, 1787) <i>Scyllarides latus</i> (Latreille, 1803) <i>Scyllarus arctus</i> (Linnaeus, 1758) <i>Scyllarus pygmaeus</i> (Bate, 1888)
<b>Echinodermata</b>
<i>Paracentrotus lividus</i> (Lamarck, 1816)
<b>Pisces</b>
<i>Alopias vulpinus</i> (Bonnaterre, 1788) <i>Alosa alosa</i> (Linnaeus, 1758) <i>Alosa fallax</i> (Lacépède, 1803) <i>Anguilla anguilla</i> (Linnaeus, 1758) <i>Carcharhinus plumbeus</i> (Nardo, 1827) <i>Centrophorus granulatus</i> (Bloch & Schneider, 1801) <i>Epinephelus marginatus</i> (Lowe, 1834) <i>Dasyatis marmorata</i> (Steindachner, 1892) <i>Heptranchias perlo</i> (Bonnaterre, 1788) <i>Hexanchus griseus</i> (Bonnaterre, 1788) <i>Lampetra fluviatilis</i> (Linnaeus, 1758) <i>Mustelus asterias</i> (Cloquet, 1821) <i>Mustelus mustelus</i> (Linnaeus, 1758) <i>Mustelus punctulatus</i> (Risso, 1826) <i>Petromyzon marinus</i> (Linnaeus, 1758) <i>Pteroplatytrygon violacea</i> (Bonaparte, 1832) <i>Prionace glauca</i> (Linnaeus, 1758) <i>Sciaena umbra</i> (Linnaeus, 1758) <i>Squalus acanthias</i> (Linnaeus, 1758) <i>Thunnus thynnus</i> (Linnaeus, 1758) <i>Umbrina cirrosa</i> (Linnaeus, 1758) <i>Xiphias gladius</i> (Linnaeus, 1758)

**Forms for proposing amendments to Annex II and Annex III of the Protocol  
concerning specially Protected Areas and Biological Diversity in the Mediterranean**



<b>Form for proposing amendments to Annex II and Annex III of the Protocol concerning specially Protected Areas and Biological Diversity in the Mediterranean</b>	
<b>Proposed by :</b> <b>The Republic of France</b>	<b>Species concerned:</b> <i>Aetomylaeus bovinus</i> (Geoffroy St. Hilaire, 1817)  <b>Amendment proposed:</b> <input checked="" type="checkbox"/> Inclusion in Annex II <input type="checkbox"/> Inclusion in Annex III <input type="checkbox"/> Removal from Annex II <input type="checkbox"/> Removal from Annex III
<b>Taxonomy</b> <b>Class:</b> Chondrichthyes <b>Order:</b> Myliobatiformes <b>Family:</b> Aetobatidae <b>Genus and Species:</b> <i>Aetomylaeus bovinus</i> <b>Known Synonym(s):</b> <i>Myliobatis bovina</i> Geoffroy St. Hilaire, 1817; <i>Myliobatis bonaparti</i> Duméril, 1865; <i>Pteromylaeus bovinus</i> (Geoffroy St. Hilaire 1817) <b>Common name:</b> English – Bull ray (Asfis); duckbill eagle ray French - Aigle vachette Spanish - Chucho vaca Italian – Vaccarella Arabic - بقرّة رابية	<b>Inclusion in other Conventions:</b>
	

**Justification for the proposal:**

The bull ray, *Aetomylaeus bovinus*, qualifies for listing in Annex II in accordance with the “Common Criteria for proposing amendments to Annexes II and III of the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean” (Decision IG 17/14, UNEP(DEPI)/MED IG.17/10 Annex V).

This benthic- and semi- to epipelagic species is rarely recorded throughout the Mediterranean Sea, elsewhere it extends in southern eastern Atlantic from Morocco to South Africa, until the southwestern Indian Ocean. The bull ray has a matrotrophic viviparous reproductive strategy and it exhibits low fecundity, 3–6 pups per litter after a gestation period of 5–6 months, therefore it is suspected to have limited productivity, similarly to other eagle rays. The bull ray appears to prefer

infralittoral muddy detritic and seagrass beds bottoms (<30 m), and it is exposed to be caught by inshore fishing gears, mainly purse seines and gillnets, occasionally by trawls. Its schooling behaviour is a factor that augment the risk of many individuals being caught in one single haul of trawls and gillnets.

Globally, in 2020, considering the declining catch trends and limited number of specimens recorded in trawl surveys and fisheries in several localities where it previously occurred, the large unmanaged fisheries that operate throughout its range and the suspected population reduction of 80% on the inferred three generation lengths (inferred to be about 51 years) it is assessed as Critically Endangered under criterion A2d (Jabado *et al.* 2021).

In Mediterranean, in 2016, considering the potential high catchability and the intense and unregulated fishing pressure across the bull ray's preferred habitats, the slow life history, paucity of records, and the suspected population reduction of at least 80% over the three generations (inferred to be about 45 years) the bull ray is assessed as Critically Endangered under criterion A2c (Walls and Buscher 2016).

If the listing in Annex II of the SPA/BD Protocol was implemented effectively, its immediate transposition in the GFCM Recommendation GFCM/42/2018/2 could act as immediate and unprecedented prohibition measure for eagle rays. The enforcement of this measure should not cause any conflict with the fisheries sector, due to the non-commercial value of the species that is expected to be mostly discarded.

### **Biological data**

[Brief description of the species:](#)

#### **Identification**

Disc transversally lozenge-shaped, about twice as wide as long. Tail about twice as long as disc, with a single, small dorsal fin on base originating far anterior to pelvic fins posterior margins, and with a long, serrated spine directly behind dorsal fin, after which the tail becomes rapidly thinner like a whiplash. Snout short but pronounced as a subrostral lobe that is narrowly rounded to a pointed tip. Front lobe of pectoral fin under snout (subrostral lobe) rather long and a little pointed in front. Middle row of teeth in upper jaw 6-8 times as broad as long. Dorsal fin originating before pelvic fin tips. Dorsal side of the disc brown with 7-8 pale transverse streaks whitish in juveniles, much less evident in adults; underside whitish, with tips of pectoral fins more or less brownish red.

#### **Biology**

The reproductive parameters may differ greatly between regions. The bull ray in Mediterranean reaches a size of 222 cm, but it is usually smaller (Dulcic *et al.* 2008; Ebert and Stehmann, 2013). Reproduction is matrotrophic viviparous, females mature at 83–100 cm DW and males at 80–100 cm DW (Capapé *et al.* 1995, Last *et al.* 2016). Females give birth to 3-6 pups per litter and size at birth of about 22-45 cm DW, after a gestation period of 5–6 months (Seck *et al.* 2002, Last *et al.* 2016). Some details on the reproductive cycle show that it last no less than one year, a block of the development of oocytes appears at the beginning of gestation and there seems to be an inability to ovulate soon after parturition; vitellogenesis start again when the embryos are practically at the end of their development (Seck *et al.* 2002). In South Africa, according to the length-age curve of Van der Elst (1988) bull rays are ~14 years old at ~180 cm DW/100 kg, therefore both sexes might mature at ~100 cm DW/10 kg. The IUCN global assessment infers the generation length (17 years) from a similar species (Martin and Caillet 1988; IUCN 2022).

It feeds mostly on hard-shelled bottom invertebrates like crabs and molluscs but also on demersal worms.

#### Distribution (current and historical):

The exact distribution of this species is uncertain, it is found throughout the Mediterranean Sea, but not in the Black Sea.

Capapé (1989) describes *Aetomylaeus bovinus* more frequently captured in the eastern basin than in the western. Historically reported as rare in Adriatic, more recently several individuals have been collected in north Adriatic (Dulcic, 2008). The bull ray was also reported off the coast of France by Moreau (1881), but no new records have been reported from this area so far, and throughout the North African shore, in Morocco (Collignon and Aloncle, 1972), Algeria (Dieuzeide et al., 1953) and Tunisia (Capapé and Quignard, 1975). Many recent records demonstrate the presence of this species in the northeastern Mediterranean.

Elsewhere, in the Eastern Atlantic it extends from off Morocco and Madeira, but not at Azores, northward along the Iberian Peninsula to the southern Bay of Biscay; southward along the West African to off South Africa, rare off Namibia and more common in the south-western Indian Ocean north to Zanzibar (Serena 2005; Ebert 2013).

#### Depth limits:

From coastal waters up to 100 m depth.

#### Countries of occurrence (Mediterranean):

Albania; Algeria; Bosnia and Herzegovina; Croatia; Cyprus; Egypt; France (more common in Corsica Island); Gibraltar; Greece; Israel; Italy; Lebanon; Libya; Malta; Monaco; Montenegro; Morocco; Palestine ; Slovenia; Spain; Syrian Arab Republic; Tunisia; Türkiye.

#### Population estimates and trends:

There are no species-specific time-series data available for the bull ray that can be used to estimate population reduction.

Between 1994 and 1999, there was not any specimen of this species caught in the International Trawl Survey in the Mediterranean (MEDITS) programme conducted in the entire northern Mediterranean basin (Baino *et al.* 2001). In 1948, 44 specimens were caught in only one haul in Adriatic Sea and after that event no other specimens had been caught in several scientific trawl surveys, analysed until 2005 (Ferretti *et al.* 2013). Similarly, from 1995 to 2006, no captures were recorded during trawl surveys in the Aegean Sea (Damalas and Vassilopoulou 2011) and from 1994 to 2015, only two specimens were recorded in the MEDITS programme in Iberian Peninsula and the Balearic Islands (Ramirez-Amaro *et al.* 2020).

More recently, an experimental trawl fishery in the Aegean Sea (Izmir Bay, Türkiye) reported bull ray as one of the least prevalent non-commercial species, with seasonal differences in the bycatch rate, 0.17% of the total catch weight during winter and 0.046% in spring, and it was not recorded in summer and autumn (Gurbet *et al.* 2013). In 2017, only one specimen (bycatch rate of 0.006 specimen per days at sea) was recorded from pelagic trawls in the Adriatic Sea (ICES-WGEF 2019).

The bottom trawl is not the ideal sampling tool for this mesopelagic species and the bull ray may not have been caught due to its lower trawl catchability compared to demersal species; when the by-catch rate of other gears is considered, this species is relatively more frequent (Carpentieri *et al.* 2021).

Other records of small numbers of this species have been published since 2000, suggesting that the bull ray can be considered a rare species but still occurring in Mediterranean:

- in 2001 one specimen in Rhode, caught with purse seine (Corsini-Foka 2009);
- in 2000, two specimens stranded on the beach, presumably a discard from gillnets and, in 2004, about 20 individual were sighted in the eastern Ionian Sea, Greece (Zogaris and Dussling 2010);
- in 2005, Dulcic *et al.* (2008) report several captures of bull rays from commercial trawl fisheries in the northern Adriatic Sea at about 20-30 m on muddy and detritic bottom. Nine out of 15 females were pregnant, suggesting the species is not vagrant but reproducing in this area.
- in 2009 one specimen caught in Mediterranean south-eastern Spain (Hernández-Orts *et al.* 2010);
- between 2010-2011, in Iskenderun Bay, Türkiye, 32 individuals caught by commercial gillnets, longlines and trawls, were collected and measured (Başusta *et al.* 2012);
- in 2016, three specimens caught with trawls in Izmir Bay, Türkiye (Akyol *et al.* 2017);
- in 2019, one individual caught by trawl off the coast of the Gökçeada Island in the Northern Aegean Sea.

#### Habitat (s):

Benthic- and semi- to epipelagic in tropical to warm temperate coastal waters between surf zone and moderate depth of 30 m, sometimes also farther offshore. In the past (30–40 years ago) it was relatively easy to find bull ray specimens in the free areas of seagrasses' beds in shallow waters at about 15–20 m depth in the northern Tyrrhenian Sea (Serena, pers. observ.).

Little information on habitat and ecology is available and most of the following comes from South Africa. *Aetomylaeus bovinus* is not confined to the bottom and is often seen on the surface (Van der Elst 1988), sometimes leaping from the water (Van der Elst 1988, Compagno *et al.* 1989, Smith 1991). It is sometimes found in small groups (Compagno *et al.* 1989). It tolerates greatly reduced salinities and also occurs in shallow bays, lagoons and estuaries (Ebert 2013). Several authors document a seasonal pattern of captures related to differences in water temperature, and sex segregation (Wallace 1967; Young 2001; Gurbet *et al.* 2013).

#### Threats

##### Existing and potential threats:

Fisheries represents the main threat for *Aetomylaeus bovinus*, as it is taken as bycatch in various commercial and artisanal fisheries, throughout its range in the Mediterranean Sea. Its schooling behaviour might expose this species to a high likelihood of large quantities being caught, intentionally or not, by trawl and gillnets in one haul. Due to its preference for shallow waters, soft bottom and seagrasses, it is likely susceptible to other stressors such as habitat degradation and pollution.

##### Exploitation:

There is no information on the catch of this species in targeted fisheries, but this species is susceptible to a variety of fishing gears, mainly purse seines, gillnets and longliners, but many accidental captures have been recorded with trawls as well. Mediterranean countries do not report this species in the official statistics (FAO-GFCM, 2022), the commercial value is presumably very low, and the accidental catches are likely to be discarded.

#### PROPOSED PROTECTION OR REGULATION MEASURES:

There are no species-specific conservation or management measures for this species in place in the Mediterranean Sea.

In Israel, in 2005, sharks and rays were introduced into the list of species protected by law and fishing of them is prohibited-. Since 2018, enforcement seems somehow improved for sharks but is still inadequate for ray fishing. Cartilaginous fishes may not be consumed under Jewish kashrut

law, although there is a market for fish of these species among non-Jewish populations (Ariel and Barash 2015).


Although countries across its range have legislation concerning fisheries activities (including gear restrictions, and no-trawling zones in coastal waters), fisheries taking *Aetomylaeus bovinus* are generally unmanaged throughout large parts of the species' range and it is unlikely that fisheries pressure will decrease in the near future. If *Aetomylaeus bovinus* were to be listed on Annex II, to harmonize the Annexes, this provision should be considered for the similar species in the Order Myliobatiformes, *Myliobatis aquila* and *Rhinoptera marginata*.

#### **bibliographical references**

- Ariel, A. and Barash, A. (2015). *Action Plan for Protection of Sharks and Rays in the Israeli Mediterranean*. EcoOcean Association. Israel: <https://www.ecoocean.org/wp-content/uploads/2020/12/Sharks-and-rays-conservation-plan-for-Israel-Ecoocean.pdf>
- Akyol, O., Aydin I., El Kamel-Moutalibi, O. and Capape, C. (2017). Bull ray, *Aetomylaeus bovinus* (Geoffroy Saint-Hilaire, 1817) (Myliobatidae) in the Mediterranean Sea and captures of juveniles from Izmir Bay (Aegean Sea, Türkiye). *Journal of Applied Ichthyology* 33(6): 1200–1203.
- CITES (2004). Report on the implementation of the UN FAO International Plan of Action for Sharks (IPOA-Sharks). AC20 Inf. 5. Twentieth meeting of the CITES Animals Committee, Johannesburg (South Africa), 29 March–2 April 2004.
- Başusta, A., Başusta, N., Sulikowski, J.A., Driggers, W.B., Demirhan, S.A. and Çiçek, E. (2012). Length–weight relationships for nine species of batoids from the Iskenderun Bay, Türkiye. *Journal of Applied Ichthyology* 28(5): 850-851.
- Başusta, A., Başusta, N., Sulikowski, J.A., Driggers, W.B., Demirhan, S.A. and Çiçek, E. (2012). Length–weight relationships for nine species of batoids from the Iskenderun Bay, Türkiye. *Journal of Applied Ichthyology* 28(5): 850-851.
- Bianchi, G., Carpenter, K.E., Roux, J.-P., Molloy, F.J., Boyer, D. and Boyer, H.J. (1999). *Field guide to the living marine resources of Namibia*. FAO, Rome, Italy.
- Cabbar, Koray and YİĞİN, Cahide. (2021). Length–Weight Relationships of Elasmobranch Species from Gökçeada Island in the Northern Aegean Sea. *Thalassas: An International Journal of Marine Sciences*, 37 (5), doi: 10.1007/s41208-021-00350-z
- Capapé C. and Quignard, J.P. (1975). Contribution à la systématique et à la biologie de *Pteromylaeus bovinus* (Geoffroy Saint-Hilaire, 1817), (Pisces, Myliobatidæ) des côtes tunisiennes. *Bull. Mus. Hist. Nat.*, Paris, 3e série, n° 338, Zool., 240: 1329-1347.
- Capapé C. (1989). Les Sélaciens des côtes méditerranéennes: aspects généraux de leur écologie et exemples de peuplements. *Océanis*, 15: 309-331.
- Capapé, C., N'dao, M. and Diop, M. (1995). Observations sur la biologie de la reproduction de quatorze espèces de Sélaciens batoides capturés dans la région marine de Dakar-Ouakam (Sénégal, Atlantique orientale tropicale). *Bulletin de l'Institut Fondamental d'Afrique Noire*, Dakar 48A:89–102.
- Carpentieri, P., Nastasi, A., Sessa, M. and Srour, A., eds. (2021). Incidental catch of vulnerable species in Mediterranean and Black Sea fisheries – A review. General Fisheries Commission for the Mediterranean. Studies and Reviews. No. 101. Rome, FAO, [doi.org/10.4060/cb5405en](https://doi.org/10.4060/cb5405en)
- Collignon J. and Aloncle, H. (1972). Catalogue raisonné des Poissons des mers marocaines. I: Cyclostomes, Sélaciens, Holocéphales. *Bull. Inst. Pêch. Marit. Maroc.*, 19, 1-164.
- Compagno, L.J.V., Ebert, D.A. and Smale, M.J. (1989). *Guide to the sharks and rays of Southern Africa*. Struik, Cape Town. 160 pp.
- Corsini-Foka, M. (2009). Uncommon fishes from Rhodes and nearby marine region (SE Aegean Sea, Greece). *Journal of Biological Research*, 12: 125–133.

- Damalas, D. and Vassilopoulou, V. (2011). Chondrichthyan by-catch and discards in the demersal trawl fishery of the central Aegean Sea (Eastern Mediterranean). *Fisheries Research* 108: 142-152.
- Dieuzeide R., Novella M. & Roland, J. (1953). Catalogue des Poissons des côtes algériennes. *Bull. Stn. Aquic. Pêch.*, 4, 1952 [1953]: 1-135.
- Dulcic, J., Lipej, L., Bonaca, M.O., Jenko, R., Grbec, B., Guelorget, O. and Capapé, C. (2008). The bull ray, *Pteromylaeus bovinus* (Myliobatidae), in the northern Adriatic Sea. *Cybium* 32(2): 119-123.
- Ebert, D.A. and Stehmann, M.F.W. (2013). *Sharks, batoids, and chimaeras of the North Atlantic*. FAO Species Catalogue for Fishery Purposes No. 7. Food and Agricultural Organization of the United Nations (FAO). FAO, Rome.
- FAO-GFCM. (2021). *Fishery and Aquaculture Statistics*. GFCM capture production 1970-2019 (FishstatJ). In: FAO Fisheries Division [online]. Rome. Updated 2021. [www.fao.org/fishery/statistics/software/fishstatj/en](http://www.fao.org/fishery/statistics/software/fishstatj/en)
- Fennessy, S.T. (1994). Incidental capture of elasmobranchs by commercial prawn trawlers on the Tugela Bank, Natal, South Africa. *South African Journal of Marine Science* 14:287-296.
- Ferretti, F., Osio, G. C., Jenkins, C. J., Rosenberg, A. A., and Lotze, H. K. (2013). Long-term change in a meso-predator community in response to prolonged and heterogeneous human impact. *Scientific reports*, 3.
- Gurbet, R., Akyol, O., Yalçın, E. and Özyayın, O. (2013). Discards in bottom trawl fishery in the Aegean Sea (Izmir Bay, Türkiye). *Journal of Applied Ichthyology* 29(6): 1269-1274.
- Hernández-Orts, J.S., Ahuir-Baraja, A.E., Raga, J.A. and Montero, F.E. (2010). A New Species of *Empruthotrema* (Monogenea: Monocotylidae) from *Pteromylaeus bovinus* (Myliobatidae) from the Western Mediterranean. *Journal of Parasitology* 96(6): 1081-1085.
- Jabado, R.W., Chartrain, E., Cliff, G., Derrick, D., Dia, M., Diop, M., Doherty, P., Dossa, J., Leurs, G.H.L., Metcalfe, K., Porriños, G., Seidu, I., Soares, A., Tamo, A., VanderWright, W.J. & Williams, A.B. 2021. *Aetomylaeus bovinus*. *The IUCN Red List of Threatened Species* 2021: e.T60127A124441812. <https://dx.doi.org/10.2305/IUCN.UK.2021-1.RLTS.T60127A124441812.en>. Accessed on 29 April 2022.
- ICES-WGEF. (2019). Working Group on Elasmobranch Fishes (WGEF). ICES Scientific Reports 1:25. International Council for the Exploration of the Seas, Copenhagen, Denmark.
- Last, P., White, W., de Carvalho, M., Séret, B., Stehmann, M. & Naylor, G. (2016.) *Rays of the World*. CSIRO Publishing, Clayton.
- Jabado, R.W., Chartrain, E., Cliff, G., Derrick, D., Dia, M., Diop, M., Doherty, P., Dossa, J., Leurs, G.H.L., Metcalfe, K., Porriños, G., Seidu, I., Soares, A., Tamo, A., VanderWright, W.J. and Williams, A.B. (2021). *Aetomylaeus bovinus*. *The IUCN Red List of Threatened Species* 2021: e.T60127A124441812. <https://dx.doi.org/10.2305/IUCN.UK.2021-1.RLTS.T60127A124441812.en>. Accessed on 01 March 2022.
- Lleonard, J. and Maynou, F. (2003). Fish stock assessments in the Mediterranean: state of the art. *Scientia Marina* 67: 37-49.
- Moreau E. (1881). *Histoire Naturelle des poissons de la France*. Vol. 1, 478 p. Paris: Masson.
- Ochumba, P.B.O. (1988). The distribution of skates and rays along the Kenyan coast. *Journal of the East African Natural History Society and the National Museum (Kenya)* 78(192):25-45.
- Pradervand, P. (2004). Long-term trends in the shore fishery of the Transkei coast, South Africa. *African Zoology* 39(2):247-261.
- Pradervand, P. and Govender, R.D. (2003). Assessment of catches in shore angling competitions from the border region of the Eastern Cape, South Africa. *African Zoology* 38(1):1-14.
- Ramírez-Amaro, S., Ordines, F., Esteban, A., García, C., Guijarro, B., Salmerón, F., Terrasa, B. and Massutí, E. (2020). The diversity of recent trends for chondrichthyans in the Mediterranean reflects fishing exploitation and a potential evolutionary pressure towards early maturation. *Scientific Reports* 10(1): 547.
- Seck, A.A., Diatta, Y., Gueye-Ndiaye, A. and Capapé, C. (2002). Observations on the reproductive biology of the bull ray, *Pteromylaeus bovinus* (E. Geoffroy Saint-Hilaire, 1817)

- (Chondrichthyes: Myliobatidae) from the coast of Senegal (Eastern tropical Atlantic). *Acta Adriatica* 43(1):87–96.
- Serena F. (2005). *Field identification guide to the sharks and rays of the Mediterranean and Black Sea*. FAO Species Identification Guide for Fisheries Purposes. Rome, 97 p. 11 colour plates + egg cases.
- Smith, M.M. and Heemstra, P.C, Eds. (1991). *Sea Fishes*. 1st edition. Southern Book Publishers, Johannesburg.
- Van der Elst, R. (1988). *A guide to the common sea fishes of Southern Africa*, 2nd edition. Struik, Cape Town.
- Wallace, J.H. (1967). *The batoid fishes of the east coast of southern Africa. II. Manta, eagle, duckbill, cownose, butterfly and sting rays*. Investigational Report. Oceanographic Research Institute. Durban 16.
- Walls, R.H.L. and Buscher, E. (2016). *Aetomylaeus bovinus*. *The IUCN Red List of Threatened Species* 2016: e.T60127A81163810. Accessed on 01 March 2022.
- Young, N. (2001). *An analysis of the trends in by-catch of turtle species, angelsharks and batoid species in the protective gillnets off KwaZulu-Natal, South Africa*. MSc thesis, University of Reading.
- Zogaris, S. and Dussling, U. (2010). On the occurrence of the Bull Ray *Pteromylaeus bovinus* (Chondrichthyes: Myliobatidae) in the Amvrakikos Gulf, Greece. *Mediterranean Marine Science* 11(1): 177-184.

<b>Form for proposing amendments to Annex II and Annex III of the Protocol concerning specially Protected Areas and Biological Diversity in the Mediterranean</b>	
<p><b>Proposed by:</b> <b>The Republic of France</b></p>	<p><b>Species concerned:</b> <i>Alopias superciliosus</i> (Lowe, 1841)</p> <p><b>Amendment proposed:</b></p> <p><input checked="" type="checkbox"/> Inclusion in Annex II</p> <p><input type="checkbox"/> Inclusion in Annex III</p> <p><input type="checkbox"/> Removal from Annex II</p> <p><input type="checkbox"/> Removal from Annex III</p>
<p><b>Taxonomy</b>  <b>Class:</b> Chondrichthyes  <b>Order:</b> Lamniformes  <b>Family:</b> Alopiidae  <b>Genus and Species:</b> <i>Alopias superciliosus</i>  <b>Known Synonyms:</b> <i>Alopecias superciliosus</i>, Lowe 1841; <i>Alopias profundus</i> Nakamura, 1935  <b>Common names:</b>            English - Bigeye Thresher            Spanish - Zorro ojón            French – Requin renard à gros yeux            Arabic - العين كبير ثعلب            Italian – Squalo volpe occhi grosso</p>	<p><b>Inclusion in other Conventions:</b>            CITES: Appendix II            CMS: Appendix II            ICCAT: Rec. 09-07; Rec 13-10</p>
	

**Justification for the proposal:**

The bigeye thresher shark, *Alopias superciliosus*, qualifies for listing in Annex II in accordance with the “Common Criteria for proposing amendments to Annexes II and III of the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean” (Decision IG 17/14, UNEP(DEPI)/MED IG.17/10 Annex V).

*Alopias superciliosus* is a highly migratory species occurring in the oceanic and coastal area, it is a circumglobally species in tropical and temperate seas (Ebert *et al.* 2021).

Life-history parameters and susceptibility to fisheries by-catch, coupled to a high at-vessel mortality, are the main vulnerability factors for this species. This species is especially vulnerable to fisheries activities as its epipelagic behavioural overlap with the range of many gillnet and longline



fisheries. It inhabits the Mediterranean since a relatively short time, its rarity and lack of data for many parts of its range prevent the inferences of its vulnerability due to other ecological or anthropogenic factors apart the fisheries (Serena *et al.* 2020).

The IUCN Red List global assessment conducted in 2019 reports the bigeye thresher as “Vulnerable”, due to a population reduction by 30–49% over the last three generations (55.5 years) (Rigby *et al.* 2019). The IUCN regional assessment conducted in Mediterranean in 2016, considers *A. superciliosus* “Endangered” (Walls and Soldo 2016). Recognising that the species has been poorly documented in the region, instead of considering this species Data Deficient, the IUCN status was mostly assumed from the status of the congener common thresher *A. vulpinus*, which has undergone steep declines over the last century in the Mediterranean Sea. It is therefore probable that similar declines have also occurred for the bigeye thresher shark.

In the last decades, the records of this species were reported with increasing frequency, suggesting a colonization of the region, but these observations about the presence of the species are not adequate to indicate an increase of the species abundance. It is more likely that the species will face up severe threats across its range, where fishing effort is unlikely to stop or decrease in the near future, preventing any chance of further colonization. Considering these aspects, the current IUCN status “Endangered” respects a precautionary approach for its conservation.

If the listing in Annex II of the SPA/BD Protocol was implemented effectively, its immediate transposition in the GFCM Recommendation GFCM/42/2018/2 could act as strengthening measure for the ICCAT regulation already implemented (Rec. 09-07), as both measures would prohibit retention of the big eye thresher.

In theory, the listing of *A. superciliosus* on Annex II and the current listing of *A. vulpinus* on Annex III would create a difficulty in the implementation of the different measures to which these two species are subject, prohibition for big eye thresher and data collection requirements for both the species. However, the identification of these two species should not create any impediment in the identification, due to the existing identification tools and the training activities that have already been carried out in Mediterranean. Therefore, as the GFCM Members shall implement species-specific actions for the congener common thresher *A. vulpinus*, it is likely that the attention to its identification might improve the species-specific recording of the two thresher species. Finally, the monitoring of the consistency of the population size for the two species is certainly required to confirm the effectiveness of these measures for their management and conservation.

### **Biological data**

#### **Brief description of the species:**

#### **Identification**

Cylindrical body with very long curving tail, conical head with mouth extending behind eyes, two spineless dorsal fins, anal fin present. Snout quite long and bulbous with an evident and strong horizontal groove on each side of head above gills. Labial furrows absent; less than 25 rows of teeth in either jaw. Eyes very large, with orbits expanded onto the dorsal surface, space between them nearly flat. Two dorsal fins of which the second very small, the first one is closer to pelvic fins than to pectoral fins which are falcate with broad apices. Dark blue to purplish grey on the back; belly cream to grey, posterior edges of pectoral and pelvic fins dusky, light colour of abdomen not extending over pectoral fin bases (Compagno 2001).

#### **Biology**

Maximum total length about 460 cm TL in females, 410-421 cm in males. Litter up to 2 young, at birth 100 to 140 cm TL, with full term foetuses at 105 - 106 cm, free-swimming individuals down to 155 cm.

Males are immature up to 316 cm TL, they mature at about 279 to 300 cm. Females are immature up to 350 cm and maturing at about 294 to 355 cm. Estimated age at maturity is years 12-13 (females), 9-10 years (males) (Liu *et al.* 1998). It has very low fecundity (usually 2 pups/litter up to 100-130 in TL at birth). Size at birth ranges from 64-140 cm TL (Bauchot 1987; Golani 1996; Chen *et al.* 1997). Longevity is estimated between 15–20 years (Liu *et al.* 1998; Fernandez-Carvalho *et al.* 2015) Bigeye Thresher has a low intrinsic growth rate of population [ $r$  0.009 (-0.001–0.018)] estimated by Cortes *et al.* (2015) in Atlantic Ocean.

Reported diet consists of pelagic bony fishes including scombroids, clupeoids and small billfishes, hake and cephalopods. This species uses its tail to stun the pelagic fishes on which it feeds. Observations from Sardinia show that the Bigeye Thresher sometimes interacts with swordfish, receiving fatal wounds (Vacchi and Serena 2000).

#### Distribution (current and historical):

Bigeye thresher is a species with a worldwide circumglobal distribution in tropical and temperate oceanic and coastal seas (Ebert *et al.* 2021). Bigeye thresher occurs in FAO fishing areas 21, 27, 31, 34, 37, 41, 47, 51, 57, 61, 67, 71, 77, 81, 87. It occurs predominantly in Western Atlantic, from north to south up to Florida, Texas and beyond: Mexico, Bahamas, Cuba, Venezuela, Brazil, Uruguay, and perhaps in Argentina but also in other areas. In details:

**Eastern Atlantic:** from eastern Portugal and Spain, Madeira, near Azores, Morocco, Canary Islands, Senegal, Guinea to Sierra Leone, Angola, South Africa (Western Cape), including the Mediterranean Sea.

**Indian Ocean:** South Africa (Eastern Cape and Kwazulu-Natal), Madagascar, Arabian Sea (Somalia), Gulf of Aden, Maldives, and Sri Lanka.

**Western Pacific:** Southern Japan (including Okinawa), Taiwan (Province of China), Viet Nam, between Northern Mariana Islands and Wake Island, North-western Submarine Rise, New Caledonia, Australia (North-western coast), New Zealand.

**Central Pacific:** Area between Wake, Marshall, Howland and Baker, Palmyra, Johnston, and Hawaiian Islands; north and south of Hawaiian Islands, off east of Line Islands, and between Marguesas and Galapagos Islands.

**Eastern Pacific:** USA (California), Mexico (Gulf of California) to approximately 15°S latitude off Peru, including west of Galapagos Islands, (Ecuador); possibly off northern Chile. Also, USA, north and south of Hawaiian Islands, off east of Line Islands, and between Marquesas and Galapagos Islands.

**Mediterranean:** It is likely that *A. superciliosus* entered in the Mediterranean Sea from the Atlantic Ocean via the Strait of Gibraltar (Serena *et al.* 2020). The presence of this species in the Mediterranean Sea was unknown until the early 1980s. Golani (1996) confirmed the species in Israeli waters. and Megalofonou *et al.* (2005) mentioned it for the Aegean Sea. Moreover, Kabasakal and Karhan (2007) mentioned the species also in the Marmara Sea. In recent years, increasing numbers of new records from the eastern Mediterranean (sometimes multiple captures) demonstrate that this species also penetrates widely to the east of Malta, occurring in the waters off Israel (Levantine basin), in the Aegean Sea off Türkiye and southern Greece, and off southern Crete.

#### Depth limits:

Epipelagic, oceanic and coastal in warm temperate and tropical waters, from the surface to 955 m, mostly > 100 m (Ebert *et al.* 2021).

A tagging study of two *A. superciliosus* (one from Hawaii and the other from the Gulf of Mexico) indicates strong diel vertical migration (Weng and Block 2004). These sharks spent most of the night time in waters warmer than 20°C and commonly spent eight or more hours during the daytime in waters cooler than 10°C, requiring them to be eurythermal. Based on acoustic telemetry studies, Nakano *et al.* (2003) report distinct daily vertical migrations observed in the Eastern Central Pacific. These observations allowed the studies of the movements of some sharks that staying at 200 to about 500 m depth during the day and at 80 to 130 m at night. More recently, Coelho *et al.* (2015) recorded marked diel vertical movements of 15 specimens tagged in the tropical northeast Atlantic, with most of the daytime spent in deeper colder water (mean depth = 353 m, mean temperature = 10.7 °C) and nighttime spent in warmer water closer to the surface (mean depth = 72 m, mean temperature = 21.9 °C).

#### Countries of occurrence (Mediterranean):

**Mediterranean:** Albania; Algeria; Bosnia and Herzegovina; Croatia; Cyprus; Egypt; France (Corsica); Gibraltar; Greece; Israel; Italy; Lebanon; Libya; Malta; Monaco; Montenegro; Morocco; Slovenia; Spain; Syrian Arab Republic; Tunisia; Türkiye.

#### Population estimates and trends:

No global population estimates are available for bigeye thresher, however, the population is unlikely to be small. No Mediterranean population estimate is available.

Trejo (2004) conducted a global population genetic study of bigeye thresher that supported links in the population structure between Indo-Pacific and Atlantic populations, but not among populations spanning the entire Indo-Pacific Ocean. However, due to the preliminary nature of these data, and low sample size throughout the study, these results cannot be relied upon to confirm one or more genetically distinct stocks of the common or bigeye thresher shark.

- In the **Atlantic Ocean**, an analysis of observer data found the trend in bigeye thresher abundance to be relatively stable from 1992–2014. However, the exploitation of this stock began at least two decades before these series began.
- In the **Indian Ocean**, the only available information was for catch rather than catch rate (catch per unit effort CPUE) and thresher shark genus (all species) instead of for the bigeye thresher.
- In the **Western Central Pacific**, a standardized CPUE series for the thresher genus for 1996–2014 showed a slight decline in the most recent three years possibly due to late reporting but excluded the important Hawaiian longline observer data. A standardized CPUE series from the Hawaiian longline fishery, which operates in one of the areas where bigeye thresher is most abundant, was generally stable with a relatively recent increase in the catch rate over the 1995–2014 period.
- In **Mediterranean** no data are available on catch trends and this species has been poorly documented.

In the last twenty years, records of this species were reported with increasing frequency (Mancusi *et al.* 2020). Various authors do not exclude that the species may have a stable population in the Mediterranean Sea, though this species is much rarer than the congener *A. vulpinus* (Serena *et al.* 2020). Data available in the official FAO-GFCM Statistics in Mediterranean refer to the common thresher *A. vulpinus*, reported in small quantities (<1 tonnes/year) by France and Italy (FAO-GFCM 2021). Similarly, in the ICCAT Database, few countries, EU-España, EU-Malta, EU-France, EU-España, Chinese Taipei (NCC) and Japan report less than 1 tonnes for year of nominal catches of *A. superciliosus*.

**Habitat (s):**

Found in coastal waters over the continental shelves, sometimes close inshore in shallow waters, and on the high seas in the epipelagic zone far from land; also caught near the bottom in deep water on the continental slopes. Ranges from the surface and in the intertidal to at least 500 m deep and has been recorded at 723 m deep (Nakano *et al.* 2003), mostly below 100 m depth (Ebert *et al.* 2021).

Mediterranean observations from fisheries dependent records are typically from offshore continental shelf waters.

**Threats****Existing and potential threats:**

The bigeye thresher is caught globally as target and bycatch in commercial and small-scale pelagic longline, purse seine, and gillnet fisheries (Serena 2021). Its epipelagic habitat mostly overlaps with the range of commercial longline fisheries in which it is readily caught in offshore and high-seas waters (Camhi *et al.* 2008). It is also captured in coastal longlines, gillnets, trammel nets, and sometimes trawls, particularly in areas with narrow continental shelves (Camhi *et al.* 2008, Martinez-Ortiz *et al.* 2015, Temple *et al.* 2019, Fauconnet *et al.* 2019; IUCN, 2022).

In 2008, an Ecological Risk Assessment conducted by ICCAT ranked the bigeye thresher as the most vulnerable of 16 Atlantic elasmobranch species in terms of overfishing from longlines. The life history of this species, including a late age at maturity (12-13 years) and very low fecundity (average two pups per litter), make it highly vulnerable to overexploitation. *Alopias superciliosus* has the lowest annual rate of population increase of all thresher sharks and is therefore particularly at risk from depletion in fisheries.

At-haulback fishing mortality for this species, estimated as percentage of dead specimens at time of haulback in pelagic fisheries targeting swordfish and by-catching pelagic sharks in the Indian Ocean, was about 68%, relatively high respect to other pelagic shark species (Coelho *et al.*, 2011). Where there are prohibitions on retention of thresher sharks, they are still caught and information suggests that mortality rates may be in the order of 50% (Clarke 2011; Coelho *et al.* 2011, Coelho *et al.* 2012; Gallagher *et al.* 2014).

The bigeye thresher generally spends time near the surface at night where it is exposed to fisheries capture but it likely has some refuge during the day, when it generally dives to greater depths than those at which most commercial tuna fleets operate (Coelho *et al.* 2015).

Since its documented presence in Mediterranean in the 1990s, the big eye thresher has been mostly a bycatch of the artisanal pelagic fisheries, such as swordfish and tuna, trammel and gillnet fisheries. *Alopias superciliosus* has been poorly documented in Mediterranean and it is so far considered scarce or rare (Serena *et al.* 2020). As a result, no data are available on catch trends or areas of aggregations for this species in the region, therefore currently it is not possible to infer other potential biological or ecological factors that would diminish or augment the concern for the status of conservation of this species.

**Exploitation (Mediterranean):**

This species is documented as bycatch of the semi-industrial fisheries (swordfish and other pelagic fisheries) of southern Spain, Morocco, Algeria, Sicily and Malta, and of artisanal trammel and gillnet fisheries elsewhere in the Mediterranean Sea (Bauchot 1987; Serena 2021)). Evidence from offshore pelagic fisheries in southern Sicily and Malta indicate that *A. superciliosus* is caught in unknown numbers each year, but routinely discarded at sea.

**Proposed protection or regulation measures:****Species specific management and conservation measures in force**

- Family Alopiidae is listed on Annex I, Highly Migratory Species, of the UN Convention on the Law of the Sea, which urges States to cooperate over the management of these species.
- In 2009, considering the results of the Ecological Risk Assessment conducted in 2008 that ranked the Bigeye Thresher as the most vulnerable of 16 Atlantic elasmobranch species in terms of overfishing from longlines, the ICCAT Commission adopted the Recommendation 09-07 on the conservation of thresher sharks caught in association with fisheries in the ICCAT convention area. Some points of this recommendation relevant for Mediterranean countries are the following:
  - Contracting Parties (CPS) shall prohibit, retaining onboard, transshipping, landing, storing, selling, or offering for sale any part or whole carcass of bigeye thresher sharks (*Alopias superciliosus*) in any fishery (...);
  - CPCs shall require vessels flying their flag to promptly release unharmed, to the extent practicable, bigeye thresher sharks when brought along side for taking on board the vessel (...).
  - CPCs shall require the collection and submission of Task I and Task II data for *Alopias* spp other than *A. superciliosus* in accordance with ICCAT data reporting requirements. The number of discards and releases of *A. superciliosus* must be recorded with indication of status (dead or alive) and reported to ICCAT in accordance with ICCAT data reporting requirements (...).
- In 2011, in Spain all thresher shark species were listed on the Spanish List of Wild Species under Special Protection (Spanish Royal Decree N°139/2011) resulting in prohibition of capture, injury, trade, import and export.
- In 2014, all thresher shark species were listed on Appendix II of the Convention on Migratory Species (CMS). CMS provides a global platform for the conservation and sustainable use of migratory animals and their habitats bringing together the States through which migratory animals pass. Parties that are Range States of migratory species listed in Appendix II shall endeavour to collaborate for the conservation the species.
- In 2016, all thresher shark species were added to Appendix II of the Convention on International Trade in Endangered Species (CITES). Trade in products of Appendix II species by CITES Parties have to be accompanied by a certificate demonstrating the legality and sustainability of its capture, overall that the trade will not be detrimental to the survival of the species in the wild.

**Other relevant measures**

- In 2017, the common thresher *A. vulpinus* was listed on Appendix III of the SPA/BD Protocol.
- In 2018, the GFCM Commission adopted the Recommendation GFCM/42/2018/2 on fisheries management measures for the conservation of sharks and rays in the GFCM area of application. Among others, CP shall:
  - Ensure that information on fishing activities, catch data, incidental catches, release and/or discarding of sharks species listed either in Annex II or Annex III of the SPA/BD Protocol, is recorded by the shipowner in the logbook or in an equivalent document, in line with the requirements of Recommendation GFCM/35/2011/1
  - Prohibit the finning of sharks and requiring retention measures to be adopted as well as requiring fins to be naturally- attached for all shark landing;

In 2021, the GFCM Commission adopted the Recommendation GFCM/44/2021/16 on additional mitigation measures for the conservation of elasmobranchs in the Mediterranean Sea, applying to all elasmobranch species in the Mediterranean Sea listed in Annex II and III of the SPA/BD

Protocol and includes the adoption of species-specific actions for the common thresher (*Alopias vulpinus*):

- Assess incidental (bycatch) and targeted catch rates of the common thresher in all fisheries
- Assess survival rate of bycaught common threshers in the different fisheries
- Identify common threshers' critical habitats
- Identify fishing technology solutions to reduce bycatch and increase post-release survival rate
- Compile any fisheries management measure in place (including spatial) that can positively affect the conservation of the common threshers, if any
- Assess priority market's demand (domestic, export, etc.), if any.

In 2005, in Israel, sharks and rays were introduced into the list of species protected by law and fishing of them is prohibited-. Since 2018, enforcement seems somehow improved for sharks. Cartilaginous fishes may not be consumed under Jewish kashrut law, although there is a market for fish of these species among non-Jewish populations (Ariel and Barash 2015).

If the listing in Annex II of the SPA/BD Protocol was implemented effectively, its immediate transposition in the GFCM Recommendation GFCM/42/2018/2 could act as strengthening measure for the ICCAT regulation already implemented (Rec. 09-07), as both measures would prohibit retention of the big eye thresher. In theory the listing of *A. superciliosus* on Annex II and the current listing of *A. vulpinus* on Annex III would create a difficulty in the implementation of the different measures to which these two species are subject, prohibition for big eye thresher and data collection requirements for both the species. However, the identification of these two species of thresher sharks should not create any difficulty, due to the existing identification tools and the training activities that have already been carried out in Mediterranean. Moreover, as the GFCM Members shall implement species-specific actions for the congener common thresher *A. vulpinus*, the attention to its identification might improve the species-specific recording of the two thresher species.


### **Bibliographical references**

- Ariel, A. and Barash, A. (2015). *Action Plan for Protection of Sharks and Rays in the Israeli Mediterranean*. EcoOcean Association. Israel: <https://www.ecoocean.org/wp-content/uploads/2020/12/Sharks-and-rays-conservation-plan-for-Israel-Ecoocean.pdf>
- Bauchot, M.L. (1987). Raies at autres batoidés. In: M. Fisher, M.S., Bauchot M.-L. (eds), Fiches FAO d'Identification des Espèces pour les Besoins de la Pêche. Méditerranée et Mer Noire. Zone de Pêche 37. Revision 1. II, pp. 847-885. FAO, Rome.
- Chen, C.T., Liu, K.M. and Chang, Y.C. (1997). Reproductive biology of the bigeye thresher shark, *Alopias superciliosus* (Lowe, 1939) (Chondrichthyes: Alopiidae), in the northwestern Pacific. *Ichthyological Research* 44(3): 227-235.
- Clarke, S. (2011). *A Status Snapshot of Key Shark Species in the Western and Central Pacific and Potential Management Options*. WCPFC-SC7-2011/EB-WP-04.
- Clarke, S., Magnusson, J.E., Abercrombie, D.L., McAllister, M. and Shivji, M.S. (2006). Identification of shark species composition and proportion in the Hong Kong shark fin market using molecular genetics and trade records. *Conservation Biology*, 20: 201-211.
- Coelho, R., Fernandez-Carvalho, J., Lino, P.G. and Santos, M.N. (2012). An overview of the hooking mortality of elasmobranchs caught in a swordfish pelagic longline fishery in the Atlantic Ocean. *Aquatic Living Resources*, 25: 31131-9.
- Coelho, R., Fernandez-Carvalho, J. and Santos, M.N. (2015). Habitat use and diel vertical migration of bigeye thresher shark: Overlap with pelagic longline fishing gear. *Marine Environmental Research* 112: 91-99.
- Coelho, R., Lino, P.G. and Santos, M.N. (2011). *At-haulback mortality of elasmobranchs caught on the Portuguese longline swordfish fishery in the Indian Ocean*. Indian Ocean Tuna Commission, Technical Report, IOTC-2011-WPEB07-31.

- Compagno, L.J.V. (2001). *Sharks of the world. An annotated and illustrated catalogue of shark species known to date*. Volume 2. Bullhead, Mackerel and Carpet Sharks (Heterodontiformes, Lamniformes and Orectolobiformes). FAO, Rome.
- Cortés, E. (2008). Comparative life history and demography of pelagic sharks. In: M. Camhi, E.K. Pikitch and E.A. Babcock (eds), *Sharks of the Open Ocean*, 309–322. Blackwell Publishing.
- Ebert, D.A., Dando, M. and Fowler, S. (2021). *Sharks of the World. A Complete Guide*. Princeton University Press. ISBN 9780691205991. 608 pages.
- FAO-GFCM. (2021). Fishery and Aquaculture Statistics. GFCM capture production 1970-2019 (FishstatJ). In: FAO Fisheries Division [online]. Rome. Updated 2021. [www.fao.org/fishery/statistics/software/fishstatj/en](http://www.fao.org/fishery/statistics/software/fishstatj/en)
- Gallagher, A.J., Orben, E.S., Hammerschlag, N. and Serafy, J.E. (2014). Vulnerability of oceanic sharks as pelagic longline bycatch. *Global Ecology and Conservation*, (1) 50–59.
- Golani, D. (1996). The Marine Ichthyofauna of the Eastern Levant. History, Inventory and Characterization. *Israel Journal of Zoology* 42:15–55.
- ICCAT (2022). MS Excel pivot table to obtain nominal catches of Atlantic tunas and tuna-like fish (including sharks), by gear, region and flag [MS Excel; version 01/2022] <https://iccat.int/en/accesingdb.html>
- IUCN (2022). The IUCN Red List of Threatened Species. Version 2021-3 [Accessed: 20 February 2022] <https://www.iucnredlist.org>.
- Kabasakal, H. and Karhan S.U. (2007). On the occurrence of the bigeye thresher shark, *Alopias superciliosus* (Chondrichthyes: Alopiidae), in Turkish waters. *JMBA2, Biodiversity Records* 5745.
- Liu, K.M., Chiang, P.J. and Chen, C.T. (1998). Age and growth estimates of the bigeye thresher shark, *Alopias superciliosus*, in northeastern Taiwan waters. *Fishery Bulletin* 96(3): 482–491.
- Maguire, J.-J., Sissenwine, M.P., Csirke, J., Grainger, R.J.R. and Garcia, S.M. (2006). The state of world highly migratory, straddling and other high seas fisheries resources and associated species. *Fisheries Technical Report*. FAO, Rome.
- Mancusi, C., Baino, R., Fortuna, C., De Sola, L., Morey, G., Bradai, M.N., Kallianotis, A., Soldo, A., Hemida, F., Saad, A., Dimech, M., Peristeraki, P., Bariche, M., Clò, S., De Sabata, E., Castellano, L., Garibaldi, F., Lanteri, L., Tinti, F., Pais, A., Sperone, E., Micarelli, P., Poisson, F., Sion, L., Carlucci, R., Cebrian-Mencheró, D., Séret, B., Ferretti, F., El-Far, A., Saygu, I., Shakman, E., Bartoli, A., Guallart, J., Damalas, D., Megalofonou, P., Vacchi, M., Colloca, F., Bottaro, M., Notarbartolo Di Sciara, G., Follesa, M., Cannas, R., Kabasakal, H., Zava, B., Cavlan, G., Jung, A., Abudaya, M., Kolutari, J., Barash, A., Joksimovic, A., Cetkovic, I., Marčeta, B., Gonzalez Vilas, L., Tiralongo, F., Giovos, I., Bargnesi, F., Lelli, S., Barone, M., Moro, S., Mazzoldi, C., Charis, C., Abella, A. and Serena, F. (2020). MEDLEM database, a data collection on large Elasmobranchs in the Mediterranean and Black seas. *Mediterranean Marine Science*, 0, 276-288. doi: 10.12681/mms.21148.
- Megalofonou, P., Damalas, D. and Yannopoulos, C. (2005). Composition and abundance of pelagic shark by-catch in the eastern Mediterranean Sea. *Cybium*, 29, 135–140.
- Moreno, J.A. and Morón, J. (1992). Comparative study of the genus *Isurus* (Rafinesque, 1810) and description of a form ('marrajo criollo') apparently endemic to the Azores. *Australian Journal of Marine and Freshwater Research*, 43: 109-22.
- Nakano, H., Matsunaga, H., Okamoto, H. and Okazaki, M. (2003). Acoustic tracking of bigeye thresher shark *Alopias superciliosus* in the Eastern Pacific Ocean. *Marine Ecology Progress Series*, 265, 255-261.
- Rigby, C.L., Barreto, R., Carlson, J., Fernando, D., Fordham, S., Francis, M.P., Herman, K., Jabado, R.W., Liu, K.M., Marshall, A., Pacoureaux, N., Romanov, E., Sherley, R.B. and Winker, H. (2019). *Alopias superciliosus*. The IUCN Red List of Threatened Species 2019: e.T161696A894216. [Accessed on 25 February 2022]. <https://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T161696A894216.en>.
- Serena, F., Abella, A.J., Bargnesi, F., Barone, M., Colloca, F., Ferretti, F., Fiorentino, F., Jenrette, J. and Moro, S. (2020). Species diversity, taxonomy and distribution of Chondrichthyes in the

- Mediterranean and Black Sea. *The European Zoological Journal*, 87 (1): 497–536, doi: [10.1080/24750263.2020.1805518](https://doi.org/10.1080/24750263.2020.1805518)
- Serena, F. (2021). Elasmobranchs, 111-197. In: Carpentieri, P., Nastasi, A., Sessa, M. and Srour, A., eds. 2021. Incidental catch of vulnerable species in Mediterranean and Black Sea fisheries – A review. General Fisheries Commission for the Mediterranean. *Studies and Reviews*. No. 101. Rome, FAO, 320 pp. <https://doi.org/10.4060/cb5405en>
- Smith, S.E., Au, D.W. and Show, C. (1998). Intrinsic rebound potentials of 26 species of Pacific sharks. *Marine and Freshwater Research* 49(7): 663-678.
- Trejo, T. (2004). *Global population structure of thresher sharks (Alopias spp.) based upon mitochondrial DNA control region sequences*. M.Sc. Thesis, Moss Landing Marine Laboratories.
- Vacchi, M. and Serena, F. (2000). On a large specimen of bigeye thresher shark *Alopias superciliosus* (Lowe, 1839) (Chondrichthyes: Alopiidae) stranded in Tavolara Island (Eastern Sardinia, Mediterranean). In: Séret B. and J.-Y. Sire (eds), Proceedings of the 3rd European Elasmobranch Association Meeting 3: 84. Boulogne-sur-Mer, France.
- Walls, R.H.L. and Soldo, A. (2016). *Alopias superciliosus*. The IUCN Red List of Threatened Species 2016: e.T161696A16527729. Accessed on 25 February 2022.
- Weng, K. and Block, B. (2004). Diel vertical migration of the bigeye thresher shark (*Alopias superciliosus*), a species possessing orbital retia mirabilia. *Fishery Bulletin* 102: 221-229.



<b>Form for proposing amendments to Annex II and Annex III of the Protocol concerning specially Protected Areas and Biological Diversity in the Mediterranean</b>	
<b>Proposed by :</b> <b>The Republic of France</b>	<b>Species concerned:</b> <i>Bathytoshia lata</i> (Garman, 1880) <b>Amendment proposed:</b> <input checked="" type="checkbox"/> Inclusion in Annex II <input type="checkbox"/> Inclusion in Annex III <input type="checkbox"/> Removal from Annex II <input type="checkbox"/> Removal from Annex III
<b>Taxonomy</b> <b>Class:</b> Chondrichthyes <b>Order:</b> Myliobatiformes <b>Family:</b> Dasyatidae Jordan & Gilbert, 1879 <b>Genus and Species:</b> <i>Bathytoshia lata</i> <b>Known Synonym(s):</b> <i>Trygon lata</i> Garman, 1880; <i>Dasyatis lubricus</i> Smith, 1957; <i>Dasyatis thetidis</i> Ogilby in Waite, 1899 <b>Common name:</b> English: Brown stingray French: raie brune Spanish: n.a. Italian: Trigone spinoso Arabic: راية لاسبعة مشوكة	<b>Inclusion in other Conventions:</b>
	

**Justification for the proposal:**

The brown stingray, *Bathytoshia lata*, qualifies for listing in Annex II in accordance with the “Common Criteria for proposing amendments to Annexes II and III of the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean” (Decision IG 17/14, UNEP(DEPI)/MED IG.17/10 Annex V).

One of the largest marine and brackish water stingrays distributed widely throughout the eastern Atlantic Ocean from Bay of Biscay to Angola, including the Mediterranean Sea. The large size (maximum size 260 cm disc width) of this species and its low fecundity (two to six pups per litter) makes it intrinsically vulnerable to depletion.

In the Southwest Atlantic and Mediterranean, *Batyoshia lata* is a rare bycatch in artisanal and trawl fisheries. It is likely that the abundance of this species in catches has declined, due to the intense trawl fisheries operations at depths of 50 to 800 m, mostly overlapping with the bathymetric range of the species.

The assessment conducted in Mediterranean in 2016 for the IUCN Red List assigned the species, still considering the species *Dasyatis centroura*, to the category Vulnerable under criteria A2d. In accordance with the regional assessment, the global IUCN assessment conducted in 2020 confirmed the brown stingray as Vulnerable A2d.

If the listing in Annex II of the SPA/BD Protocol was implemented effectively, its immediate transposition in the GFCM Recommendation GFCM/42/2018/2 could act as immediate and unprecedented prohibition measure for stingrays in Mediterranean. Although this species deserves the Annex II protection, it would benefit from an Annex III listing, for the species-specific activities foreseen for Annex III species in the GFCM Recommendation GFCM/44/2021/16. On the contrary in Annex II there is the risk that if becoming prohibited, this species might be easily illegally landed and traded with the generic name "skates or rays". To harmonise the Annexes, equal decisions should be accorded to the similar species *Dasyatis pastinaca* and *Dasyatis marmorata*.

### **Biological data**

#### **Brief description of the species:**

#### **Identification**

Formerly present in Mediterranean as *Dasyatis centroura*, the taxonomy of the species changed after the revision made by Last *et al.* (2016), who confirmed *Dasyatis centroura* as synonym, considered valid the genus *Batyoshia* and made a clear distinction regarding the geographical distribution of *Batyoshia centroura* (Mitchill 1815), which is distributed only in the western Atlantic, and *Batyoshia lata* (Garman 1880) distributed in the eastern Atlantic, including the Mediterranean where it is considered valid species .

The brown stingray has a snout obtuse; disc rhomboid, front and back margins relatively straight; tail twice as long as disc length, with a deep membranous fold below, no fold or ridge above. Floor of mouth with 5-6 fleshy papillae. Dorsal side with large tubercles or bucklers along midline and middle of disc in larger specimens, as well as large thorns along top and sides of tail. Dorsal surface olive-brown, ventral side whitish.

#### **Biology**

Maximum disc width (DW) observed up to 260 cm for a male from the southern Adriatic (Dulcic *et al.* 2003), usually 100-130 cm. Capapé (1993) reported for the Mediterranean a size at first maturity for males of 80 cm DW, and from 66 to 100 cm DW for females. This species is ovoviviparous (aplacental viviparity), different values of the size at birth are reported: from 34 to 37 cm (McEachran and de Carvalho 2002) and from 8 to 13 cm (Notarbartolo and Bianchi 1998; Bini 1967). Capapé (1993) reported the gestation period lasting a minimum of four months with fecundity ranging from 2 to 6 pups per litter.

#### **Distribution (current and historical):**

The species occurs in the Eastern Atlantic, from southern France to Angola, from Madeira and Morocco northward to southern Bay of Biscay including the Mediterranean Sea, where the species is most common off Algeria, Tunisia, and Sicily, absent in the Black Sea (Whitehead *et al.* 1984). In the Indo-Pacific it is widespread, from southern Africa to Hawaii.

It has a widespread but patchy distribution and its reporting under different names may have precluded its accurate identification in the past.

**Depth limits:**

The brown stingray occurs in a range of depth between surface up to 800 m, usually between 40–200 m.

**Countries of occurrence (Mediterranean):**

Albania; Algeria; Bosnia and Herzegovina; Croatia; Cyprus; Egypt; France; Greece; Israel; Italy (Sicilia, Sardinia, Italy (mainland)); Lebanon; Libya; Malta; Monaco; Montenegro; Morocco; Palestine; Slovenia; Spain (Spain (mainland), Balears); Syrian Arab Republic; Tunisia; Türkiye.

**Population estimates and trends:**

In the Mediterranean Sea, the Brown Stingray is considered rare with few records over the last few decades (Capapé 1993, Serena *et al.* 2020). Capapé (1993) report the species relatively common along the North African coast, especially off Tunisia, but records are limited.

This species was recorded in one of 6,336 hauls conducted during the International Bottom Trawl Survey in the Mediterranean (MEDITS) program in the western, central, and eastern Mediterranean Sea, from 1994 to 1999 at depths of 10–800 m (Baino *et al.* 2001; Follesa *et al.* 2019).

In the Balearic Islands, a similar scientific survey conducted from 1994 to 2015 one individual was recorded at 58 m depth (Ramírez-Amaro *et al.* 2020).

In Italian seas, data from the 22 trawl surveys conducted by the program Gruppo Nazionale Risorse Demersali (GRUND) between 1985 and 1998, showed that the percentage presence of this species was one of the lowest recorded (0.83%) and it was only captured in the South Ligurian Sea and Sardinian waters (Relini *et al.* 2000). In particular, in Adriatic Sea, analysis of various trawl datasets from 1948 and 2005 four individuals were recorded (Ferretti *et al.* 2013).

Off the coast of Türkiye, about 5 individuals have been recorded in the surveys conducted between 2000 and 2017 in Iskenderun Bay, the Gulf of Antalya, and the Aegean Sea (Akyol *et al.* 2017).

**Habitat (s):**

Demersal or benthic species living over sandy and muddy bottoms, sometimes near hard bottoms of the continental shelves, usually from shallow water to about 200 m.

**threats****Existing and potential threats:**

The continental shelf and upper slope of the Mediterranean Sea have been highly exploited in the last 60 years, with intensive commercial trawling occurring at depths ranging from 50 to 700-800 m (Colloca *et al.* 2003). As a result, there has been increasing concern about changes in the abundance and diversity of elasmobranchs in this basin and decreases in the abundance and biomass of some species throughout the last decade have been recorded in highly exploited areas such as north-western Mediterranean (Aldebert 1997; Massuti and Moranta 2003). The detailed information of the brown stingray has been hampered by the different taxa names assigned to this species, however the life history intrinsic vulnerability coupled with the intense trawl fisheries operations overlapping with the bathymetric range of the species, support the suspicion that also the brown stingray population has declined from historical levels.

**Exploitation:**

In the Mediterranean, the brown stingray is caught as bycatch of the artisanal fisheries, bottom set longline, gillnet, handline and bottom trawl (Fischer *et al.* 1987; Carpentieri *et al.* 2021).

**proposed protection or regulation measures:**

In 2005, in Israel sharks and rays were introduced into the list of species protected by law and fishing of them is prohibited. Since 2018, enforcement seems somehow improved for sharks but is still inadequate for ray fishing. Cartilaginous fishes may not be consumed under Jewish kashrut

law, although there is a market for fish of these species among non-Jewish populations (Ariel and Barash 2015).


There are no species-specific conservation or management measures for this species in place in the Mediterranean Sea. Although countries across its range have legislation concerning fisheries activities (including gear restrictions, and no-trawling zones in coastal waters), fisheries taking *Bathytoshia lata* are generally unmanaged throughout large parts of the species' range and it is unlikely that fisheries pressure will decrease in the near future.

If the listing in Annex II of the SPA/BD Protocol was implemented effectively, its immediate transposition in the GFCM Recommendation GFCM/42/2018/2 could act as immediate and unprecedented prohibition measure for stingrays in Mediterranean. Although the brown stingray deserves the Annex II protection, it would benefit from an Annex III listing, due to the species-specific activities foreseen for Annex III species in the GFCM Recommendation GFCM/44/2021/16. On the contrary in Annex II there is the risk that if becoming prohibited, this species might be easily illegally landed and traded with the generic name "skates or rays". To harmonise the Annexes, equal decisions should be accorded to the similar species *Dasyatis pastinaca* and *Dasyatis marmorata*.

#### **Bibliographical references**

- Ariel, A. and Barash, A. (2015). *Action Plan for Protection of Sharks and Rays in the Israeli Mediterranean*. EcoOcean Association. Israel: <https://www.ecoocean.org/wp-content/uploads/2020/12/Sharks-and-rays-conservation-plan-for-Israel-Ecoocean.pdf>
- Aldebert, Y. (1997). Demersal resources of the Gulf of Lions (NW Mediterranean). Impact of exploitation on fish diversity. *Vie et Millieu* 47: 275–284.
- Baino, R., Serena, F., Ragonese, S., Rey, J. and Rinelli, P. (2001). Catch composition and abundance of Elasmobranchs based on the MEDITS program. *Rapports de la Commission Internationale pour l'Exploration Scientifique de la Mer Méditerranée* 36:234.
- Bini, G. (1967). *Atlante dei pesci delle coste Italiane, vol. I. Leptocardi, Ciclostomi, Selaci*. Mondo Sommerso Editrice, Roma, Italia.
- Capapé, C. (1993). New data on the reproductive biology of the thorny stingray, *Dasyatis centroura* (Pisces: Dasyatidae) from off the Tunisian coasts. *Environmental Biology of Fishes* 38: 73-80.
- Carpentieri, P., Nastasi, A., Sessa, M. and Srour, A. (2021). *Incidental catch of vulnerable species in Mediterranean and Black Sea fisheries – A review. General Fisheries Commission for the Mediterranean. Studies and Reviews. No. 101. Rome, FAO. doi: 10.4060/cb5405en*
- Colloca, F., Cardinale, M., Belluscio, A. and Ardizzone, G. (2003). Pattern of distribution and diversity of demersal assemblages of the central Mediterranean Sea. *Estuarine and Coastal Shelf Science* 56: 469-480.
- Dulcic, J., Jardas, I., Onofri, V. and Bolotin, J. (2003). The roughtail stingray *Dasyatis centroura* (Pisces: Dasyatidae) and spiny butterfly ray *Gymnura altavela* (Pisces: Gymnuridae) from the southern Adriatic. *Journal of the Marine Biology Association, U.K.*, 83: 871-872.
- Dulvy, N.K. and Reynolds, J.D. (1997). Evolutionary transitions among egg-laying, live-bearing and maternal inputs in sharks and rays. *Proc. R. Soc. Lond., Ser. B: Biol. Sci.* 264:1309-1315.
- Fischer, W., Bauchot, M.-L. and Schneider, M. (1987). *Fiches FAO d'identification des espèces pour les besoins de la pêche. Méditerranée et mer Noire. Zone de Pêche 37*. FAO, Rome, Italy.
- Follesa M.C., Marongiu M.F., Zupa W., Bellodi A., Cau A., Cannas R., Colloca F., Djurovic M., Isajlovic I., Jadaud A., Manfredi C., Mulas A., Peristeraki P., Porcu C., Ramirez-Amaro S., Salmerón Jiménez F., Serena F., Sion L., Thasitis I., Cau A. and Carbonara P. (2019). Spatial variability of Chondrichthyes in the northern Mediterranean. *Sci. Mar.* 83 (S1). doi:10.3989/scimar

- Jabado, R.W., Chartrain, E., De Bruyne, G., Derrick, D., Dia, M., Diop, M., Doherty, P., Finucci, B., Leurs, G.H.L., Metcalfe, K., Pires, J.D., Seidu, I., Soares, A.-L., Tamo, A., VanderWright, W.J. & Williams, A.B. 2021. *Bathytoshia lata*. The IUCN Red List of Threatened Species (2021): e.T104071039A104072486. <https://dx.doi.org/10.2305/IUCN.UK.2021-2.RLTS.T104071039A104072486.en>. Accessed on 26 April 2022.
- Last, P.R., Weigmann, S. and Yang, L. (2016). Changes to the nomenclature of the skates (Chondrichthyes: Rajiformes). In: Last PR, Yearsley GK, editors. *Rays of the World* (Supplementary information). Melbourne, CSIRO. Special Publication. pp. 11–34.
- Massuti, E. and Moranta, J. (2003). Demersal assemblages and depth distribution of elasmobranchs from the continental shelf and slope off the Balearic Islands (western Mediterranean). *ICES Journal of Marine Science* 60: 753-766.
- McEachran, J.D. and de Carvalho, M.R. (2002). Batoid fishes. In: K.E. Carpenter (ed). *The Living Marine Resources of the Western Central Atlantic. Volume 1. Introduction, molluscs, crustaceans, hagfishes, sharks, batoid fishes and chimaeras*. pp: 508–589. FAO Species Identification Guides for Fishery Purposes. FAO, Rome.
- Notarbartolo di Sciarra, G. and Bianchi, I. (1998). *Guida degli squali e delle razze del Mediterraneo*. Franco Muzzio Editore, Roma, Italia.
- Relini G., Biagi F., Serena F., Belluscio A., Spedicato M.T., Rinelli P., Follesa M.C., Piccinetti C., Ungaro N., Sion L. and Levi. D. (2000). I selaci pescati con lo strascico nei mari italiani. [Selachians fished by otter trawl in the Italian Seas] *Biologia Marina Mediterránea*, 7(1): 347– 384.
- Serena, F., Abella, A.J., Bargnesi, F., Barone, M., Colloca F., Ferretti F., Fiorentino F., Jenrette J. and Moro, S. (2020). Species diversity, taxonomy and distribution of Chondrichthyes in the Mediterranean and Black Sea. *The European Zoological Journal*, 87 (1): 497–536, doi: [10.1080/24750263.2020.1805518](https://doi.org/10.1080/24750263.2020.1805518)
- Whitehead, P.J.P., Bauchot, M.L., Hureau, J.C., Nielsen, J. and Tortonese, E. (eds). (1984). *Fishes of the North-eastern Atlantic and the Mediterranean*. Vol 1. UNESCO, Paris.

<b>Form for proposing amendments to Annex II and Annex III of the Protocol concerning specially Protected Areas and Biological Diversity in the Mediterranean</b>	
<b>Proposed by</b> <b>The Republic of France</b>	<b>Species concerned:</b> <i>Dasyatis marmorata</i> (Steindachner, 1892)
	<b>Amendment proposed:</b> <input type="checkbox"/> Inclusion in Annex II <input checked="" type="checkbox"/> Inclusion in Annex III <input type="checkbox"/> Removal from Annex II <input type="checkbox"/> Removal from Annex III
<b>Taxonomy</b> <b>Class:</b> Chondrichthyes <b>Order:</b> Myliobatiformes <b>Family:</b> Dasyatidae <b>Genus and Species:</b> <i>Dasyatis marmorata</i> <b>Known Synonym(s):</b> <i>Trygon pastinaca</i> var. <i>marmorata</i> Steindachner, 1892 <b>Common name:</b> English - Marble stingray French - Pastenague marbrée Spanish - Raja látigo jaspeada Italian - Trigone marmorato Arabic - راية لاسعة رخامية	Inclusion in other Conventions:
	

<p><b>Justification for the proposal:</b></p> <p>The marbled stingray <i>Dasyatis marmorata</i> qualifies for listing in Annex III in accordance with the “Common Criteria for proposing amendments to Annexes II and III of the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean” (Decision IG 17/14, UNEP(DEPI)/MED IG.17/10 Annex V).</p> <p><i>Dasyatis marmorata</i> is a demersal ray that occurs in the Mediterranean Sea and the Eastern Central Atlantic ranging from the Levantine Basin and North African coast to the Republic of the Congo. Due to taxonomic uncertainty and its easy misidentification with the other stingray of the region, data on distribution and trends of this species have not properly reported in the past. Its occurrence</p>
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is limited to Tunisia and the Levantine region, where recently has been more frequently recorded. The marble stingray reaches a maximum size of about 75 cm TL. It is found in coastal waters over soft and muddy bottoms, resulting to be more vulnerable to small-scale inshore fisheries than to offshore trawling.

In Mediterranean, the marbled stingray has most recently been assessed for the Mediterranean IUCN Red List in 2016 and listed as Data Deficient. Globally, *Dasyatis marmorata* has most recently been assessed for the IUCN Red List in 2020 and listed as Near Threatened under criteria A2d, due to the level of intense and large unmanaged fisheries that operate throughout its range and the coastal anthropogenic factors impacting the habitat of the species.

*Dasyatis marmorata* would benefit from an Annex III listing, for the species-specific activities foreseen for Annex III species in the GFCM Recommendation GFCM/44/2021/16. An Appendix III listing, if properly implemented, will result in a specie specific data collection with the objective to produce more and higher quality by-catch data, allowing the proper conservation of these populations and the strengthen of the collaboration for its monitoring. To harmonise the Annexes, equal decisions should be accorded to the similar species *Bathytoshia lata* and *Dasyatis pastinaca*.

### **Biological data**

#### **Brief description of the species:**

In Mediterranean, the taxonomic status of the marbled stingray *Dasyatis marmorata* had long been uncertain, due to its similarity with the congener *D. chrysonota*. In 2000, a genetic study critically revised the specimens from the Mediterranean Sea and Eastern Atlantic, confirming *Dasyatis marmorata* as a tropical Atlantic species that has rapidly spread throughout the Mediterranean Sea, and *Dasyatis chrysonota* distributed in the South-eastern Atlantic Ocean and the South-western Indian Ocean (Quignard and Tomasini 2000; Last *et al.* 2016).

#### **Identification**

Disc rhombic, about 1.2 times as wide as long; anterior margins dully concave; not projecting snout tip. Tail slender with 1 serrated and poisonous sting on its base. Low longitudinal fold and short on ventral side of tail. Dorsal side of the disc smooth, sometimes a few enlarged denticles in mid-dorsal line. Mouth almost straight, small, and blunt oral teeth arranged in pavement; a transverse row of 3 to 5 fleshy papillae on floor of mouth. dorsal side of the disc with a typical pattern of blue mottling on a golden-brown background; ventral side white.

#### **Biology**

Maximum lengths, 74.5 cm TL and 40 cm DW (tail about 70-75 cm long if undamaged) (Özgür Özbek *et al.* 2015).

Males mature from 33 to 35 cm disc width (DW) (estimated total length (TL) at 50% maturity 32.9 cm); females mature from 40 to 41 cm (estimated TL at 50% maturity 40.2 cm) (Capapé 1990; Capapé *et al.* 1996; Serena 2005). The reproduction strategy is aplacental viviparity, fecundity of 2–4 pups (up to 6) (Valadou *et al.* 2006), gestation length of 2–4 months and size at birth of about 16 cm DW.

#### **Distribution (current and historical):**

The first finding of *Dasyatis marmorata* was recorded in the southern part of Tunisia by Maurin and Bonnet (1970) and later confirmed in Tunisia by Capapé and Zaouali (1992, 1995) in the Gulf of Gabes and El Biban lagoon, and by El Kamel (2009) in the Lagoon of Bizerte (reported as *D. chrysonota*). Bilecenoğlu (2014), Ergüden *et al.* (2014), Yemişken *et al.* (2014) and Özgür Özbek *et al.* (2015) reported records of the species caught off the Mediterranean coast of Türkiye, from Adana, Mersin, İskenderun and Antalya, at depths ranging from 17 to 100 m. Other records come

from off the Israel (Golani and Capapé 2004), Lebanon (Lteif M. pers. comm.) and Greece (Chatzisyrou *et al.* 2020). Chaikin *et al.* (2020) report *Dasyatis chrysonota* in Israel, but as stated above, this species is currently not valid in Mediterranean, therefore these observations might correspond to *Dasyatis marmorata*.

#### Depth limits:

Demersal species occur in a range of 12–65 m up to about 100 m depth of the continental shelf (Capapé and Desoutter 1990; Serena 2005; Özgür Özbek *et al.* 2016).

#### Countries of occurrence (Mediterranean):

Limited to Tunisia and the Levantine region, recorded in Israel, Lebanon, Cyprus, Türkiye, and Greece.

#### Population estimates and trends:

There is no information on the size of the population of this species within the Mediterranean. Data from a bottom trawl survey conducted seasonally between August 2009 and April 2010 in the Gulf of Antalya reports *Dasyatis marmorata* rarely caught respect to *D. pastinaca* with mean abundance of  $2.54 \pm 0.75$  (ind./km<sup>2</sup>), biomass of  $2.56 \pm 0.92$  (kg/km<sup>2</sup>) and frequency of occurrence of about 11% in the 116 hauls carried out. *D. marmorata* was found in all seasons, the highest abundance and biomass in spring and the highest frequency of occurrence in spring and autumn (Özgür Özbek *et al.* 2016).

#### Habitat (s):

The marble stingray is found in coastal waters over soft and muddy bottoms of the continental shelf down to about 100 m depth, often in bays and off sandy beaches (Serena 2005).

### threats

#### Existing and potential threats:

The main threats to the species are fisheries and habitat degradation. The species preference for shallow waters makes it more vulnerable to artisanal inshore fisheries operating with multiple fishing gears including gillnet, set nets, tangle nets, and trammel nets, than to offshore trawling.

#### Exploitation:

This species is accidentally and rarely caught, its commercial value and consumption are not known. Similarly, to the other stingrays (e.g. *D. pastinaca*) few species-specific landing data are available and this species is suspected to be frequently discarded. It can be easily misidentified with other stingrays, and therefore eventually landed with a generic name of “ray”.

#### proposed protection or regulation measures:

In Israel, in 2005, sharks and rays were introduced into the list of species protected by law and fishing of them is prohibited. Since 2018, enforcement seems somehow improved for sharks but is still inadequate for ray fishing. Cartilaginous fishes may not be consumed under Jewish kashrut law, although there is a market for fish of these species among non-Jewish populations (Ariel and Barash 2015).

No other species-specific conservation or management measures are in place in the Mediterranean Sea. Some countries across its range have legislation concerning fisheries activities (e.g., gear restrictions and no-trawling zones) that could reduce the risk of this species to further decline, however, the fisheries taking *Dasyatis marmorata* are generally unmanaged throughout large parts of the species' range, and it is improbable that fisheries pressure and the anthropogenic factors impacting the habitat of the species will decrease in the near future.




Assessed as Data Deficient in Mediterranean (Bradai *et al.* 2016) and Near Threatened in 2020 globally (Jabado *et al.* 2020), *Dasyatis marmorata* would benefit from an Annex III listing, for the species-specific activities foreseen for Annex III species in the GFCM Recommendation GFCM/44/2021/16. An Appendix III listing, if properly implemented, will result in a species-specific data collection with the objective to produce more and higher quality by-catch data, allowing the proper conservation of these populations and the strengthening of the collaboration for its monitoring. To harmonise the Annexes, equal decisions should be accorded to the similar species *Bathytoshia lata* and *Dasyatis pastinaca*.

### Bibliographical references

- Ariel, A. and Barash, A. (2015). *Action Plan for Protection of Sharks and Rays in the Israeli Mediterranean*. EcoOcean Association. Israel: <https://www.ecoocean.org/wp-content/uploads/2020/12/Sharks-and-rays-conservation-plan-for-Israel-Ecoocean.pdf>
- Bilecenoğlu, M. (2014) Substantiated record of *Dasyatis marmorata* (Steindachner, 1892) from the northeastern Levant. In: Collective Article A, *Mediterranean Marine Science*, 15(1): 205-206 [online] <https://ejournals.epublishing.ekt.gr/index.php/hcmr-med-mar-sc/article/download/12654/12425>
- Bradai, M.N. (2000). *Diversité du peuplement ichtyque et contribution à la connaissance des sparidés du golfe de Gabès*. Theses de Doctorat d'état es-sciences naturelles.
- Bradai, M.N., Notarbartolo di Sciara, G., Serena, F. and Mancusi, C. (2016). *Dasyatis marmorata*. *The IUCN Red List of Threatened Species* 2016: e.T161748A81162822. Accessed on 27 April 2022.
- Capapé, C. (1990). Observations sur la biologie de la reproduction de *Dasyatis marmorata* (Steindachner, 1892) (Pisces. Dasyatidae) de la mer des Bibans (Tunisie Méridionale). Rapports. *Commission Internationale pour L'Exploration Scientifique de la Mer Mediterranee* 32: 1.
- Capapé, C. and Zaouali, J. (1993). Nouvelles données sur la biologie de la reproduction de la pastenague marbrée, *Dasyatis marmorata* (Steindachner, 1892) (Pisces, Rajiformes, Dasyatidae) des côtes méridionales de la Tunisie (Méditerranée centrale). *Ichthyophysiological Acta* 16: 1-34.
- Capapé, C., Diop, M., N'dao, M. and Ben Brahim, R. (1996). Observations biologiques comparées entre quelques espèces de selaciens des côtes Tunisiennes (Mediterranée centrale) et de la région de dakar-ouakam (Senegal, Atlantique oriental tropical). *Ichthyophysiological Acta* 19: 179-199.
- Capapé, C., M. Desoutter M. (1990). Dasyatidae. p. 59-63. In J.C. Quero, J.C. Hureau, C. Karrer, A. Post and L. Saldanha (eds.) *Check-list of the fishes of the eastern tropical Atlantic (CLOFETA)*. JNICT, Lisbon; SEI, Paris; and UNESCO, Paris. Vol. 1.
- Capapé, C., N'dao, M. and Diop, M. (1995). Observation sur la biologie de quatorze espèces de Sélaciens batoïdes capturés dans la région marine de Dakar-Ouakam (Sénégal, Atlantique oriental tropical). *Bull. Inst. fond. Afr. noire Cheikh Anta Diop, Dakar, sér. A* 48: 89-102.
- Chatzisprou, A., Gubili, C., Laiaki, M., Mantopoulou-Palouka, D., Kavadas, S. (2020). First record of the marbled ray, *Dasyatis marmorata* (Elasmobranchii: Dasyatidae), from Greece (central Aegean Sea). *Biodiversity Data Journal* 8: e51100.
- El Kamel, O., Mnasri, N., Ben Souissi, J., Boumaïza, M., Ben Amor, M.M. and Capapé, C. (2009). Inventory of elasmobranch species caught in the Lagoon of Bizerte (North-eastern Tunisia, central Mediterranean). *Pan-American Journal of Aquatic Sciences* 4(4): 383–412.
- Erguden D, Turan C, Gurlek M, Uyan A, Reyhaniye AN. (2014). First record of marbled stingray, *Dasyatis marmorata* (Elasmobranchii: Myliobatiformes: Dasyatidae), on the coast of Türkiye, north-eastern Mediterranean. *Acta Ichthyologica et Piscatoria* 44(2):159–161. DOI:10.3750/AIP2014.44.2.11.
- Golani, D. and Capapé, C. (2004). First records of the blue stingray, *Dasyatis chrysonota* (Smith, 1828) (Chondrichthyes: Dasyatidae), off the coasts of Israel (Eastern Mediterranean). *Acta Adriatica* 45(1): 107-113.

- Jabado, R.W., Chartrain, E., De Bruyne, G., Derrick, D., Dia, M., Diop, M., Doherty, P., El Vally, Y., Leurs, G.H.L., Meissa, B., Metcalfe, K., Seidu, I., Tamo, A., VanderWright, W.J. & Williams, A.B. (2021). *Dasyatis marmorata*. *The IUCN Red List of Threatened Species 2021*: e.T161748A124537991. <https://dx.doi.org/10.2305/IUCN.UK.2021-2.RLTS.T161748A124537991.en>. Accessed on 27 April 2022.
- Last, P.R., Naylor, G.J.P. and Manjaji-Matsumoto, B.M. (2016). A revised classification of the family Dasyatidae (Chondrichthyes: Myliobatiformes) based on new morphological and molecular insights. *Zootaxa* 4139(3): 345-368. doi.org/10.11646/zootaxa.4139.3.2.
- Maurin, C. and Bonnet M. (1970). Poissons des côtes nord-ouest africaines (campagnes de la Thalassa), (1962 et 1968). *Revue des Travaux de l'Institut scientifique et technique des Pêches maritimes* 34:125–170.
- Özgür Özbek, E., Cardak, M. and Kebapcioglu, T. (2015). Spatio-temporal patterns of abundance, biomass and length-weight relationships of *Dasyatis* species (Pisces: Dasyatidae) in the Gulf of Antalya, Türkiye (Levantine Sea). *Journal of the Black Sea and Mediterranean Environment* 21(2): 169–190.
- Quignard JP, Tomasini JA. (2000). Mediterranean fish biodiversity. *Biologia Marina Mediterranea* 7(3):1–66.
- Serena, F. (2005). *Identification guide to the sharks and rays of the Mediterranean and Black Sea*. Rome, FAO. [www.fao.org/3/a-y5945e.pdf](http://www.fao.org/3/a-y5945e.pdf)
- Valadou, B., Brethes, J.C. and Inejih, C.A.O. (2006). Observations biologiques sur cinq espèces d'Élasmobranches du Parc National du Banc d'Arguin (Mauritanie). *Cybium*, 30(4), 313-322.
- Yeldan, H. and Gundoglu, S. (2018). Morphometric relationships and growth of common stingray, *Dasyatis pastinaca* (Linnaeus, 1758) and marbled stingray, *Dasyatis marmorata* (Steindachner, 1892) in the northeastern Levantine Basin. *Journal of the Black Sea and Mediterranean Environment* 24(1): 10–27.
- Yemişken, E., Dalyan, C. and Eryılmaz, L. (2014) Catch and discard fish species of trawl fisheries in the Iskenderun Bay (Northeastern Mediterranean) with emphasis on lessepsian and chondrichthyan species. *Mediterranean Marine Science* 15(2): 380-389.

<b>Form for proposing amendments to Annex II and Annex III of the Protocol concerning specially Protected Areas and Biological Diversity in the Mediterranean</b>	
<b>Proposed by :</b> <b>The Republic of France</b>	<b>Species concerned:</b> <i>Dasyatis Pastinaca</i> (Linnaeus, 1758)  <b>Amendment proposed:</b> <input checked="" type="checkbox"/> Inclusion in Annex II <input type="checkbox"/> Inclusion in Annex III <input type="checkbox"/> Removal from Annex II <input type="checkbox"/> Removal from Annex III
<b>Taxonomy</b> <b>Class:</b> Chondrichthyes <b>Order:</b> Myliobatiformes <b>Family:</b> Dasyatidae <b>Genus and Species:</b> <i>Dasyatis pastinaca</i> <b>Known Synonym(s):</b> <i>Pastinaca laevis</i> Gronow in Gray, 1854; <i>Pastinaca olivacea</i> Swainson, 1839; <i>Raja pastinaca</i> Linnaeus, 1758 <b>Common name:</b> English - Common stingray French - Pastenague commune ou raie pastenague Spanish - Raja látigo común Italian – Trigone/Pastinaca Arabic - راية لاسعة شائعة	<b>Inclusion in other Conventions:</b>
	

**Justification for the proposal:**

The common stingray, *Dasyatis pastinaca*, qualifies for listing in Annex II in accordance with the “Common Criteria for proposing amendments to Annexes II and III of the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean” (Decision IG 17/14, UNEP(DEPI)/MED IG.17/10 Annex V).

The common stingray is a demersal brackish to marine water species, found over sandy and muddy bottoms from shallow waters to a depth of approximately 200 m, more commonly found in shallow waters (<50 m) and occurring in the eastern Atlantic and Mediterranean Sea, from the shore to about 200 m depth. Due to its depth preferences, this species is more vulnerable to small-scale inshore fisheries than to offshore trawling. The reproductive biology of relatively better know relatively with respect to other stingrays, in particular there are evidence of aggregation events in

several regions of Mediterranean Sea, highlighting the risk of exposure of many individuals being caught in few hauls of trawls and gillnets during the reproductive season.

This species appears to be less common than it once was in the northwestern Mediterranean, even if some analyses of comparison of scientific surveys show contrasting trends in the Adriatic Sea. So far, the potential protection foreseen by the marine reserves of the Balearic Islands has not evidenced a positive effect on the shark and ray populations. In the Levant region, the species is regulated in Israel waters, but the implementation of the ban of fisheries for batoids seem not implemented appropriately.

At regional level, the common stingray has most recently been assessed for the IUCN Red List in Mediterranean in 2016. Considering the scale and intensity of unmanaged fisheries that operate throughout its range, its preference for shallow waters, its susceptibility to fisheries pressure, and noted declines in rays in general across its range, it has been listed as Vulnerable under criteria A2d.

Similarly, at global scale *Dasyatis pastinaca* has most recently been assessed for the IUCN Red List in 2020 and has been listed as Vulnerable under criteria A2bd.

If the listing in Annex II of the SPA/BD Protocol was implemented effectively, its immediate transposition in the GFCM Recommendation GFCM/42/2018/2 could act as immediate and unprecedented prohibition measure for stingrays in Mediterranean. Although this species deserves the Annex II protection, it would benefit from an Annex III listing, for the species-specific activities foreseen for Annex III species in the GFCM Recommendation GFCM/44/2021/16. On the contrary in Annex II there is the risk that if becoming prohibited, this species might be easily illegally landed and traded with the generic name "skates or rays". To harmonise the Annexes, equal decisions should be accorded to the similar species *Bathytoshia lata* and *Dasyatis marmorata*.

## Biological data

### Brief description of the species:

#### Identification

The common stingray *Dasyatis pastinaca* has a disc rhombic with the anterior margins relatively straight, snout tip not projecting; tail slim, whip-like, its length (if not damaged) about 1.5 times as long as disc, with a serrated sting on its base. Mouth nearly straight; 22 to 46 rows small, blunt teeth, settled in pavement, 5 bulbous papillae on floor of mouth. Dorsal side mostly smooth, a mid-dorsal row of a few thornlets from nape to root of tail, reducing in number with growth. Dorsal side uniformly greyish to greenish brown and ventral side white with dark margins.

#### Biology

Maximum disc width (DW) range between 69.5–140 cm, common at 60 cm DW and maximum reported total length of about 250 cm (if tail undamaged) (Bauchot 1987, Fisher *et al.* 1987, Notarbartolo and Bianchi 1998).

Reproduction strategy is a placental viviparity, the size at maturity estimated by Capapé *et al.* (2003) is 38 cm DW in females and 32 cm DW in males; by Ismen (2003) 28 cm DW/60 cm TL in females, and 26 cm DW/ 50 cm TL in males; and recently by Yigin *et al.* (2021) estimating the TL 50% combined for females and males attained at 62.5 cm TL. Females reproduce twice a year (Notarbartolo and Bianchi 1998) with gestation length of 4 months, litter sizes of 3–9 pups and size-at-birth of ~ 8–12 cm DW and 20 cm TL (Ismen 2003, Ebert and Stehmann 2013, Last *et al.* 2016). The age-at-maturity is estimated of 7 years, and a maximum age of 16 years (Yigin and Ismen 2012).

In the northern Adriatic, reproduction takes place between September and May, during which pregnant females approach the coast, and pupping occurred between July and August (Vatova

1928; Bini 1967). Data from scientific trawl surveys conducted off the Balearic Islands reports relative higher catch rates in shallow waters from late spring to early summer, with two main events in late June, suggesting that these high abundances and balanced sex ratios could be related with reproductive movement patterns (Morey *et al.* 2006). In the eastern Mediterranean, in agreement with Bini (1967) parturition has reported to occur in early July, when young specimens are commonly found in shallow waters over sandy bottoms (Ismen 2003). Survey conducted using breath-hold diving along fixed transects, in very shallow waters of about 7 m depth, on sandy and rocky bottoms, showed a strong seasonality pattern of aggregations, with differences in sex ratio, active mate seeking and courtship behaviour, during March to June 2017–2018 along Israeli coast, Eastern Levantine basin (Chaikin *et al.*, 2020).

Yigin and Ismen (2012) estimated von Bertalanffy growth parameters of the common stingray from the North Aegean Sea suggesting that males attain a slightly larger asymptotic total length (Linf 188.49 cm) than females (Linf 119.96 cm) and grow more slowly ( $K=0.065$  year<sup>-1</sup> and  $0.086$  year<sup>-1</sup>, respectively). Girgin and Başusta (2016) estimated slightly different growth parameters from Iskenderun Bay, Türkiye: disc width-weight relationships,  $W=0.0272 \cdot DW^{3.06}$  for females and  $W=0.0247 \cdot DW^{3.08}$  for males, and von-Bertalanffy growth parameters, indicating larger asymptotic disc width ( $DW_{\infty}=127.06$ cm) for females than for males ( $DW_{\infty}=114.54$ cm) and growth parameters:  $k=0.058$  year<sup>-1</sup>,  $t_0=-1.508$  and  $k=0.041$  year<sup>-1</sup>,  $t_0=-3.632$  for females and males, respectively.

Common stingray feed mainly on demersal and benthic animals, such as crustaceans, cephalopods, clams, polychaetes and fish (Notarbartolo and Bianchi 1998, Whitehead *et al.* 1984). In a study by Ismen (2003), crustaceans represented more than 99% of the diet when pooling all size classes, but teleost fish were of increasing importance in the diet of larger stingrays.

#### Distribution (current and historical):

This species occurs in the Eastern Atlantic, from southern Norway and the UK to South Africa, including the Canary Islands, Madeira, and throughout the Mediterranean and Black seas (Bilecenoglu *et al.* 2002, Serena 2005; Ebert and Dando 2021). Common stingray also occurs in western Baltic Sea, and Celtic Sea regarded as a vagrant from more southern waters of these seas (ICES, 2005).

In Mediterranean, data from scientific surveys shows that *Dasyatis pastinaca* has a higher presence in the western-central Mediterranean area off the coasts of Morocco, Spain, France, Italy, mostly around Corsica Islands, Sardinia and Sicily (Baino *et al.* 2001) and Balearic Islands (Morey *et al.* 2006). More recently data from the levant region confirmed the regular occurrence of the species in Türkiye and Israel (Ismen 2003; Chaikin *et al.* 2020).

#### Depth limits:

The common stingray is frequent from shallow waters (5 m) to a depth of approximately 200 m, more common between 20–35 m (Whitehead *et al.* 1984). Bottom trawl surveys conducted in Mediterranean, suggest that it is more common in waters <50 m depth (Relini *et al.* 2000; Massuti and Moranta 2003; Morey *et al.* 2006) with depth distribution of the biomass index of 1–10 kg/km<sup>2</sup> between 0–100 m, and 0.1–1 kg/km<sup>2</sup> between 100–200 m (Baino *et al.* 2001).

#### Countries of occurrence (Mediterranean):

Albania; Algeria; Bosnia and Herzegovina; Croatia; Egypt; France (mainland and Corsica); Gibraltar; Greece; Israel; Italy; Lebanon; Libya; Montenegro; Morocco; [Palestine](#); Slovenia; Spain (Balears, mainland and North African Territories); Syrian Arab Republic; Tunisia; Türkiye.

#### Population estimates and trends:

There is no information on the size of the population of this species within the Mediterranean, but scattered data are available for short periods in different locations. The Mediterranean International Trawl Surveys (MEDITS) from 1994–1999 revealed a low frequency of occurrence for *Dasyatis pastinaca* (Baino *et al.* 2001) as it appeared in 49 hauls, representing the 0.5% of the total number of hauls. A similar estimate of presence has been estimated by Follesa *et al.* (2019). Low value of presence might be due to the survey methodology, covering depths from 50–800 m, while this species is more common in shallower waters less than 50 m depth.

In the Adriatic Sea, comparison of surveys conducted in 1948 (Hvar) and 1998 (MEDITS), both up to 400 m depth, suggest that the abundance of common stingray may have decreased during this period. The frequency of occurrence of common stingray on the shelf according to the 1948 survey was ~0.5, whereas the frequency of occurrence on the shelf in the 1998 survey was <0.1 (Jukic-Peladic *et al.* 2001). On the contrary, Ferretti *et al.* (2013) report 1.13-fold increase of common stingray in Adriatic Sea.

In the Balearic Islands, surveys conducted in three marine reserves during 2000–2004 with trammel nets, in very shallow waters over mixed bottoms of seagrass meadows, sand and rock, show *Dasyatis pastinaca* as the most important species, representing about the 50% in biomass of the elasmobranch species caught, and the 20% in biomass of the total fish caught during the study, with CPUE values ranging between  $3.1 \pm 1.5$  for the total surveys conducted in spring.

Data from a bottom trawl survey conducted seasonally between August 2009 and April 2010 in the Gulf of Antalya reports *Dasyatis pastinaca* relatively common respect to the other stingrays investigated, with mean abundance of  $55.32 \pm 8.52$  (ind./km<sup>2</sup>), biomass of  $137.77 \pm 24.29$  (kg/km<sup>2</sup>) and frequency of occurrence of about 56% in the 116 hauls carried out. The mean abundance and biomass were relatively higher in summer followed by spring, autumn and winter. The frequency of occurrence was higher in spring following by summer, autumn, and winter Özgür Özbek *et al.* (2015).

#### Habitat (s):

*Dasyatis pastinaca* is a demersal brackish to marine water species, found over sandy and muddy bottoms from shallow waters to a depth of approximately 200 m, although it seems to be most abundant in inshore waters; it can sometimes inhabit areas close to estuaries and over rocky reefs (Whitehead *et al.* 1984).

#### threats

##### Existing and potential threats:

The main threats to the species are represented by fisheries and habitat degradation. This species is bycatch of small-scale and semi-industrial fisheries, operating with bottom trawl, gillnet, beach seine, bottom longline and trammel nets, targeting cuttlefish, mullets, bass and flatfishes. Professional fishers use to cut off the tails of stingrays after the hauling, also prior of discarding, and it is unclear to which extent this affects the discard survival (Serena 2021).

The species preference for shallow waters (<50 m) makes it more vulnerable to small-scale inshore fisheries than to offshore trawling. Small scale fisheries operating in shallow waters is an important component of the European fishing fleet, fishing relatively high quantities of common stingray (Stergiou *et al.* 2006; Serena 2021), that is estimated to amount to more than 40% of the elasmobranch biomass captured in the trammel net fishery off the Balearic Islands (Morey *et al.* 2006). Moreover, the evidence of breeding aggregations exposes the species to the risk of many individuals being caught in one single haul of trawls and gillnets during the reproductive season.

**Exploitation:**

The common stingray has a very low commercial value in European countries. Few species-specific landing data are available as this species is frequently discarded, can be easily misidentified with other stingrays, and therefore eventually landed with a generic name of "ray".

**Proposed protection or regulation measures:**

The common stingray is protected within the Balearic Island marine reserves. Although artisanal fishing is allowed within these marine protected areas (MPAs), if caught, this species must be released alive.

In Israel, in 2005, sharks and rays were introduced into the list of species protected by law and fishing of them is prohibited. Since 2018, enforcement seems somehow improved for sharks but is still inadequate for ray fishing. Cartilaginous fishes may not be consumed under Jewish kashrut law, although there is a market for fish of these species among non-Jewish populations (Ariel and Barash 2015).

In 2016, Croatia listed the common stingray under the "Regulation on strictly protected species" officially declaring the strictly protected species on the territory of the Republic of Croatia. No other species-specific conservation or management measures are in place in the Mediterranean Sea. Some countries across its range have legislation concerning fisheries activities (e.g., gear restrictions and no-trawling zones) that could reduce the risk of this species to further decline, however, the fisheries taking *Dasyatis pastinaca* are generally unmanaged throughout large parts of the species' range, and it is improbable that fisheries pressure and the anthropogenic factors impacting the habitat of the species will decrease in the near future.

Even in MPAs well established, as it is the case in Balearic Islands, there are still some uncertainties on their role of protecting the common stingrays and in general sharks and rays populations (Morey *et al.* 2006). This is likely due to the small-scale fisheries allowed to operate in the area, but it is worth noting that the study reporting these findings was conducted for a period considered not sufficient to detect significant changes in relative abundances.

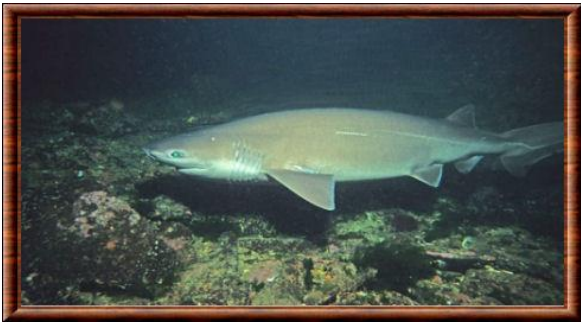
If the listing in Annex II of the SPA/BD Protocol was implemented effectively, its immediate transposition in the GFCM Recommendation GFCM/42/2018/2 could act as immediate and unprecedented prohibition measure for stingrays in Mediterranean. Although this species deserves the Annex II protection, it would benefit from an Annex III listing, for the species-specific activities foreseen for Annex III species in the GFCM Recommendation GFCM/44/2021/16. On the contrary in Annex II there is the risk that if becoming prohibited, this species might be easily illegally landed and traded with the generic name "skates or rays". To harmonise the Annexes, equal decisions should be accorded to the similar species *Bathytoshia lata* and *Dasyatis marmorata*.

**bibliographical references**

- Ariel, A. and Barash, A. (2015). *Action Plan for Protection of Sharks and Rays in the Israeli Mediterranean*. EcoOcean Association. Israel: <https://www.ecoocean.org/wp-content/uploads/2020/12/Sharks-and-rays-conservation-plan-for-Israel-Ecoocean.pdf>
- Baino, R., Serena, F., Ragonese, S., Rey, J. and Rinelli, P. (2001). Catch composition and abundance of Elasmobranchs based on the MEDITS program. *Rapp. Comm. int. Mer Médit* 36: 234.
- Bilecenoglu, M., Taskavak, E., Mater S. and Kaya, M. (2002). Checklist of the marine fishes of Türkiye. *Zootaxa* 113: 1-194.
- Bini G. (1967). *Atlante dei pesci delle coste italiane: Leptocardi, Ciclostomi, Selaci*. Mondo Sommerso, Milan.
- Ferretti, F., Osio, G. C., Jenkins, C. J., Rosenberg, A. A., & Lotze, H. K. (2013). Long-term change in a meso-predator community in response to prolonged and heterogeneous human impact. *Scientific reports*, 3.
- Follesa M.C., Marongiu M.F., Zupa W., Bellodi A., Cau A., Cannas R., Colloca F., Djurovic M., Isajlovic I., Jadaud A., Manfredi C., Mulas A., Peristeraki P., Porcu C., Ramirez-Amaro S.,

- Salmerón Jiménez F., Serena F., Sion L., Thasitis I., Cau A. and Carbonara P. (2019). Spatial variability of Chondrichthyes in the northern Mediterranean. *Sci. Mar.* 83S1, doi.org/10.3989/scimar.04998.23A
- Girgin, H. and Baştusta, N. (2016). Testing staining techniques to determine age and growth of *Dasyatis pastinaca* (Linnaeus, 1758) captured in Iskenderun Bay, northeastern Mediterranean. *J Appl Ichthyol* 32:595–601. doi. org/ 10. 1111/ jai. 13077
- ICES (2005). North Sea Elasmobranchs: distribution, abundance and biodiversity. Theme Session on Elasmobranch Fisheries Science. ICES CM 2005/N:06.
- ICES (2005). Report of the Working Group on Elasmobranch Fishes (WGEF). ICES Advisory Committee on fishery Management, 14-21st June 2005, Lisbon, Portugal.
- Ismen, A. (2003). Age, growth, reproduction and food of common stingray (*Dasyatis pastinaca* L., 1758) in İskenderun Bay, the eastern Mediterranean. *Fisheries Research*, 60(1), 169-176.
- Jabado, R.W., Chartrain, E., De Bruyne, G., Derrick, D., Dia, M., Diop, M., Doherty, P., Leurs, G.H.L., Metcalfe, K., Pacoureaux, N., Pires, J.D., Ratão, S., Seidu, I., Serena, F., Soares, A.-L., Tamo, A., VanderWright, W.J. and Williams, A.B. 2021. *Dasyatis pastinaca*. The IUCN Red List of Threatened Species 2021: e.T161453A124488102. <https://dx.doi.org/10.2305/IUCN.UK.2021-2.RLTS.T161453A124488102.en>. Accessed on 26 April 2022.
- Massuti, E. and Moranta, J. (2003). Demersal assemblages and depth distribution of elasmobranchs from the continental shelf and slope off the Balearic Islands (western Mediterranean). *ICES Journal of Marine Science* 60: 753-766.
- Ministar Zaštite Okoliša i Prirode (2016). *Pravilnik o strogo zaštićenim vrstama. Regulation on strictly protected species.* (Narodne novine«, broj 80/2013). [Retrieved from FAOLEX database on 26 April 2022]. <https://www.fao.org/faolex/results/details/en/c/LEX-FAOC143051/>
- Morey, G, Moranta, J, Riera, F., Grau, A.M. and Morales-Nin, B. (2006). Elasmobranchs in trammel net fishery associated to marine reserves in the Balearic Islands (NW Mediterranean). *Cybium* 30: 125-32.
- Notarbartolo di Sciara, G. and Bianchi, I. (1998). *Guida degli squali e delle razze del Mediterraneo.* Muzzio, Padova.
- Özgür Özbek, E., Cardak, M. and Kebapcioglu, T. (2015). Spatio-temporal patterns of abundance, biomass and length-weight relationships of *Dasyatis* species (Pisces: Dasyatidae) in the Gulf of Antalya, Türkiye (Levantine Sea). *Journal of the Black Sea and Mediterranean Environment* 21(2): 169–190.
- Relini G., Biagi F., Serena F., Belluscio A., Spedicato M.T., Rinelli P., Follesa M.C., Piccinetti C., Ungaro N., Sion L. and Levi D. (2000). I selaci pescati con lo strascico nei mari italiani. *Biologia Marina Mediterranea* 7(1): 347-384.
- Serena F. (2005). *Field identification guide to the sharks and rays of the Mediterranean and Black Sea.* FAO, Rome.
- Serena F. (2021). Elasmobranchs, 111-197. In: Carpentieri, P., Nastasi, A., Sessa, M. & Srour, A., eds. 2021. *Incidental catch of vulnerable species in Mediterranean and Black Sea fisheries – A review.* General Fisheries Commission for the Mediterranean. Studies and Reviews. No. 101. Rome, FAO, 320 pp. doi.org/10.4060/cb5405en
- Serena, F., Mancusi, C., Morey, G and Ellis, J.R. (2016). *Dasyatis pastinaca* (errata version published in 2016). *The IUCN Red List of Threatened Species* 2016: e.T161453A97841681. Accessed on 26 April 2022.
- Vatova A. (1928) Compendio della fauna e flora del mare Adriatico presso Rovigno. *Com. Tal. Ital. Mem.* CXLIII.
- Yeldan, H. and Gundoglu, S. (2018). Morphometric relationships and growth of common stingray, *Dasyatis pastinaca* (Linnaeus, 1758) and marbled stingray, *Dasyatis marmorata* (Steindachner, 1892) in the northeastern Levantine Basin. *Journal of the Black Sea and Mediterranean Environment* 24(1): 10–27.
- Yığın, C.C., İşmen, A. (2012) Age, growth and reproduction of the common stingray, *Dasyatis pastinaca* from the North Aegean Sea. *Marine Biology Research* 8(7): 644-653.



<b>Form for proposing amendments to Annex II and Annex III to the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean</b>	
<b>Proposed by</b> <b>The Republic of France</b>	<b>Species concerned:</b> <i>Hexanchus griseus</i> (Bonnaterre,1788)
	<b>Amendment proposed:</b> <input type="checkbox"/> Inclusion in Annex II <input checked="" type="checkbox"/> Inclusion in Annex III <input type="checkbox"/> Removal from Annex II <input type="checkbox"/> Removal from Annex III
<b>Taxonomy</b> <b>Class:</b> Chondrichthyes <b>Order:</b> Exanchiformes <b>Family:</b> Exanchidae <b>Genus and Species:</b> <i>Hexanchus griseus</i> <b>Known Synonym(s):</b> <i>Squalus griseus</i> , Bonnaterre (ex Broussonet) 1788; <i>Squalus vacca</i> , Bloch & Schneider 1801; <i>Notidanus monge</i> , Risso 1827 <b>Common names:</b> English - Bluntnose sixgill shark French - Requin gris Spanish - Cañabota gris Italian – Pesce vacca Arabic - ستة أبو كلب	<b>Inclusion in other Conventions:</b>
	

**Justification for the proposal:**

The bluntnose sixgill shark (*Hexanchus griseus*) qualifies for listing in Annex III in accordance with the “Common Criteria for proposing amendments to Annexes II and III of the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean” (Decision IG 17/14, UNEP(DEPI)/MED IG.17/10 Annex V).

*Hexanchus griseus* is a deep-benthic, littoral and semi pelagic shark, with a wide range of distribution, even if discontinuous, in boreal, temperate and tropical seas. In Mediterranean it is infrequently reported across much of its range, and relatively more abundant at depth between 200 and 800 m. Life-history parameters are the main vulnerability factors for this species, making it unable to sustain both professional and recreational fisheries for long periods, as demonstrated in other regions where populations have been depleted.

The IUCN Red List global assessment conducted in 2019 reports the bluntnose sixgill shark as Near Threatened (close to meeting Vulnerable A2bd) (Finucci *et al.* 2020), based on population reduction and current levels of exploitation. The Mediterranean assessment conducted in 2016 reports this species as Least Concern (Soldo and Bariche 2016), for the probable negligible level of interaction with fishing activity, due to the wide depth range that exceeds the reach of fisheries and low occurrence in reports of catch and landings. It is therefore likely to have some refuge at depth in parts of its range and this factor might diminish the concern for the status of conservation of this species.

However, the evidence of schooling related to reproduction or predatory behaviour, coupled with the presence of juveniles mostly distributed at lower depth and the daily patterns of vertical migrations, might augment the risk of bycatch on particular fraction of the population and consequently the risk of becoming a near threatened species in the future.

The inclusion of *H. griseus* in Appendix III, will be a first step toward the respect of the principle of the UNLOS, asking “to cooperate directly or through the appropriate existing international organizations for the conservation of straddling fish stocks and highly migratory species”...”to ensure the long term-sustainability of these stocks, including measures for their conservation and management”. In this direction, an Appendix III listing, if properly implemented, will result in a species-specific data collection with the objective to produce more and higher quality by-catch data, allowing the proper conservation of these populations and the strengthen of the collaboration for its monitoring.

In addition, the sharpnose sevengill shark (*Heptranchias perlo*), a similar species of the Order Hexanchiformes, assessed in 2016 as Data Deficient in Mediterranean, is already listed in Appendix III; therefore including *H. griseus* would also guarantee the proper implementation and harmonization of the Appendices.

## **biological data**

### **Brief description of the species:**

#### **Identification**

Six peculiar gill-slits. Moderately slender (juvenile) to stout (adult), head broad, snout relatively short and blunt. Upper jaw with 4 rows of front teeth, in line with lateral teeth, lower jaw with 6 rows of lateral teeth. Spineless dorsal fin rather far back, mostly above anal fin base; pectoral fins with almost straight posterior margin; lower caudal lobe moderately developed. Dorsal side dark brown to greyish, belly lighter. Up to about 5 m in total length.

#### **Biology and life history**

The reproduction strategy is aplacental viviparity, this species bears very large litters numbering from 22–108 young, with size at birth ranging between 65-74 cm TL. Males mature at about 315 cm and females at about 420 cm. Female age-at-maturity is estimated at 26.5 years and maximum age at 80 years (COSEWIC 2007), but this estimate has not been validated. The reproductive cycle is possibly biannual with a 12-month resting period followed by 12 month gestation period (Ebert and Stehmann 2013). There is evidence of multiple paternities in this species with as many as nine males siring a single female’s litter (Larson *et al.* 2011).

Pupping grounds apparently occur on the upper slopes and outer continental shelves. Since this species preys on conspecifics opportunistically, some mechanism of separation of larger and smaller individuals undoubtedly occurs (Ebert 1994). As for many species of deep-water sharks, it is unknown whether this species segregates by sex. A capable predator, the bluntnose sixgill shark feeds on a wide variety of animals including other sharks (it is known to attack hooked conspecifics, which it sometimes follows to the surface from depth) and a variety of bony fishes, as

well as many types of invertebrates including cephalopods and crustaceans. It also eats carrion and sometimes seals (Ebert 1994).

**Distribution (current and historical):**

*Hexanchus griseus* is widely but discontinuously distributed in temperate and tropical seas of the continental and insular shelves of Pacific, Atlantic (including Mediterranean) and Indian Oceans, apparently avoiding the tropics. It occurs along Atlantic coasts northward to southern Norway and to Iceland (rare) to south to Mauritania; not recorded from Baltic. This species is relatively more common in Mediterranean. The bluntnose six-gill shark was reported in Maltese waters, in the northern Tyrrhenian Sea, in southern Adriatic Sea, northern Ionian Sea, south Sicily waters, along the coasts of Tunisia and in the Turkish waters. It is also regularly captured along the coast of Lebanon (Mancusi *et al.* 2020). In particular, on the Calabrian coast it is commonly found in both Ionian and Tyrrhenian waters (Sperone *et al.* 2012), it appears to be relatively abundant in the Adriatic Sea (Soldo 2006), it is confirmed in the Sea of Marmara (Kabasaskal 2009) and this shark is also distributed and reproduces off the Algerian and Tunisian coasts (Capapé *et al.* 2003). In the Black Sea, only one individual incidentally caught by gillnet is documented by Kabasakal (2006).

**Depth limits:**

The bluntnose sixgill shark occurs from the surface to at least 2,000 m, on continental and insular shelves and upper slopes (including sea mounts). Depth range depends on geographic location. In Mediterranean, data from the MEDITS survey show a depth distribution of the biomass index ranging from about 0.1 kg/km<sup>2</sup> between 50 and 100 m to 0.1–10 kg/km<sup>2</sup> from 200 to 800 m of depth (Baino *et al.* 2001). However, outside the Mediterranean, it has been recorded at much greater depths, even 2,490 m (Ebert *et al.* 2013) and it is frequent in shallow estuarine waters (Andrews *et al.* 2009).

**Countries of occurrence (Mediterranean):**

Albania; Algeria; Bosnia and Herzegovina; Croatia; France; Greece; Italy; Libya; Malta; Monaco; Montenegro; Morocco; Slovenia; Spain; Tunisia.

**Population estimates and trends:**

There is no population or sub-population structure available for this species in the Mediterranean.

**Habitat (s):**

It is a deep-benthic, littoral and semi pelagic shark, not known to be epipelagic. Young tend to be found in shallow waters often just off the shore, but as they grow, they move into successively deeper waters. In estuarine waters, they are found in shallow waters. In the Sea of Marmara, Türkiye, adult individuals have been mostly captured over the deeper parts of shelf and upper slope in the north, whereas young individuals have been captured in shallower waters (Kabasakal 2003). Adults and sub-adults tend to follow diurnal patterns of vertical range, sitting deep on the bottom by day and coming toward or to the surface at night to feed. Popping grounds apparently occur on the upper slopes and outer continental shelves.

**threats**

**Existing and potential threats:**

Due to its broad depth range and relative sluggishness, this shark has often been captured incidentally in fisheries for other species. It is taken by handline, longline, gillnet, traps, trammel net, and both pelagic and bottom-trawls (Carpentieri *et al.* 2021).

The ban on fishing below 1,000 m depth in the Mediterranean region coupled with the species' wide depth range mean that it might occur largely outside the reach of fisheries. It is therefore

likely to have some refuge at depth in parts of its range and this factor might diminish the concern for the status of conservation of this species. However, the presence of juveniles mostly distributed at lower depth and the diurnal patterns of occurrence might augment the risk of bycatch on particular fractions of population.

In 2019, a shoal of 21 individuals of *H. griseus* was landed at the fishing port of Kelibia, Tunisia, caught by bottom longline targeting groupers. Ben amour *et al.* (2019) discussed this event as the demonstration of that the species does not face to a drastic decline; however, they also noted that the capture of this shoal indicates that *H. griseus* could not be exclusively considered as solitary shark and the species can live in shoal probably during reproductive period or to check for preys, as already observed by Ebert (1986) and Capapé *et al.* (2004). This evidence of schooling behaviour exposes the species to the risk of many individuals being caught in one single haul of longlines. *Hexanchus griseus* is widely believed to be unable to sustain targeted fisheries for long periods as well as to sustain recreational fisheries. This have been demonstrated in Northeast Pacific and Arabian Seas, where populations have been depleted.

#### Exploitation:

Small-scales fisheries seasonally operating and targeting this species in the Mediterranean is documented by Celona *et al.* 2005.

Traditionally, when captured this species is often smoked in the Pacific Northwest and Italy to produce a fine cured product, usually for export to European markets. Additionally, it has been used for salted and dried food products, as well as fish meal and pet foods. Uses of fins may exist but are unreported. In Tunisia, this species is presumably not targeted due to the low economical value of the flesh and the fact it is not greatly appreciated for local consumption.

#### Proposed protection or regulation measures:

This species is defined as migratory species and listed in “Annex I. Highly migratory species of the United Nations Convention on the Law of the Sea (UNCLOS)”, therefore countries should cooperate for the monitoring and assessment of its status.

In European waters, this species is regulated by the Council Regulation (EC) No 1967/2006, setting a limitation of catch for EU vessels, therefore, in Mediterranean, only accidental by-catches of bottom-set nets of no more than 3 specimens may be retained on board or landed.

In Israel, in 2005, sharks and rays were introduced into the list of species protected by law and fishing of them is prohibited-. Since 2018, enforcement seems somehow improved for sharks. Cartilaginous fishes may not be consumed under Jewish kashrut law, although there is a market for fish of these species among non-Jewish populations (Ariel and Barash 2015).

In 2016, Croatia listed the bluntnose sixgill shark under the "Regulation on strictly protected species", officially declaring the strictly protected species on the territory of the Republic of Croatia.


Moreover, in Mediterranean Sea there is a ban on deep water fishing below 1 000 m depth, which may offer this species refuge from fishing activity throughout much of its potential bathymetric range, even if the enforcement of this ban is still unclear. At National level, Croatia claims to strictly protect this and other elasmobranch species, again the enforcement of this measure is unclear.

#### bibliographical references

Ariel, A. and Barash, A. (2015). Action Plan for Protection of Sharks and Rays in the Israeli Mediterranean. EcoOcean Association. Israel: <https://www.ecoocean.org/wp-content/uploads/2020/12/Sharks-and-rays-conservation-plan-for-Israel-Ecoocean.pdf>

- Andrews, K.S., Williams, G.D., Farrer, D., Tolimieri, N., Harvey, C.J., Bargmann, G., Levin, P.S. (2009). Diel activity patterns of six gill sharks, *Hexanchus griseus*: the ups and downs of an apex predator. *Anim. Behav.* 78,525–536.
- Baino, R., Serena, F., Ragonese, S., Rey, J. and Rinelli P. (2001). Catch composition and abundance of Elasmobranchs based on the MEDITS program. *Rapp. Comm. int. Mer Médit* 36: 234.
- Ben Amor, M.M., Ounifi-Ben Amor, K. and Capapé, C. (2019). A shoal of bluntnose sixgill shark *Hexanchus griseus* (Chondrichthyes: Hexanchidae) from the Tunisian coast (Central Mediterranean). *Thalassia Salentina*, 41: 83-88, doi: 10.1285/i15910725v41p83
- Capapé, C., Guelorget, O., Barull, J., Mate, I., Hemida, F., Seridji, R., Bensaci, J. and Bradai, M.N. (2003). Records of the bluntnose six-gill shark, *Hexanchus griseus* (Bonnaterre, 1788) (Chondrichthyes: Hexanchidae) in the Mediterranean Sea: a historical survey. *Annales Series Historia Naturalis* 13(2): 157-166.
- Capapé C., Hemida F., Guélorget O., Barrull J., Mate I., Ben Souissi J. and Bradai M.N. (2004). Reproductive biology of the bluntnose sixgill shark *Hexanchus griseus* (Bonnaterre, 1788) (Chondrichthyes, Hexanchidae) from the Mediterranean Sea: a survey. *Acta Adriatica*, 45 (1): 95-106.
- Carpentieri, P., Nastasi, A., Sessa, M. and Srour, A., eds. (2021). *Incidental catch of vulnerable species in Mediterranean and Black Sea fisheries – A review*. Studies and Reviews No. 101 (General Fisheries Commission for the Mediterranean). Rome, FAO.  
<https://doi.org/10.4060/cb5405en>
- COSEWIC. (2007). Assessment and Status Report on the Bluntnose Sixgill Shark *Hexanchus griseus* in Canada. In: *Committee on the Status of Endangered Wildlife in Canada* (ed.). Ottawa.
- Ebert D.A. (1986) - Biological aspects of the six gill shark, *Hexanchus griseus*. *Copeia* (1986): 131-135.
- Ebert, D.A. (1994). Diet of the sixgill shark *Hexanchus griseus* off southern Africa. *South African Journal of Marine Science* 14: 213-218.
- Ebert, D.A. and Stehmann, M.F.W. (2013). *Sharks, batoids, and chimaeras of the North Atlantic*. FAO Species Catalogue for Fishery Purposes No. 7. Food and Agricultural Organization of the United Nations (FAO). FAO, Rome.
- Finucci, B., Barnett, A., Bineesh, K.K., Cheok, J., Cotton, C.F., Dharmadi, Graham, K.J., Kulka, D.W., Neat, F.C., Pacoureaux, N., Rigby, C.L., Tanaka, S. and Walker, T.I. (2020). *Hexanchus griseus*. *The IUCN Red List of Threatened Species* 2020: e.T10030A495630. <https://dx.doi.org/10.2305/IUCN.UK.2020-3.RLTS.T10030A495630.en>. Accessed on 14 April 2022.
- Kabasakal, H. (2009). On the occurrence of the bluntnose sixgill shark, *Hexanchus griseus* (Chondrichthyes: Hexanchidae), in the Sea of Marmara. *Marine Biodiversity Records*, 2, E110. doi:10.1017/S1755267209001018
- Kabasakal, H. (2006). Distribution and biology of the bluntnose sixgill shark, *Hexanchus griseus* (Bonnaterre, 1788) (Chondrichthyes: Hexanchidae), from Turkish waters. *Annales Series Historia Naturalis* 16. 29-36.
- Kabasakal, H. (2003). Historical and contemporary records of sharks from the Sea of Marmara, Türkiye. *Annales Series Historia Naturalis* 131: 1-12.
- Larson, S., Christiansen, J., Griffing, D., Ashe, J., Lowry, D and Andrews, K. (2011). Relatedness and polyandry of sixgill sharks, *Hexanchus griseus*, in an urban estuary. *Conservation Genetics* 12: 679-690.
- Mancusi C, Baino R, Fortuna C, De Sola L, Morey G, et al. (2020). MEDLEM database, a data collection on large Elasmobranchs in the Mediterranean and Black seas. *Mediterranean Marine Science*:276–288. DOI: [HTTPS://DOI.ORG/10.12681/MMS.21148](https://doi.org/10.12681/MMS.21148).
- Ministar Zaštite Okoliša i Prirode (2016). *Pravilnik o strogo zaštićenim vrstama. Regulation on strictly protected species*. (Narodne novine«, broj 80/2013). [Retrieved from FAOLEX database on 26 April 2022]. <https://www.fao.org/faolex/results/details/en/c/LEX-FAOC143051/>

- Mundy, B.C., (2005). Checklist of the fishes of the Hawaiian Archipelago. *Bishop Mus. Bull. Zool.* (6):1-704.
- Soldo, A., Bariche, M., Buscher, E., Cook, S.F. & Compagno, L.J.V. 2016. *Hexanchus griseus*. *The IUCN Red List of Threatened Species* 2016: e.T10030A16527980. Accessed on 14 April 2022.
- Sperone, E., Parise, G., Leone, A., Milazzo, C., Circosta, V., Santoro, G., & Tripepi, S. (2012). Spatiotemporal patterns of distribution of large predatory sharks in Calabria (central Mediterranean, southern Italy). *Acta Adriatica*, 53(1), 13-23.
- White, W.T. and Dharmadi. (2010). Aspects of maturation and reproduction in hexanchiform and squaliform sharks. *Journal of Fish Biology* 76: 1362–1378.

<b>Form for proposing amendments to Annex II and Annex III of the Protocol concerning specially Protected Areas and Biological Diversity in the Mediterranean</b>	
<b>Proposed by:</b> <b>The Republic of France</b>	<b>Species concerned:</b> <i>Myliobatis aquila</i> (Linnaeus, 1758)  <b>Amendment proposed:</b> <input checked="" type="checkbox"/> Inclusion in Annex II <input type="checkbox"/> Inclusion in Annex III <input type="checkbox"/> Removal from Annex II <input type="checkbox"/> Removal from Annex III
<b>Taxonomy</b> <b>Class:</b> Chondrichthyes <b>Order:</b> Myliobatiformes <b>Family:</b> Myliobatidae <b>Genus and Species:</b> <i>Myliobatis aquila</i> <b>Known Synonym(s):</b> <i>Raia aquila</i> Stephan, 1779; <i>Myliobatis cervus</i> Smith, 1935 <b>Common name:</b> English - Common eagle ray French - Aigle commun Spanish - Aguila marina Italian – Aquila di mare Arabic - عربي: عقاب البحر -	<b>Inclusion in other Conventions:</b>
	

**Justification for the proposal:**

The common eagle ray, *Myliobatis aquila*, qualifies for listing in Annex II in accordance with the “Common Criteria for proposing amendments to Annexes II and III of the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean” (Decision IG 17/14, UNEP(DEPI)/MED IG.17/10 Annex V).

This semi-pelagic ray occurs from the North Sea to South Africa in the eastern Atlantic, including the Mediterranean Sea, and off Kenya and South Africa in the Western Indian Ocean. It appears to be less common in the Mediterranean Sea and possibly the eastern Atlantic.

The common eagle ray has a matrotrophic viviparous reproductive strategy, age-at-maturity and generation time are not known, but it exhibits low fecundity, 3–7 pups per litter after a gestation

period of 6–8 months, therefore it is suspected to have limited productivity, similarly to other eagle rays.

The common eagle ray appears to prefer inshore waters (<50 m), although it has been reported from depths of up to 537 m off southern Africa. Fishery operations mostly overlap with the bathymetric range of the common eagle ray, susceptible to be caught by a variety of fishing gears, including bottom trawls, purse seines, gillnets and pole and lines. This species often swims in groups close to the bottom and this schooling behaviour exposes it to the risk of many individuals being caught in one single haul of trawls and gillnets.

Historically, a decline of this species is evident in the time series data from demersal fishery landings and demersal trawl surveys in the Gulf of Lions, north-western Mediterranean Sea, in the late 1970s. It was recorded in extremely low numbers during northern Mediterranean-wide trawl surveys from 1994–1999, and in low quantities in other scientific surveys conducted in Iberian Peninsula and the Balearic Islands from 1994 to 2015.

Few data are currently available to assess trends in other areas of the Mediterranean Sea but given that fishing pressure is high throughout this species' bathymetric range, declines are also likely to have occurred elsewhere.

Globally, in 2021 this species was assessed by IUCN as Critically Endangered (under criteria A2bd), considering the declining catch trends and limited number of specimens recorded in trawl surveys and fisheries in several localities where it is previously occurred, the level of intense and large unmanaged fisheries that operate throughout its range, its aggregating behaviour, its limited productivity, and the estimated reduction over of >80% over the past three generation lengths (about 36 years) based on abundance data and actual levels of exploitation.

In Mediterranean, in 2016 this species was assessed as Vulnerable (under criterion A2b) as it is suspected to have declined by at least 30% over three generations (about 33 years).

If the listing in Annex II of the SPA/BD Protocol was implemented effectively, its immediate transposition in the GFCM Recommendation GFCM/42/2018/2 could act as immediate and unprecedented prohibition measure for eagle rays. Moreover, due to the concern off Mediterranean for the fishing effort increase in the Eastern Central Atlantic and the suspect of high levels of Illegal, Unreported, and Unregulated (IUU) fishing in this region (Gutiérrez *et al.* 2020), the Mediterranean might represent a refuge for the future of the common eagle ray.

## **Biological data**

[Brief description of the species:](#)

### **Identification**

Front lobe of pectoral fins under snout (subrostral lobe) rather short and obtuse. Middle row of teeth in upper jaw 4 -6 times as long as broad, distance between fifth gill-slits a little more than distance between nostrils. Dorsal fin with narrow base, less than distance between nostrils, its origin behind pelvic fin tips by 1-3 times its base.

Disc rhombic to lozenge-shaped, about 2 times as broad as long; thick. Head elevated, distinct from disc; snout projecting and rounded, subrostral lobe, below anterior part of head, broadly rounded and connected to pectoral fins by continuous borders alongside of head; pectoral fins wing-like with their outer corners narrowly angular; pelvic fins single-lobed, broad and distinctly extending posterior to pectoral posterior margins. Tail slender and whip-like, much longer than disc (up to 2.5 times longer than disc), with a small dorsal fin on its base, in front of one (rarely 2) long and serrated sting. Five gill slits on ventral side. Eyes and spiracles on sides of head. Mouth almost straight, a transverse row of fleshy papillae on floor of mouth; usually 7 series of broad, plate-like



teeth; the teeth of the median series much larger than the lateral ones. Nasal curtain greatly expanded, its posterior margin slightly emarginate and fringed. Dorsal and ventral surfaces smooth, sometimes with an irregular mid-dorsal band of denticles from nape to tail in large individuals. Large adult males develop a large tubercle in front of orbits.

Dorsal side uniform yellowish to greenish brown; ventral side white with reddish brown margins; tail blackish behind sting.

### **Biology**

In the Mediterranean Sea, *M. aquila* reaches a maximum size of 150 cm disc width (DW) and 260 cm total length (TL) (Fischer *et al.* 1987; Notarbartolo and Bianchi 1998; Otero *et al.* 2019; Ebert and Dando 2021). Off southern Africa, this species reaches a maximum size of 79.1 cm DW, Matrotrophic viviparous (Whitehead *et al.* 1984; Last *et al.* 2016); life-history parameters vary regionally: in Mediterranean, females mature at 60 cm disc width (DW) and males at 40 cm DW (Fischer *et al.* 1987, Serena 2005; Ebert and Dando 2021); in southern Africa, males mature at 31.8 cm DW and females at 42.5 cm DW. Females give birth to 3–7 pups per litter, after a gestation period of 6–8 months (Fischer *et al.* 1987; Whitehead *et al.* 1984; Serena 2005; Ebert and Dando 2021). Reproduction in Mediterranean takes place between September and February (Notarbartolo and Bianchi 1998). There is no information on this species' age-at-maturity and maximum age, therefore generation length from a similar species is inferred to be 11–12 years (Martin and Cailliet 1988; IUCN 2022; Serena *et al.* 2016).

Common eagle ray feeds on invertebrates such as crabs, molecrabs and bivalves, and on small bony fishes.

#### **Distribution (current and historical):**

Eastern Atlantic from British Isles to South Africa, including Azores, Madeira, Canary Islands, Cape Verde Islands and São Tomé and Príncipe. in southwestern Indian Ocean (Natal coast). South Africa north to Kenya, including western Mascarenes. It ranges throughout the Mediterranean Sea, but it is not reported in the Black Sea.

#### **Depth limits:**

Found in coastal waters over the continental shelf, mainly inshore, generally from shoreline to about 100 m depth. This species occurred in low numbers in the MEDITS surveys at depths of 10–200 m (Baino *et al.* 2001; Follesa *et al.* 2019).

#### **Countries of occurrence:**

This species is more common in the southern part of its range (southern Africa) and appears to be less common in European waters. In Mediterranean the countries of occurrence are Albania; Algeria; Bosnia and Herzegovina; Croatia; Cyprus; Egypt; France; Gibraltar; Greece; Israel; Italy; Lebanon; Libya; Malta; Montenegro; Morocco; Palestine; Slovenia; Spain; Syrian Arab Republic; Tunisia; Türkiye.

#### **Population estimates and trends:**

Scattered data are available to assess trends in the Mediterranean Sea. Historically, an analysis of trends from commercial landings and from bottom trawl survey in the Gulf of Lions, France, northwestern Mediterranean Sea from 1970–1995 showed a clear decrease of *M. aquila* during the study period, and after the late 1970s it remained absent (Aldebert 1997).

Data from experimental surveys confirmed that decreasing trends were most likely related to the continuous increasing fishing intensity, resulting in a general decline in stocks under a not changing patterns of effort in the fishery. From 1994–1999, the common eagle ray was recorded in low

numbers (37 of 6,336 scientific survey hauls) during northern Mediterranean-wide trawl surveys (Baino *et al.* 2001). Similar results have been confirmed by Follesa *et al.* (2019). An experimental trawl fishery in the Aegean Sea (Izmir Bay, Türkiye) revealed that this species was one of the more prevalent non-commercial species, representing up to 5.9% of the total catch weight during the summer months and 4.3% in the autumn (Gurbet *et al.* 2013). In scientific surveys in the western Mediterranean (Iberian Peninsula and the Balearic Islands) from 1994 to 2015, about 200 specimens were recorded of which the majority around the Balearic Islands (Ramirez-Amaro *et al.* 2020). In 2017, a by-catch rate of 0.478 (specimen per days at sea) was estimated for pelagic trawls, from observations conducted in the Ionian Sea, and a bycatch rate of 0.075 (a total of 13 specimens caught) from pelagic trawls in the Adriatic Sea (Bonanomi *et al.* 2018; ICES 2019). From 2009 to 2015, Bonanomi *et al.* (2018), report an increase of the standardized catches in the North Adriatic Sea, which constitutes an important portion of the trawling bycatch. The assumption is that the non-commercialization of this species determines the discard of the specimens caught at sea, allowing the maintenance of the population and in some cases even its increase. These findings are in contrast to the Mediterranean situation and since the information on this species remains scarce, further work to understand the real impact of the incidental catches on the mortality of this species is needed.

#### Habitat (s):

Marine, demersal and semi pelagic, the common eagle ray is found inshore and offshore, it appears primarily to occur in inshore, coastal areas (<50 m), readily entering shallow lagoons and estuaries, although it has been reported from depths of up to 537 m in some areas (Whitehead *et al.* 1984). In the Mediterranean Sea it is reported to occur on sandy and muddy substrates, to 200 m depth (Notarbartolo and Bianchi 1998; Baino *et al.* 2001; Serena 2005). They can often be found solitary or in groups swimming close to the bottom, sometimes on the Posidonia beds, likely to migrate long distances (Auteri *et al.* 1986).

#### Threats

##### Existing and potential threats:

Fisheries represents the main threat for *M. aquila*, as it is taken as bycatch in various in commercial and artisanal fisheries, throughout its range in the Mediterranean Sea and it is likely taken in artisanal fisheries in the tropical Atlantic. Its schooling behaviour exposes it to a high likelihood of large quantities being caught, intentionally or not, by trawl and gillnets in one haul (Diop and Fossa 2011, Ebert and Stehmann 2013; Carpentieri *et al.* 2021,).

The inshore soft-substrate habitats preferred by rays are threatened by habitat degradation for coastal development and pollution.

##### Exploitation:

There is no information on the catch of this species in targeted fisheries, but this species is susceptible to a variety of fishing gears, including bottom trawls, purse seines, gillnets and longliners. Fisheries increased or remained stable in both effort and capacity in the Mediterranean Sea during the last decades (Cavanagh and Gibson 2007, Davidson *et al.* 2016; Spedicato *et al.* 2019), the continental shelf and upper slope are subject to high levels of exploitation, down to a depth of 800 m, meaning that fishery operations mostly overlap with the bathymetric range of the common eagle ray (Massuti and Moranta 2003). Even if not exploited or traded commercially, this species is still sometimes observed on fish markets, sold as generic ray (WWF SafeShark Project 2019). Since 2011, Croatia reports an average of 14 tonnes/year of nominal catches of *M. aquila* caught in Adriatic. In 2018-19, about 3 tonnes were officially reported by Italy in Adriatic. A decreasing trend in landing statistics is reported by Spain for the Balearic Division, from 45 tones in 2005 to about one tone in 2019 (FAO-GFCM 2021).

#### Proposed protection or regulation measures:

There are no species-specific conservation or management measures for this species in place in the Mediterranean Sea.

In Israel, in 2005, sharks and rays were introduced into the list of species protected by law and fishing of them is prohibited. Since 2018, enforcement seems somehow improved for sharks but is still inadequate for ray fishing. Cartilaginous fishes may not be consumed under Jewish kashrut law, although there is a market for fish of these species among non-Jewish populations (Ariel and Barash 2015).

Although countries across its range have legislation concerning fisheries activities (including gear restrictions, and no-trawling zones in coastal waters) that might reduce the risk for the species to further decline, fisheries taking *Myliobatis aquila* are generally unmanaged throughout large parts of the species' range and it is unlikely that fisheries pressure will decrease in the near future. If the listing in Annex II of the SPA/BD Protocol was implemented effectively, its immediate transposition in the GFCM Recommendation GFCM/42/2018/2 could act as immediate and unprecedented prohibition measure for eagle rays. Moreover, due to the concern off Mediterranean for the fishing effort increase in the Eastern Central Atlantic and the suspect of high levels of Illegal, Unreported, and Unregulated (IUU) fishing in this region (Gutiérrez *et al.* 2020), the Mediterranean might represent a refuge for the future of the common eagle ray.


Lastly, if *Myliobatis aquila* were to be listed on Annex II, to harmonize the Annexes, this provision should be considered for the similar species in the Order Myliobatiformes, *Aetomylaeus bovinus* and *Rhinoptera marginata*.

#### **Bibliographical references**

- Ariel, A. and Barash, A. (2015). *Action Plan for Protection of Sharks and Rays in the Israeli Mediterranean*. EcoOcean Association. Israel: <https://www.ecoocean.org/wp-content/uploads/2020/12/Sharks-and-rays-conservation-plan-for-Israel-Ecoocean.pdf>
- Auteri R., Righini P. & Serena F. (1986). - Comportement d'un chalut modifié sur les substrats solides de l'étage infralittoral. *FAO Fish. Rep. No. (358): 76-83*
- Baino, R., Serena, F., Ragonese, S., Rey, J. and Rinelli P. (2001). Catch composition and abundance of Elasmobranchs based on the MEDITITS program. *Rapp. Comm. int. Mer Médit* 36: 234.
- Bianchi, G., Carpenter, K.E., Roux, J.-P., Molloy, F.J., Boyer, D. and Boyer, H.J. (1999). *Field guide to the living marine resources of Namibia*. FAO, Rome, Italy.
- Bini G. (1967). *Atlante dei pesci delle coste italiane: Leptocardi, Ciclostomi, Selaci*. Mondo Sommerso, Milan, Italy.
- Bonanomi, S., Pulcinella, J., Fortuna, C.M., Moro, F. and Sala, A. (2018). Elasmobranch bycatch in the Italian Adriatic pelagic trawl fishery. *PLoS ONE* 13(1): e0191647, doi: 10.1371/journal.pone.0191647
- Carpentieri, P., Nastasi, A., Sessa, M. & Srour, A., eds. (2021). *Incidental catch of vulnerable species in Mediterranean and Black Sea fisheries – A review*. General Fisheries Commission for the Mediterranean. Studies and Reviews. No. 101. Rome, FAO, 320 pp. <https://doi.org/10.4060/cb5405en>
- Cavanagh, R.D. and Gibson, C. (2007). Overview of the Conservation Status of Cartilaginous Fishes (Chondrichthyans) in the Mediterranean Sea. IUCN, Gland, Switzerland and Malaga, Spain.
- Compagno, L.J.V., Ebert, D.A. and Cowley, P.D. (1991). Distribution of offshore demersal cartilaginous fishes (Class Chondrichthyes) of the west coast of southern Africa, with notes on their systematics. *South African Journal of Marine Science* 11: 43-139.
- Davidson, L.N., Krawchuk, M.A. and Dulvy, N.K. (2016). Why have global shark and ray landings declined: improved management or overfishing? *Fish and Fisheries* DOI: 10.1111/faf.12119.

- Ebert, D.A. and Stehmann, M.F.W. (2013). *Sharks, batoids, and chimaeras of the North Atlantic*. FAO Species Catalogue for Fishery Purposes No. 7. Food and Agricultural Organization of the United Nations (FAO). FAO, Rome.
- Ebert, D.A. and Dando M. (2021). *Sharks, Rays & Chimaeras of the Europe and the Mediterranean*. Princeton University Press. Wildnaturepress, Plymouth, UK. 383 pp.
- Fischer, W., Bauchot, M.-L. and Schneider, M. (1987). *Fiches FAO d'identification des espèces pour les besoins de la pêche. Méditerranée et mer Noire. Zone de Pêche 37*. FAO, Rome, Italy.
- Fischer, W., Bianchi, G. and Scott, W.B. (1981). *FAO Species Identification Sheets for Fishery Purposes*. FAO, Rome.
- FAO-GFCM. (2021). Fishery and Aquaculture Statistics. GFCM capture production 1970-2019 (FishstatJ). In: FAO Fisheries Division [online]. Rome. Updated 2021. [www.fao.org/fishery/statistics/software/fishstatj/en](http://www.fao.org/fishery/statistics/software/fishstatj/en)
- Follesa MC, Marongiu MF, Zupa W, Bellodi A, Cau A, Cannas R, Colloca F, Djurovic M, Isajlovic I, Jadaud A, Manfredi C, Mulas A, Peristeraki P, Porcu C, Ramirez- Amaro S, Salmerón Jiménez F, Serena F, Sion L, Thasitis I, Cau A, Carbonara P. (2019). Spatial variability of Chondrichthyes in the northern Mediterranean. *Sci. Mar.* 83S1: 000-000. DOI: ORG/10.3989/SCIMAR.04998.23A.
- Gurbet, R., Akyol, O., Yalçın, E., and Özyaydn, O. (2013). Discards in bottom trawl fishery in the Aegean Sea (Izmir Bay, Türkiye). *Journal of Applied Ichthyology* 29(6): 1269-1274.
- Gurbet, R., Akyol, O., Yalçın, E., and Özyaydn, O. (2013). Discards in bottom trawl fishery in the Aegean Sea (Izmir Bay, Türkiye). *Journal of Applied Ichthyology* 29(6): 1269-1274.
- Gutiérrez, M., Daniels, A., Jobbins, G., Gutiérrez Almazor, G. and Montenegro, C. (2020). *China's distant-water fishing fleet: Scale, impact and governance*. ODI, London, 47 p.
- Jabado, R.W., Chartrain, E., Cliff, G., Da Silva, C., Derrick, D., Dia, M., Diop, M., Doherty, P., Leurs, G.H.L., Metcalfe, K., Pacoureaux, N., Porriños, G., Seidu, I., Soares, A., Tamo, A., VanderWright, W.J., Williams, A.B. & Winker, H. 2021. *Myliobatis aquila*. *The IUCN Red List of Threatened Species* 2021: e.T161569A124508353. <https://dx.doi.org/10.2305/IUCN.UK.2021-1.RLTS.T161569A124508353.en>. Accessed on 29 April 2022.
- ICES. (2019). Working Group on Bycatch of Protected Species (WGBYC). In: Konigson, S., Macleod, K (ed.), *ICES Scientific Reports* 1:51.
- Lloris, D. (1986). Ictiofauna demersal y aspectos biograficos de la costa sudoccidental de Africa (SWA/Namibia). *Monogr. Zool. Mar.* 1: 9-432.
- Martin, L.K. and Cailliet, G.M. (1988). Age and growth determination of the bat ray, *Myliobatis californica* Gill, in central California. *Copeia* 1988(3):762-773.
- Notarbartolo di Sciara, G. and Bianchi, I. (1998). Guida degli squali e delle razze del Mediterraneo. Muzzio, Padova.
- Otero, M., Serena F., Gerovasileiou, V., Barone, M., Bo, M., Arcos, J.M., Vulcano A. and Xavier, J. (2019). *Identification guide of vulnerable species incidentally caught in Mediterranean fisheries*. IUCN, Malaga, Spain, 204 pages.
- Quero, J.C., Hureau, J.C., Karrer, C., Post, A. and Saldanha, L. Eds. (1990). *Check-list of the fishes of the Eastern Tropical Atlantic (CLOFETA)*. JNICT (Lisbon), EIU (Paris) and UNESCO (Paris).
- Ramírez-Amaro, S., Ordines, F., Esteban, A., García, C., Guijarro, B., Salmerón, F., Terrasa, B. and Massutí, E. (2020). The diversity of recent trends for chondrichthyans in the Mediterranean reflects fishing exploitation and a potential evolutionary pressure towards early maturation. *Scientific Reports* 10(1): 547.
- Relini G., Biagi F., Serena F., Belluscio A., Spedicato M.T., Rinelli P., Follesa M.C., Piccinetti C., Ungaro N., Sion L. and Levi D. (2000). I selaci pescati con lo strascico nei mari italiani. *Biologia Marina Mediterranea* 7(1): 347-384.
- Serena, F. (2021). Elasmobranchs. In: Carpentieri, P., Nastasi, A., Sessa, M. & Srouf, A., eds. 2021. *Incidental catch of vulnerable species in Mediterranean and Black Sea fisheries – A*

- review*. Studies and Reviews No. 101: 111–197 (General Fisheries Commission for the Mediterranean). Rome, FAO, doi: 10.4060/cb5405en
- Serena, F., Abella, A.J., Bargnesi, F., Barone, M., Colloca F., Ferretti F., Fiorentino F., Jenrette J., Moro, S. (2020). Species diversity, taxonomy and distribution of Chondrichthyes in the Mediterranean and Black Sea. *The European Zoological Journal*, 87 (1), 497-536, doi: 10.1080/24750263.2020.1805518
- Serena, F., Holtzhausen, J., Ebert, D.A. and Mancusi, C. (2016). *Myliobatis aquila*. The IUCN Red List of Threatened Species 2016: e.T161569A16527996. Accessed on 27 February 2022.
- Smith, M.M. and Heemstra, P.C. (1995). *Smith's Sea Fishes*. J.L.B. Smith Institute of Ichthyology, Grahamstown.
- Spedicato MT, Massutí E, Mérigot B, Tserpes G, Jadaud A, Relini G. (2019). The MEDITS trawl survey specifications in an ecosystem approach to fishery management. *Science Marine*, 83S1 9–20. DOI: ORG/10.3989/SCIMAR.04915.11X.
- Tortonese, E. (1956). *Fauna d'Italia: Leptocardia, Ciclostomata, Selachii*. Calderini, Bologna.
- Tsikliras, A.C., Dinouli, A., Tsiros, V.Z. and Tsalkou, E. (2015). The Mediterranean and Black Sea fisheries at risk from overexploitation. *PLoS One* 10(3): e0121188.
- Whitehead, P.J.P., Bauchot, M.-L., Hureau, J. and Tortonese E. (1984). *Fishes of the Northeastern Atlantic and the Mediterranean*, Vol. I. UNESCO, Paris.
- WWF. (2019). *Analysis on the occurrence of mislabelling of shark products and recommendations to improve the supply chain*. SafeShark project, Activity F.1.1. <https://www.wwf.it/cosa-facciamo/progetti/safe-sharks-2/>
- Young, N. (2001). *An analysis of the trends in by-catch of turtle species, angelsharks and batoid species in the protective gillnets off KwaZulu-Natal, South Africa*. University of Reading.

<b>Form for proposing amendments to Annex II and Annex III to the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean</b>	
<b>Proposed by:</b> <b>The Republic of France</b>	<b>Species concerned:</b> <i>Pteroplatytrygon violacea</i> (Bonaparte, 1832)  <b>Amendment proposed:</b> <input type="checkbox"/> Inclusion in Annex II <input checked="" type="checkbox"/> Inclusion in Annex III <input type="checkbox"/> Removal from Annex II <input type="checkbox"/> Removal from Annex III
<b>Taxonomy</b> <b>Class:</b> Chondrichthyes <b>Order:</b> Myliobatiformes <b>Family:</b> Dasyatidae <b>Genus and Species:</b> <i>Pteroplatytrygon violacea</i> <b>Known Synonym(s):</b> <i>Trygon violacea</i> , Bonaparte 1832; <i>Trygon purpurea</i> , Smith in Müller & Henle 1841 <b>Common names:</b> English - Pelagic stingray French - Pastenague violette Spanish - Raja látigo violeta Italian - Trigone viola Arabic - راية لاسعة بنفسجية	<b>Inclusion in other Conventions:</b>
	

**Justification for the proposal:**

The pelagic stingray, *Pteroplatytrygon violacea*, qualifies for listing in Annex III in accordance with the “Common Criteria for proposing amendments to Annexes II and III of the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean” (Decision IG 17/14, UNEP(DEPI)/MED IG.17/10 Annex V).

The pelagic stingray is widespread circumglobally and through the Mediterranean Sea, and it is the only species of stingray that occurs in pelagic, oceanic waters. It has a viviparous reproductive strategy, and it exhibits a fecundity that is relatively higher with respect to other stingrays, but still low when considering that it gives birth to 4-13 pups after a gestation period of 2-4 months. The *Pteroplatytrygon violacea* is exposed to high catchability with artisanal fishing gears, in particular with longlines and it is therefore frequently caught by tuna and swordfish longlines. It is mostly discarded with post-discard survival rates likely to be low because they suffer serious damages of the mouth and the jaws.

Global IUCN assessment conducted in 2019, report abundance trends appearing stable, increasing in some region and declining (about 40%) in others, with an apparent resilience to fisheries. It is therefore assessed as Least Concern, “with the caveat that catches should continue to be monitored”. In Mediterranean, the last IUCN assessment conducted in 2016 assigned the status of Least Concern as it reported similar findings and evaluations. Moreover, some concern is related to the consistency of reporting of the pelagic stingray in fisheries statistics, advising on the urgent need of proper monitoring.

Even if this species is assessed as Least Concern by IUCN both globally and in Mediterranean, an eventual increase of fishing effort in pelagic fisheries, owing to decreasing abundance of target species (swordfish and tunas), will result in an increase in catches of this species and associated high discard mortality in some areas, with the risk of becoming a near threatened species in the future.

There are no species-specific conservation or management measures in place in the Mediterranean Sea, however the pelagic stingray is listed in the “ICCAT species”, as it is defined to be “elasmobranchs that are oceanic, pelagic, and highly migratory”. The ICCAT Commission shall be responsible for studying these species, therefore, the pelagic stingray might become object of species-specific data collection with the objective to produce more and higher quality by-catch data, allowing the proper conservation of these populations.

The inclusion of *Pteroplatytrygon violacea* in Appendix III will result in a better harmonization between ICCAT and GFCM Recommendations in Mediterranean, and, if properly implemented, it would help strengthening the collaboration for its monitoring.

## **biological data**

### **Brief description of the species:**

#### **Identification**

Disc shape nearly triangular or trapezoid due to convex anterior margins forming an almost even arc, with very short snout broadly rounded. Tail long 2.5–3.0 times as long as disc, with serrated spines and a short and low membranous fold on underside, originating at the level of the spines, with sometimes a ridge above. Floor of mouth with 10–12 broad-based papillae. Upper surface of the disc dark, ranging from dark purple to dark greenish blue; ventral side similar or slightly lighter. This species reaches a maximum size of 96.0 cm disc width (Ebert 2003).

#### **Biology and life history**

Females reach maturity at 39–50 cm DW and males at 35–50 cm DW (Wilson and Beckett 1970; Mollet *et al.* 2002; Forselleo *et al.* 2007; Neer 2008; Junior and Rotundo 2012; Veras *et al.* 2014; Last *et al.* 2016). Females mature at 3 years, males mature at 2 years and longevity is about 10 years (Wilson and Beckett 1970; Mollet *et al.* 2002; Neer 2008).

The reproduction strategy is viviparous with histotrophy and the gestation period is less than 2-4 months (Ranzi and Zezza 1936; Tortonese 1956; Wilson and Beckett 2002; Forselleo *et al.* 2007). Females give birth to 4–13 pups per litter (average 6) (Ebert 2003; Neer 2008; Tortonese 1956;

Fisher *et al.* 1987) and new-born measure approximately 14.3–24.1 cm DW (mean range) (Mollet 2002; Mollet *et al.* 2002).

Few observations are available describing the pattern of migration. In the Mediterranean Sea, copulation takes place in spring and females move inshore during summer to give birth (Tortonese, 1956; Whitehead *et al.* 1984) and females are supposed to give birth before the rays migrate to warmer water and this has been historically recorded in the Bay of Naples (Lo Bianco 1909; Ranzi, 1933; Mollet 2002). This can also be directly related to the by-catches recorded by. Indeed, pelagic stingray by-catch presents eco-geographical and temporal distribution patterns linked with summer season and fishing activity over continental shelf. Different eco-geographical and gear-type parameters heavily influence over the CPUE of pelagic stingray (Baez 2015). Moreover, Santana-Hernández *et al.* (2011) and Domingo *et al.* (2005) suggested the correlation between sea surface temperature and by-catch CPUE.

The migration pattern appears to be different in the Pacific Ocean, where the pelagic stingray give birth in winter in warmer waters near the equator before migrating to higher latitudes (Mollet 2002). In the Southwest Atlantic, the population existing off Brazil possibly carries out its reproductive cycle in water southeast of Brazil and Uruguay on the slope and in oceanic waters, migrating towards the tropical zone to give birth (Forselledo *et al.* 2007).

Diet consists primarily of planktonic crustaceans in the form of euphausiids and amphipods. Other food items include jellyfish, squid, octopus, shrimp, and small pelagic fishes such as herring and mackerel.

#### Distribution (current and historical):

This stingray is widespread, in circumtropical to temperate waters of the Pacific, Atlantic and Indian Oceans, between 52°N-50°S and 167°W-180°E (Mollet 2002), also throughout the Mediterranean (Ebert and Stehmann 2013).

#### Depth limits:

Usually found in the first 100 m, occasionally to 240 m, and it has been reported to 381 m (Mollet 2002, Weigmann 2016).

#### Countries of occurrence (Mediterranean):

Algeria; Croatia; Egypt; France; Greece; Israel; Italy; Libya; Morocco; Slovenia; Tunisia.

#### Population estimates and trends:

The population structure, migratory patterns and reproduction cycles are not well known throughout most of this species' range. There is evidence of the complexity of the populations structure of *Pteroplatytrygon violacea*, for the presumed existence of discrete population and differences in patterns of migration observed especially in the Pacific Ocean (Ebert 2013).

In the Mediterranean, *Pteroplatytrygon violacea* has never had commercial value, but has always represented an important component of the bycatch of the longline fisheries. This has prevented collecting information on population trends, as fishermen have always discarded this species by throwing it back into the sea. Therefore, there is the suspect that the surface longlines and the pelagic nets in general have decimated the population of this species over time. The pelagic and migratory habits of this species might be the ecological factors that have reduced the risk of *Pteroplatytrygon violacea* to become threatened, ensuring a recovery, which is nevertheless conditioned by the operational practices of the fishermen. An example is represented by longline fisheries in Ligurian Sea, where in recent years the fishers have modified their habits setting the gears on the seabed and no longer on the surface; as consequence the events of bycatch of stingrays



become less frequent, probably allowing a significant recovery of the population, limited to that area.

#### Habitat (s):

This is perhaps the only species of stingray that occurs in pelagic, oceanic waters (Last *et al.* 1994). It is usually found from the surface to 100 m depth over deep water (Mollet 2002) but has been reported to 238 m (Bester *et al.* 2007; Ebert 2013).

#### threats

##### Existing and potential threats:

Fisheries represents the main threat for *Pteroplatytrygon violacea*, frequently taken as bycatch of purse seine and pelagic longlines targeting tuna and swordfish. Usually it is discarded, but might be retained and even utilised in some areas (e.g. Indonesia) (Mollet 2002; Vaske 2002; Domingo *et al.* 2005; White *et al.* 2006; Forselleo *et al.* 2007; Piovano *et al.* 2009).

Several authors report differences in the sex ratio in the captures, depending on the area investigated the females prevail on males or vice versa [e.g. 2:1 to 7:1 in the eastern Pacific; 3:1 for the western Atlantic; a prevalence of males observed in Southwest Atlantic (Wilson and Beckett 1970; Neer 2008)]. An asymmetric take of this species could potentially impact the long-term stability of pelagic stingray populations (Neer 2008).

In Mediterranean the magnitude of the captures in the entire basin is unknown. This species is captured mainly by pelagic longline fisheries, and it is mostly discarded, with an expected low discard survival rate, due to the damage to jaws and/or mouth caused by the treatments on board for releasing the individuals. In Italian seas, the pelagic stingray is the most common elasmobranch species by-catch of the longline fisheries targeting Albacore and the second most common in longlines targeting swordfish (Filanti *et al.* 1986; di Natale *et al.* 1995; Orsi Relini *et al.* 1999). Total bycatch of *Pteroplatytrygon violacea* in the swordfish fishery in the Ligurian Sea was estimated at ~2,000 (up to 20 per boat) in 1995, although the catch was estimated to be smaller and more variable in 1996) (Mollet 2002). Rey and Alot (1984) reporting the results of a swordfish longline surveys for Mediterranean Spanish waters, recorded only two pelagic stingrays in 11 fishing operations (<0.001).

The pelagic stingray is also occasionally taken by recreational fisheries (Fischer *et al.* 1987), which presumably does not have a significant impact on the populations.

##### Exploitation:

The pelagic stingray is not used or traded commercially in Mediterranean. The official FAO-GFCM statistics report nominal captures of the taxa *Dasyatidae* in very low quantities (<1 tonne) by Cyprus, Italy, Malta and Spain (FAO-GFCM, 2022).

Reports of common stingrays *Dasyatis pastinaca* in pelagic fisheries catches in the Mediterranean may likely refer to pelagic stingrays *Pteroplatytrygon violacea*.

#### Proposed protection or regulation measures:

There are no species-specific conservation or management measures for this species in place in the Mediterranean Sea.

In Israel, in 2005, sharks and rays were introduced into the list of species protected by law and fishing of them is prohibited-. Since 2018, enforcement seems somehow improved for sharks but is still inadequate for ray fishing. Cartilaginous fishes may not be consumed under Jewish kashrut

law, although there is a market for fish of these species among non-Jewish populations (Ariel and Barash 2015).

Some studies have shown how the use of circular hooks in longline fishing can be able to mitigate the impact of this gear on the *Pteroplatytrygon violacea* population (Piovano *et al.* 2009; François *et al.*, 2019).

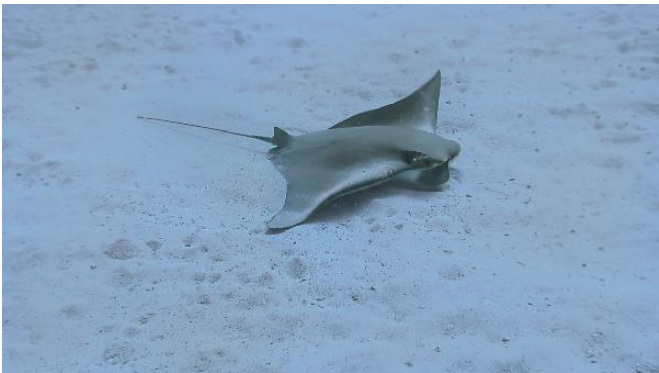
The ICCAT Convention has included the pelagic stingray in the list of “elasmobranchs that are oceanic, pelagic, and highly migratory” frequently caught incidentally by tuna fleets, defined to be an “ICCAT species” by Recommendation 19-01 (ICCAT 2019). Article IV of the ICCAT Convention states: “the Commission shall be responsible for the study of the population of tuna and tuna-like fishes (...) and such other species of fishes exploited in tuna fishing in the Convention area as are not under investigation by another international fishery organization”. Therefore, the pelagic stingray might become object of species-specific data collection with the objective to produce more and higher quality by-catch data allowing the protection of these populations. The inclusion of *Pteroplatytrygon violacea* in Appendix III will result in a better harmonization between ICCAT and GFCM Recommendations in Mediterranean, and, if properly implemented, it would help strengthening the collaboration for its monitoring.

#### **bibliographical references**

- Ariel, A. and Barash, A. (2015). *Action Plan for Protection of Sharks and Rays in the Israeli Mediterranean*. EcoOcean Association. Israel: <https://www.ecoocean.org/wp-content/uploads/2020/12/Sharks-and-rays-conservation-plan-for-Israel-Ecoocean.pdf>
- Báez, J.C., Crespo, G.O., García-Barcelona, S., Ortiz de Urbina, J.M., de la Serna, J.M. and Macías, D. (2015). Understanding pelagic stingray (*Pteroplatytrygon violacea*) by-catch by Spanish longliners from the Mediterranean Sea. *Journal of the Marine Biological Association of the United Kingdom* 98(7): 1387–1394.
- Baino, R., Serena, F., Ragonese, S., Rey, J. and Rinelli P. (2001). Catch composition and abundance of Elasmobranchs based on the MEDITS program. *Rapp. Comm. int. Mer Médit* 36: 234.
- Bester, C., Mollet, H. and Bourdon, J. (2007). Biological Profile: Pelagic stingray. Available at: <http://www.flmnh.ufl.edu/fish/Gallery/Descript/PelagicStingray/PelagicStingray.html>
- Bini G. (1967). *Atlante dei pesci delle coste italiane: Leptocardi, Ciclostomi, Selaci*. Mondo Sommerso, Milan. 206 pp.
- Caillet, G.M. and Goldman, K.J. (2004). In: J.C. Carrier, J.A. Musick and M.R. Heithaus (eds), *Biology of sharks and their relatives*. CRC Press, Florida, USA. 399-447.
- Domingo, A., Menni, R. and Forselledo, R. (2005). Bycatch of the pelagic ray *Dasyatis violacea* in Uruguayan longline fisheries and aspects of distribution in the southwestern Atlantic. *Scientia Marina*, 69(1): 161-166.
- Ebert, D.A. and Stehmann, M.F.W. (2013). *Sharks, batoids, and chimaeras of the North Atlantic*. FAO Species Catalogue for Fishery Purposes No. 7. Food and Agricultural Organization of the United Nations (FAO). FAO, Rome.
- Ebert, D.A. (2003). *Sharks, rays and chimaeras of California*. California Natural History Guides No. 71. University of California Press. 284 pp. DOI / ISBN 0-520-22265-2
- FAO-GFCM. (2021). *Fishery and Aquaculture Statistics. GFCM capture production 1970-2019* (FishstatJ). In: FAO Fisheries Division [online]. Rome. Updated 2021. [www.fao.org/fishery/statistics/software/fishstatj/en](http://www.fao.org/fishery/statistics/software/fishstatj/en)
- Ferretti, F., Myers, R.A., Sartor, P. and Serena, F. (2005). Long term dynamic of the chondrichthyan fish community in the upper Tyrrhenian Sea. *ICES CM* 2005/N:25.
- Filanti, T., Megalofonou, P., Petrosino, G. and De Metrio, G. (1986). Incidenza dei selaci nella pesca del pesce spada con long-line nel Golfo di Taranto. *Nova Thalassia* 8: 667-669.
- Fischer, W., Bauchot, M.-L. and Schneider, M. (1987). *Fiches FAO d'identification des espèces pour les besoins de la pêche. Méditerranée et mer Noire. Zone de Pêche 37*. FAO, Rome, Italy.

- Forselledo, R., Pons, M., Miller P. and Domingo, A. (2007). Distribución y estructura poblacional de la raya negra (*Pteroplatytrygon violacea*) en el Atlántico Sur (1998-2006). *Aquatic Living Resources* 21:357-363.
- François P., Sidonie, C., Carlinec, C., and Jean-Marcd, J. (2019). The effect of hook type and trailing gear on hook shedding and fate of pelagic stingray (*Pteroplatytrygon violacea*): New insights to develop effective mitigation approaches. *Marine Policy* 107: 103594.
- ICES. (2006). Report of the ICES Working Group on Elasmobranch Fishes (WGEF), 14-21 June 2006, ICES Headquarters. *ICES CM 2006/ACFM*.
- ICES. (2012). Report of the Working Group on Elasmobranch Fishes (WGEF). 19-26 June 2012, Lisbon, Portugal. *ICES CM 2012/ACOM:19*.
- Junior, T.V. and Rotundo, M.M. (2012). Inshore occurrences of the pelagic stingray, *Pteroplatytrygon violacea*, (Bonaparte, 1832) (Elasmobranchii: Dasyatidae), in São Paulo State, southeastern Brazil. *Pan-American Journal of Aquatic Sciences* 7(3): 182–186.
- Kyne, P.M., Barreto, R., Carlson, J., Fernando, D., Francis, M.P., Fordham, S., Jabado, R.W., Liu, K.M., Marshall, A., Pacoureaux, N., Romanov, E., Sherley, R.B. and Winker, H. (2019). *Pteroplatytrygon violacea*. *The IUCN Red List of Threatened Species* 2019: e.T161731A896169. <https://dx.doi.org/10.2305/IUCN.UK.2019-1.RLTS.T161731A896169.en>. Accessed on 03 March 2022.
- Last, P., White, W., de Carvalho, M., Séret, B., Stehmann, M. and Naylor, G. (2016). *Rays of the World*. CSIRO Publishing, Clayton.
- Last, P.R. and Stevens, J.D. (1994). *Sharks and Rays of Australia*. CSIRO Division of Fisheries, Hobart.
- Megalofonou, P., Damalas, D., Yannopoulos, C., De Metri, G., Deforio, M., De La Serna, J.M. and Macias, D. (2000). By catches and discards of sharks in the large pelagic fisheries in the Mediterranean Sea. European Union Project 97/50 Directorate General XIV/C1, 336 p.
- Mollet, H.F. (2002). Distribution of the pelagic stingray, *Dasyatis violacea* (Bonaparte, 1832), off California, Central America, and worldwide. *Marine Freshwater Review* 53(7): 525-530.
- Mollet, H.F., Ezcurra, J.M. and O'Sullivan, J.B. (2002). Captive biology of the pelagic stingray, *Dasyatis violacea* (Bonaparte, 1832). *Marine and Freshwater Research* 53: 531-541.
- Myers, R.A. and Worm, B. (2003). Rapid worldwide depletion of predatory fish communities. *Nature* 423: 280-283.
- Neer, J.A. (2008). Ecology of the pelagic stingray, *Pteroplatytrygon violacea* (Bonaparte, 1832). In: In: Camhi, M.D., Pikitch, E.K., Babcock, E.A. (eds). *Sharks of the open ocean: Biology, Fisheries and Conservation*, Blackwell Scientific, New York. 536 pp.
- Notarbartolo di Sciara, G. and Bianchi, I. (1998). *Guida degli squali e delle razze del Mediterraneo*. Franco Muzzio Editore. 388 pp.
- Orsi Relini, L., Cima, C., Garibaldi, F., Palandri, G., Relini, M. and Torchia, G. (1999). La pesca professionale con i palamiti galleggianti nel Sautuario dei cetacei del Mar Ligure: si tratta di attivita' ecocompatibili? *Biologia Marina Mediterranea* 6: 100-109.
- Piovano, S., Clò, S.m Giacomina, C. (2009). Reducing longline bycatch: The larger the hook, the fewer the stingrays. *Biol. Conserv* 143: 261–264. doi:10.1016/j.biocon.2009.10.001.
- Relini, G., Biagi, F., Serena, F., Belluscio, A., Spedicato, M.T., Rinelli, P., Follasa, M.C., Piccinetti, C., Ungaro, N., Sion, L. and Levi, D. (2000). Selachians fished by otter trawl in the Italian Seas. *Biologia Marina Mediterranea* 7(1): 347-384.
- Relini, L., Garibaldi, F., Digitali, B. and Lanteri, L. (2002). Abundance of the pelagic stingray, *Pteroplatytrygon (Dasyatis) violacea*, in the Ligurian Sea, with preliminary notes about its feeding and growth. *Proceedings of the 4th EEA Meeting*: 193-194. Livorno, Italy.
- Rey, J. and Alot, E. (1984). Contribution al estudio de la pesqueria de palangre del pez espada (*Xiphias gladius*) en el Mediterraneo Occidental. *ICCAT Col.Vol.Sci.Pap*.
- Santana-Hernández, H., Espino-Barr E. and Valdez-Flores J.J. (2011). Distribución y abundancia relativa de la raya látigo *Pteroplatytrygon violacea* capturada incidentalmente en el Pacífico central mexicano. *Ciencia Pesquera*, 19 (2): 13-22.
- Tortonese, E. (1956). *Fauna d'Italia. Volume 2. Leptocardia, Cyclostomata, Selachii*. Calderini, Bologna.

- Vaske, T. (2000). *Relacoes troficas dos grandes peixes pelágicos da regio equatorial Sudoeste do oceano Atlantico*. Tésis de doctorado, Fundacao Universidade Federal do Rio Grande.
- Veras, D.P., Hazin, F.H.V., Branco, I.S.L., Tolotti, M.T. and Burgess, G.H. (2014). Reproductive biology of the pelagic stingray, *Pteroplatytrygon violacea* (Bonaparte, 1832), in the equatorial and south-western Atlantic Ocean. *Marine and Freshwater Research* 65: 1035–1044.
- Ward, P. and Myers, R.A. (2005). Shifts in open ocean fish communities coinciding with the commencement of commercial fishing. *Ecology* 86(4): 835-847.
- Weigmann, S. (2016). Annotated checklist of the living sharks, batoids and chimaeras (Chondrichthyes) of the world, with a focus on biogeographical diversity. *Journal of Fish Biology* 88(3): 837-1037.
- Whitehead P.J.P., Bauchot M.L., Hureau J.C., Nielsen J., Tortonese E. (1984). *Fishes of the Northeast Atlantic and Mediterranean*. UNESCO, Paris.
- Wilson, P.B. and Beckett, J.S. (1970). Atlantic Ocean distribution of the pelagic stingray, *Dasyatis violacea*. *Copeia* 4: 696-707.

<b>Form for proposing amendments to Annex II and Annex III of the Protocol concerning specially Protected Areas and Biological Diversity in the Mediterranean</b>	
<b>Proposed by :</b> <b>The Republic of France</b>	<b>Species concerned:</b> <i>Rhinoptera marginata</i> (Geoffroy St. Hilaire, 1817)
	<b>Amendment proposed:</b> <input checked="" type="checkbox"/> Inclusion in Annex II <input type="checkbox"/> Inclusion in Annex III <input type="checkbox"/> Removal from Annex II <input type="checkbox"/> Removal from Annex III
<b>Taxonomy</b> <b>Class:</b> Chondrichthyes <b>Order:</b> Myliobatiformes <b>Family:</b> Rhinopteridae <b>Genus and Species:</b> <i>Rhinoptera marginata</i> <b>Known Synonym(s):</b> <i>Myliobatis marginata</i> Geoffroy St. Hilaire, 1817 <b>Common name:</b> English - Lusitanian cownose ray French - Mourine lusitanienne ou Mourine échancrée Spanish - Gávilan lusitánico Italian – Rinottera Arabic - رابية طائرة	<b>Inclusion in other Conventions:</b>
	

**Justification for the proposal:**

The Lusitanian cownose ray (*Rhinoptera marginata*) qualifies for listing in Annex II in accordance with the “Common Criteria for proposing amendments to Annexes II and III of the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean” (Decision IG 17/14, UNEP(DEPI)/MED IG.17/10 Annex V).

*Rhinoptera marginata* is a large benthopelagic species inhabiting the coastal waters of the Mediterranean Sea (excluding the Black Sea) as well as the western coast of Africa, eastern Atlantic Ocean.

The very low fecundity, its relatively large size, combined with the schooling behavior augmenting the risk of many individuals being caught in one single haul, are limiting life-history characteristics making this specie highly vulnerable to coastal fisheries, and suggesting that the current fishing pressure is likely to be unsustainable for this species which population reductions are suspected.

The most recent assessment conducted at global level for The IUCN Red List of Threatened Species in 2020, listed *Rhinoptera marginata* as Critically Endangered under criteria A2d (Jabado *et al.* 2020).

Formerly assessed in Mediterranean as Near Threatened (close to meeting the criteria for VU A2d+A3d) in 2007 (Cavanagh and Gibson 2007), its status has been updated in 2016 (Ferretti *et al.* 2016) and listed as Data Deficient but reaffirming the urgency of a precautionary approach toward the conservation of this rare species.

Due to its status of Critically Endangered species in the near Atlantic region, the Mediterranean populations of *Rhinoptera marginata* deserve an Annex II listings of the SPA/BD Protocol, as its immediate transposition in the GFCM Recommendation GFCM/42/2018/2 could act as immediate and unprecedented prohibition measure for cownose rays. Moreover, due to the concern off Mediterranean for the fishing effort increase in the Eastern Central Atlantic and the suspect of high levels of Illegal, Unreported, and Unregulated (IUU) fishing in this region (Gutiérrez *et al.* 2020), the Mediterranean might represent a refuge for the future of the Lusitanian cownose ray.

If *Rhinoptera marginata* were to be listed on Annex II, to harmonize the Annexes, this provision should be considered for the similar species in the Order Myliobatiformes, *Aetomylaeus bovinus* and *Myliobatis aquila*.

## Biological data

### Brief description of the species:

#### Identification

Disc rhombic, about twice broader than long, snout notched with a subrostral fleshy lobe, distinctly concave in front. Spiracle much larger than eye on side of head. Tail slender and whip-like, longer than disc, with a small dorsal fin on its base and a single (rarely more) long and serrated sting. Pectoral fins slightly falcate, outer angle blunt; pelvic fins longer than wide. Mouth without fleshy papillae on floor, usually with 9–11 rows in each jaw of broad plate-like teeth, those of the median series much larger than the lateral ones. Posterior margin of the nose smooth and greatly expanded, fringed or lobed. Upper surfaces without thorns or thornlets. Greenish brown to bronze on the back; ventral side whitish with dark margins (Whitehead *et al.* 1984).

#### Biology

Size up to 200 cm disc width (DW). Viviparous, usually with litters of a single pups. Males estimated to mature at ~75 cm DW and females at ~80 cm DW. Breeding appears to take place in June and parturition the following year in April-May; near term embryos mean of 42.0±5.3 TL and 23.4±3.3 DW, size at birth inferred of about 22–24 cm DW (Tirasin and Basusta 2018). Cownose rays are among the least productive elasmobranchs with an estimated intrinsic rate of population growth rates ( $r$ ) ranging from 0.018 yr<sup>-1</sup> to 0.032 yr<sup>-1</sup> (median  $r = 0.008$ ) (Grubbs *et al.* 2016). Age data are not available for this species, but for its congener *R. bonasus* to use as a proxy for generation period, estimated as 11.25 years (Neer and Thompson 2005).

### Distribution (current and historical):

In the eastern Atlantic, from Portugal to Gulf of Guinea, also in the Mediterranean Sea.

**Depth limits:**

This species prefers shallow waters of the continental shelf and around offshore islands. It occurs from shoreline to about 30 m depth, although it may occur to at least 100m depth (it was found at 50–100m depth in MEDITS trawl surveys in the Mediterranean) (Baino *et al.* 2001).

**Countries of occurrence (Mediterranean):**

Mainly reported along the Turkish coasts, absent in the Black Sea. (Baino *et al.* 2001; Tıraşın and Basušta 2018). Infrequent elsewhere: Albania; Algeria; Bosnia and Herzegovina; Croatia; Cyprus; Egypt; France; Greece; Israel; Italy; Lebanon; Libya; Montenegro; Morocco; Palestine; Spain; Syrian Arab Republic; Tunisia.

**Population estimates and trends:**

No data are currently available to estimate the population and analyse of trends in abundance in Mediterranean, where it is apparently rare. During the scientific trawl surveys (MEDITS), conducted between 1994-1999 (at depths of 10-800 m) in the central western Mediterranean, it occurred in only two hauls (in the eastern Ionian Sea) of a total of 6,336 hauls (Baino *et al.* 2001). An exceptional event has been documented in February 2013, when 89 females and 40 males of lusitanian cownose ray were accidentally caught in Mersin Bay, Türkiye, eastern Mediterranean Sea. They included many gravid specimens with near-term embryos and mature males, and they were in a schooling formation, apparently for parturition and reproduction (Tıraşın and Basušta 2018).

**Habitat (s):**

The lusitanian cownose ray is a semi pelagic or benthopelagic species, found in tropical to warm temperate coastal waters where it is relatively common. Gregarious, often forming large groups swimming near the surface, and occurring from shoreline to about 30 m depth, on soft bottoms.

**threats****Existing and potential threats:**

The main threat to the survival of the species is represented by the fishing pressure from commercial trawl fisheries, generally intensive on the continental shelf and upper slope of the Mediterranean Sea (at depths ranging from 50 to 700-800 m) and therefore overlapping with the species range (Colloca *et al.* 2003; Massuti and Moranta 2003).

The very low fecundity, a generation period inferred to exceed 11 years and its relatively large size are limiting life-history characteristics, combined with the schooling behavior augmenting the risk of many individuals being caught in one single haul, as documented by Tıraşın and Basušta (2018), make the specie highly vulnerable to coastal fisheries, and suggest that the current fishing pressure is likely to be unsustainable for this species and population reductions are suspected

**Exploitation:**

*Rhinoptera marginata* is not targeted by commercial fisheries but incidentally caught by multiple gear types and is particularly vulnerable to coastal fisheries using purse seine, gillnet and trammel nets and above all by bottom trawlers (Serena 2021). The species is of little commercial importance for human consumption in the Mediterranean region.

**Proposed protection or regulation measures:**

There are no species-specific conservation or management measures for this species in place in the Mediterranean Sea.

In Israel, in 2005, sharks and rays were introduced into the list of species protected by law and fishing of them is prohibited-. Since 2018, enforcement seems somehow improved for sharks but is

still inadequate for ray fishing. Cartilaginous fishes may not be consumed under Jewish kashrut law, although there is a market for fish of these species among non-Jewish populations (Ariel and Barash 2015).

Although countries across its range have legislation concerning fisheries activities (including gear restrictions, and no-trawling zones in coastal waters), fisheries taking *Rhinoptera marginata* are generally unmanaged throughout large parts of the species' range and it is unlikely that fisheries pressure will decrease in the near future.

Formerly assessed in Mediterranean as Near threatened in 2007 and reassessed as Data Deficient in 2016, this species deserves an Annex II listings of the SPA/BD Protocol, as its immediate transposition in the GFCM Recommendation GFCM/42/2018/2 could act as immediate and unprecedented prohibition measure for cownose rays. Moreover, due to the concern off Mediterranean for the fishing effort increase in the Eastern Central Atlantic and the suspect of high levels of Illegal, Unreported, and Unregulated (IUU) fishing in this region (Gutiérrez *et al.* 2020), the Mediterranean might represent a refuge for the future of the Lusitanian cownose ray.

If *Rhinoptera marginata* were to be listed on Annex II, to harmonize the Annexes, this provision should be considered for the similar species in the Order Myliobatiformes, *Aetomylaeus bovinus* and *Myliobatis aquila*.

#### **Bibliographical references**

- Ariel, A. and Barash, A. (2015). Action Plan for Protection of Sharks and Rays in the Israeli Mediterranean. EcoOcean Association. Israel: <https://www.ecoocean.org/wp-content/uploads/2020/12/Sharks-and-rays-conservation-plan-for-Israel-Ecoocean.pdf>
- Baino, R., Serena, F., Ragonese, S., Rey, J. and Rinelli P. (2001). Catch composition and abundance of Elasmobranchs based on the MEDITS program. *Rapp. Comm. int. Mer Médit* 36: 234.
- Basusta, A., Ozer, E. I., Sulikowski, J. A., and Basusta, N. (2012). First record of a gravid female and neonate of the Lusitanian cownose ray *Rhinoptera marginata*, from the eastern Mediterranean Sea. *Journal of Applied Ichthyology* 28, 643–644. doi:10.1111/J.1439-0426.2012.01941.X
- Carpenter, K.E. and De Angelis, N. (2016). *The living marine resources of the Eastern Central Atlantic. Volume 2: Bivalves, gastropods, hagfishes, sharks, batoid fishes, and chimaeras.* FAO Species Identification Guide for Fishery Purposes, Rome, FAO. pp. 665–1509.
- Cavanagh, Rachel D. and Gibson, Claudine. (2007). *Overview of the Conservation Status of Cartilaginous Fishes (Chondrichthyans) in the Mediterranean Sea.* IUCN, Gland, Switzerland and Malaga, Spain. vi + 42 pp
- Colloca, F., Cardinale, M., Belluscio, A. and Ardizzone, G. (2003). Pattern of distribution and diversity of demersal assemblages of the central Mediterranean Sea. *Estuarine and Coastal Shelf Science* 56: 469-480.
- Ferretti, F., Notarbartolo di Sciara, G., Serena, F. and Ducrocq, M. (2016). *Rhinoptera marginata* (errata version published in 2016). *The IUCN Red List of Threatened Species* 2016: e.T161463A97837871. Accessed on 28 April 2022.
- Garcia, V.B., Lucifora, O.L. and Myers, R.A. (2008). The importance of habitat and life history to extinction risk in sharks, skates, rays and chimaeras. *Proc Biol Sci*, 275:83-89
- Grubbs, R.D., Carlson, J.K., Romine, J.G., Curtis, T.H., McElroy, W.D., McCandless, C.T., Cotton, C.F. and Musick, J.A. (2016). Critical assessment and ramifications of a purported marine trophic cascade. *Scientific Reports* 6: 20970.
- Jabado, R.W., Chartrain, E., De Bruyne, G., Derrick, D., Dia, M., Diop, M., Doherty, P., Dossa, J., Ducrocq, M., Leurs, G.H.L., Metcalfe, K., Porriños, G., Seidu, I., Soares, A.-L., Tamo, A., VanderWright, W.J. & Williams, A.B. 2021. *Rhinoptera marginata.* *The IUCN Red List of Threatened Species* 2021: e.T161463A49318282. <https://dx.doi.org/10.2305/IUCN.UK.2021-2.RLTS.T161463A49318282.en>. Accessed on 28 April 2022.



- Massuti, E. and Moranta, J. (2003). Demersal assemblages and depth distribution of elasmobranchs from the continental shelf and slope off the Balearic Islands (western Mediterranean). *ICES Journal of Marine Science* 60: 753-766.
- Neer, J.A. and Thompson, B.A. (2005). Life history of the cownose ray, *Rhinoptera bonasus*, in the northern Gulf of Mexico, with comments on geographic variability in life history traits. *Environmental Biology of Fishes* 73: 321-331.
- Serena F. (2021). Elasmobranchs, 111-197. In: Carpentieri, P., Nastasi, A., Sessa, M. & Srour, A., eds. 2021. *Incidental catch of vulnerable species in Mediterranean and Black Sea fisheries – A review*. General Fisheries Commission for the Mediterranean. Studies and Reviews. No. 101. Rome, FAO, 320 pp. <https://doi.org/10.4060/cb5405en>
- Tıraşın E.M. and Basušta N. (2018). Near-term embryos and gravid females of Lusitanian cownose ray (*Rhinoptera marginata*) in Mersin Bay, eastern Mediterranean Sea. *Marine and Freshwater Research*, CSIRO PUBLISHING. <https://doi.org/10.1071/MF17356>
- Whitehead, P.J.P., Bauchot, M.-L., Hureau, J. and Tortonese E. (1984). *Fishes of the Northeastern Atlantic and the Mediterranean*, Vol. I. UNESCO, Paris.

**Annex IX**

**Draft Evaluation and Monitoring Framework for the Post-2020 Regional Strategy for MCPAs and  
OECMs in the Mediterranean**

## **Draft Evaluation and Monitoring Framework for the Post-2020 Regional Strategy for MCPAs and OECMs in the Mediterranean**

### **I. Background**

1. The Contracting Parties to the Barcelona Convention, at their COP 22 (Antalya, Türkiye, 7-10 December 2021):

- Adopted the Post-2020 Regional Strategy for marine and coastal protected areas (MCPAs) and other effective area-based conservation measures (OECMs) in the Mediterranean (Post-2020 Strategy for MCPAs and OECMs); and
- Requested SPA/RAC to develop an evaluation and monitoring framework (EMF) for the strategy, with the technical support of the Ad hoc Group of Experts for Marine Protected Areas in the Mediterranean (AGEM), using to the extent possible existing monitoring tools in the region, in particular those established under UNEP/MAP-Barcelona Convention as well as in the framework of Sustainable Development Goals (SDGs), Post-2020 Biodiversity framework and related target monitoring.

### **II. Guidance for the development of the Evaluation and Monitoring Framework**

2. During its third meeting (teleconference, 1 March 2022), AGEM requested SPA/RAC to prepare an overview of data and resources available, including reporting requirements, indicators and data in the framework of:

- the Post-2020 Strategic Action Programme for the Conservation of Biodiversity and Sustainable Management of Natural Resources in the Mediterranean Region (Post-2020 SAPBIO);
- the Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria (IMAP);
- the Barcelona Convention Reporting System (BCRS);
- the European Union (EU) Biodiversity Strategy processes;
- the Convention on Biological Diversity (CBD) reporting;
- the CBD Post-2020 Kunming Montreal Global Biodiversity Framework (GBF);
- the Sustainable Development Goals (SDGs);
- Regional Seas contribution to the GBF; and
- the zero draft of the MCPA-OECM strategy indicators, mid-term and final targets (drafted in 2021 during the strategy elaboration process).

3. AGEM also suggested aligning, where relevant, the evaluation and monitoring framework with the ongoing work on management effectiveness indicators in the EU's Natura 2000 network of protected areas.

4. AGEM recommended to have the evaluation and monitoring framework focused on the minimum requirement of indicators to ensure that the strategy objectives and achievements are effectively monitored; and to involve the SPA/BD Focal Points since the early stages of its development.

5. AGEM agreed to establish a dedicated working group on evaluation and monitoring (WG-E&M) formed by volunteer members, to focus on the development of the EMF, before validating it within the whole group.

### **III. Development of the Evaluation and Monitoring Framework**

6. After the adoption by the CBD COP 15 (Montreal, Canada, 7-19 December 2022) of the Kunming-Montreal Global Biodiversity Framework as well as the Monitoring framework for the Kunming-Montreal Global Biodiversity Framework, SPA/RAC was able to compile a comprehensive background document to help the AGEM working group members to discuss and develop the evaluation and monitoring framework for the Post-2020 Regional Strategy for MCPAs and OECMs in the Mediterranean.

7. Two meeting of the AGEM WG-E&M working group were held on 31 March 2023 and 5 April 2023, by teleconference, and led to the discussion and development of a draft Evaluation and Monitoring Framework. The draft was circulated for review and endorsement by all the AGEM members, before being submitted by the Secretariat for informal consultation with the SPA/BD Focal Points (teleconference, 18 April 2023).

8. The resulting draft Evaluation and Monitoring Framework for the Post-2020 Regional Strategy for MCPAs and OECMs in the Mediterranean is submitted to this meeting for review and endorsement.

9. The draft Evaluation and Monitoring Framework appears in Table 1 here below. The framework will have the format of an Appendix II to be appended to the Post-2020 Regional Strategy for MCPAs and OECMs, adopted by COP 22.

10. SPA/RAC and MedPAN are closely coordinating to ensure synergy between this Evaluation and Monitoring Framework for the Post-2020 Regional Strategy for MCPAs and OECMs in the Mediterranean and the Post-2020 Mediterranean MPA Roadmap Voluntary commitments' Monitoring and Evaluation Mechanism under development.

**Table 1: Appendix II – Draft Evaluation and Monitoring Framework for the Post-2020 Regional Strategy for MCPAs and OECMs in the Mediterranean, including indicators, mid-term and final targets.**

Output	Indicator	Mid-term target 2026	Final target 2030	Means of verification
<b>The Strategy overall target: By 2030, at least 30 per cent of the Mediterranean Sea is protected and conserved through well connected, ecologically representative and effective systems of marine and coastal protected areas and other effective area-based conservation measures, ensuring adequate geographical balance, with the focus on areas particularly important for biodiversity</b>				
--	% coverage of MCPAs and OECMs in the Mediterranean Sea	15% of the Mediterranean Sea	30% of the Mediterranean Sea	MAPAMED database <sup>1</sup>
<b>Strategic Outcome 1: Governance arrangements for MCPAs and OECMs are inclusive and effective in delivering conservation and livelihood outcomes</b>				
<b>Output 1.1:</b> Legal frameworks and institutional arrangements of MCPAs and OECMs allow for opportunities for participatory management	Number of Contracting Parties with legal frameworks and institutional arrangements of MCPAs allowing for opportunities for participatory management.	11 States Contracting Parties to the Barcelona Convention	All States Contracting Parties to the Barcelona Convention	National reports  Official data provided by the Contracting Parties
	Number of Contracting Parties with legal frameworks and institutional arrangements of OECMs allowing for opportunities for participatory management, considering the objectives of such OECMs.	11 States Contracting Parties to the Barcelona Convention	All States Contracting Parties to the Barcelona Convention	
<b>Output 1.2:</b> Governance arrangements for MCPAs and OECMs are inclusive and equitable	Number of Contracting Parties with governance structures and mechanisms (e.g., a national commission or other) for MCPAs established and functional, that facilitates inclusive and equitable governance.	11 States Contracting Parties to the Barcelona Convention	All States Contracting Parties to the Barcelona Convention	National reports  Official data provided by the Contracting Parties
	Number of Contracting Parties with appropriate procedures and mechanisms for the effective participation of and/or coordination with other stakeholders in OECM processes.	11 States Contracting Parties to the	All States Contracting Parties	

<sup>1</sup> SPA/RAC should ensure that the MAPAMED database is expanded to cover all the indicators agreed upon under this Evaluation and Monitoring Framework, and includes coastal protected areas, provided that relevant data and information are shared by the Contracting Parties to inform the MAPAMED database for these indicators.

		Barcelona Convention	to the Barcelona Convention	
<b>Output 1.3:</b> National, regional, transboundary and cross sectoral co-operation for the establishment and management of MCPAs and OECMs are strengthened	<p>Number of Contracting Parties with multi-sectoral cooperation tools (e.g., committees, consultations, agreements, etc.) for MCPAs or OECMs established.</p> <p>Number of transboundary co-operation agreements for MCPAs or OECMs.</p>	<p>11 States Contracting Parties to the Barcelona Convention</p> <p>3 Agreements</p>	<p>All States Contracting Parties to the Barcelona Convention</p> <p>5 Agreements</p>	<p>National reports</p> <p>Official data provided by the Contracting Parties</p>
<b>Output 1.4:</b> Adaptive planning and management frameworks of MCPAs and OECMs that anticipate, learn from and respond to changes in decision-making are strengthened	<p>Number of MCPAs that have management plans.</p> <p>% of MCPAs applying adaptive management.</p> <p>% of OECMs that have flexible procedures in place to ensure that results from monitoring, evaluation, consultation, and multiple knowledge sources are used to inform management and planning processes.</p>	<p>50% of MCPAs</p> <p>50% of MCPAs</p> <p>50% of OECMs</p>	<p>100% of MCPAs</p> <p>100% of MCPAs</p> <p>100% of OECMs</p>	<p>MAPAMED database</p>
<b>Strategic Outcome 2: MCPA coverage increased through the expansion of soundly-designed, ecologically representative and well-connected systems of MCPAs</b>				
<b>Output 2.1:</b> Areas of importance for biodiversity and ecosystem services are identified	<p>Number of Contracting Parties that have identified areas of importance for biodiversity and ecosystem services, serving to inform MCPAs establishment process.</p>	<p>11 States Contracting Parties to the Barcelona Convention</p>	<p>All States Contracting Parties to the Barcelona Convention</p>	<p>National reports</p> <p>Official data provided by the Contracting Parties</p>
<b>Output 2.2:</b> Distribution of MCPA systems across the Mediterranean Sea is balanced	<p>The unbalanced MCPA distribution between the 4 Mediterranean sub-regions (Adriatic Sea; Aegean - Levantine Sea; Ionian Sea and Central Mediterranean Sea; and Western Mediterranean Sea) is reduced.</p>	<p>The unbalanced distribution is reduced by 50%</p>	<p>The distribution is balanced</p>	<p>MAPAMED database</p>

	<u>Baseline: % coverage of MPAs per Mediterranean sub-region<sup>2</sup>:</u> Adriatic Sea: 4.8% Aegean - Levantine Sea: 2.1% Ionian Sea and Central Mediterranean Sea: 1.8% Western Mediterranean Sea: 20.4%			
<b>Output 2.3:</b> MCPA coverage in areas beyond national jurisdiction is increased	The coverage of MPAs in ABNJ <sup>3</sup> is increased. <u>Baseline: % coverage of MPAs in ABNJ: [less than 1.85%]<sup>4</sup></u>	The coverage of MPAs in ABNJ is increased by 50%	The coverage of MPAs in ABNJ is increased by 100%	MAPAMED database
<b>Output 2.4:</b> The number and coverage of MCPAs with enhanced protection levels is increased	% coverage of NTZs <sup>5</sup> within MCPAs/OECMs. <u>Baseline: % cumulative surface of no-go, no-take or no-fishing area<sup>6</sup>: 0.04%</u>	2% of the Mediterranean Sea	5% of the Mediterranean Sea	MAPAMED database National reports
<b>Strategic Outcome 3: Marine and coastal OECMs in the Mediterranean are identified, recognized and reported towards post-2020 global and regional targets</b>				
<b>Output 3.1:</b> Awareness in Contracting Parties and stakeholders on OECMs enhanced and guidance for the application of OECM criteria provided	Number of Contracting Parties that established processes to evaluate the application and identification of OECMs, applying the guidance for application of OECM criteria.	50% of the States Contracting Parties to the Barcelona Convention	100% of the States Contracting Parties to the Barcelona Convention	National reports Official data provided by the Contracting Parties
<b>Output 3.2:</b> OECMs identified, recognized and reported to regional and global databases by Contracting Parties and regional organizations	Surface of OECMs recognized and reported.	OECM surface complementing MPA surface to 15%	OECM surface complementing MPA surface to 30%	MAPAMED database

<sup>2</sup> Source: SPA/RAC and MedPAN, MAPAMED 2019 edition.

<sup>3</sup> The extent of ABNJ in the Mediterranean depends on the number of EEZs declared by coastal States. If all the coastal States declare their EEZ, there will be no more ABNJ.

<sup>4</sup> Figure to be updated by SPA/RAC on the following versions of the draft document (information requested from the Pelagos Agreement Permanent Secretariat).

<sup>5</sup> No-Take Zones are geographically defined zones within marine protected areas that do not allow any fishing, mining, drilling, or other extractive activities.

<sup>6</sup> Source: MedPAN: The Mediterranean MPA management database, 2021.

<p><b>Output 3.3:</b> Effectiveness of identified OECMs is enhanced, including through prioritization in cross-sectoral marine spatial planning</p>	<p>Number of OECMs included within MSP measures adopted by the Contracting Parties using OECMs to contribute to the 30% target for the Mediterranean.</p> <p>Number of projects to evaluate the effectiveness of OECMs.</p>	<p>3 OECMs</p> <p>3 projects</p>	<p>6 OECMs</p> <p>6 projects</p>	<p>National reports</p> <p>Official data provided by the Contracting Parties</p>
<p><b>Output 3.4:</b> New OECMs are established and recognized OECMs expanded</p>	<p>Guidance document on future OECM designation, recognition and reporting</p> <p>Number of new OECMs established at Mediterranean level contributing to the 30% collective target on protected areas and OECMs.</p>	<p>1</p> <p>10 OECMs</p>	<p>--</p> <p>20 OECMs</p>	<p>Guidance document</p> <p>MAPAMED database</p>
<p><b>Strategic Outcome 4: MCPAs are effectively managed and their conservation outcomes successfully delivered</b></p>				
<p><b>Output 4.1:</b> All MCPAs have adaptive management plans adopted, effectively implemented and periodically reviewed</p>	<p>MCPAs have adaptive management plans adopted, effectively implemented and periodically reviewed.</p>	<p>50% of MCPAs</p>	<p>100% of MCPAs</p>	<p>MAPAMED database</p>
<p><b>Output 4.2:</b> Sufficient and sustainable resources for the establishment and management of MCPAs in the Mediterranean are mobilized</p>	<p>% of MCPAs where financial constraints are not threatening the capacity of management to achieve the site's objectives.</p>	<p>50% of MCPAs</p>	<p>100% of MCPAs</p>	<p>MAPAMED database</p>
<p><b>Output 4.3:</b> Individual and institutional capacity for MCPA management is enhanced</p>	<p>% of MPCAs with adequate numbers of appropriately trained staff provided by the responsible entity.</p> <p>Number of Contracting Parties with MCPA institutions in place.</p>	<p>50% of MCPAs</p> <p>11 States Contracting Parties to the Barcelona Convention</p>	<p>100% of MCPAs</p> <p>All States Contracting Parties to the Barcelona Convention</p>	<p>MAPAMED database</p> <p>National reports</p> <p>Official data provided by the</p>



				Contracting Parties
<b>Output 4.4:</b> Surveillance and enforcement in MCPAs are strengthened and ensured, and user compliance is promoted	% MCPAs having regular surveillance.	50% of MCPAs	100% of MCPAs	National reports MAPAMED database
<b>Output 4.5:</b> Monitoring of conservation outcomes and evaluation of management effectiveness are strengthened across the MCPA system	% MCPAs with regular monitoring identifying biological threat and socio-economic indicators	50% of MCPAs	100% of MCPAs	MAPAMED database
	% MCPAs carrying out regular site-level management effectiveness evaluations	50% of MCPAs	100% of MCPAs	
<b>Strategic Outcome 5: Actions and support for MCPAs and OECMs are mobilized</b>				
<b>Output 5.1:</b> Awareness, understanding and appreciation of the values of, and threats to, MCPAs and OECMs across government and non-government stakeholders, the private sector, the youth and wider society	Number of Contracting Parties with targeted communication and awareness strategies as standalone or as part of other national activities.	11 States Contracting Parties to the Barcelona Convention	All States Contracting Parties to the Barcelona Convention	National reports Official data provided by the Contracting Parties Stakeholder survey
	Number of CPs having education programmes including MCPAs and OECMs.	11 States Contracting Parties to the Barcelona Convention	All States Contracting Parties to the Barcelona Convention	
	% of positive attitudes towards MCPAs/OECMs across wide stakeholder groups.	30% positive attitudes towards MCPAs/OECMs	60% positive attitudes towards MCPAs/OECMs	
<b>Output 5.2:</b> Political support for the establishment and management of MCPAs and biodiversity conservation is increased	% of MCPAs receiving regular adequate funds from government budgets for management.	50% of MCPAs	100% of MCPAs	National reports
	Number of Contracting Parties that consider MCPAs in Environmental Impact Assessments (EIAs) and Spatial Planning processes.	11 States Contracting Parties to the Barcelona Convention	All States Contracting Parties to the Barcelona Convention	Official data provided by the Contracting Parties

<p><b>Output 5.3:</b> The contribution of MPCAs and OEEMs to sustainable development goals, the blue economy, climate change mitigation and adaptation, and the wider society are recognized and accounted for</p>	<p>Number of Contracting Parties with MCPA/OEEM considerations included into national plans and policies for climate change mitigation and adaptation.</p>	<p>11 States Contracting Parties to the Barcelona Convention</p>	<p>All States Contracting Parties to the Barcelona Convention</p>	<p>National reports</p>
	<p>Number of Contracting Parties with MCPA/OEEM considerations included into national plans and policies for sustainable blue economy growth.</p>	<p>11 States Contracting Parties to the Barcelona Convention</p>	<p>All States Contracting Parties to the Barcelona Convention</p>	<p>Official data provided by the Contracting Parties</p>
	<p>Number of national Public Relation (PR) and awareness initiatives in relation with MCPA/OEEM targeting the wider society</p>	<p>1 per Contracting Party</p>	<p>2 per Contracting Party</p>	<p>Media produced (social media platforms, videos, etc.)</p>

**Annex X**  
**Draft Programme of work of SPA/RAC for the biennium 2024- 2025**

### **Narrative introduction to the draft Programme of Work 2024-2025 of SPA/RAC**

1. The activities and deliverables of the UNEP/MAP POW 2024-2025, proposed by SPA/RAC have been prepared following the guiding elements included in the “Guiding elements for the preparation of 2024-2025 UNEP/MAP Programme of Work (PoW)” prepared by the Secretariat. Since this is the second biennium of the MTS cycle (2022-2027), most of the proposed activities are in continuation of those started in the present biennium to implement relevant priority actions included in the new regional strategies adopted by the Contracting Parties to the Barcelona Convention at their 22nd meeting (COP 22, Antalya, Türkiye, 7-10 December 2021).
2. In developing the activities and deliverables of the UNEP/MAP POW 2024-2025, proposed by SPA/RAC, due consideration has been given to the contribution of its expected deliverables to the achievement of the 2022-2027 MTS programmes’ objectives, strategic outcomes and related targets. Special emphasis was placed on outcomes which require a long-term timespan, especially those planned to be expanded over the entire six-year MTS cycle or those implemented over a longer term and need to build on ongoing work of the current and previous medium-term strategies, such as threatened and endangered species and habitats conservation, marine and coastal protected areas establishment and management, SPAMI periodic review, EcAp/IMAP activities, etc. New activities related to emerging issues have been also launched mainly in relation to off-shore activities or to climate change, such as ecosystem restoration, nature-based technical solutions, mass mortality linked to heat waves, the interface of wind energy farms and marine biodiversity, etc.
3. The activities and deliverables of the UNEP/MAP POW 2024-2025, proposed by SPA/RAC aim at assisting the Contracting Parties in the implementation of the Specially Protected Areas and Biological Diversity (SPA/BD) Protocol, in particular, by protecting, preserving and managing, in a sustainable and environmentally sound way, areas of particular natural or cultural value, notably by establishing and fostering effective management of specially protected areas and by protecting, preserving and restoring threatened or endangered species of flora and fauna, and their habitats, in line with the SPA/RAC mandate.
4. The activities and deliverables of the UNEP/MAP POW 2024-2025, proposed by SPA/RAC have been developed considering the priorities defined in the Post-2020 SAPBIO, the Post-2020 Regional Strategy for marine and coastal protected areas (MCPAs) and other effective area-based conservation measures (OECMs) in the Mediterranean, adopted by the Contracting Parties at their 22nd meeting, and the Regional Action Plans and Strategy on threatened and endangered species and key habitats. Its deliverables aim at contributing, based on the available budget (both MTF and externally mobilized funds), to the implementation of Instruments and Decisions taken by the Contracting Parties to the Barcelona Convention: the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean (SPA/BD Protocol); in particular COP 22 Decision IG.25/1 UNEP/MAP Medium-Term Strategy 2022-2027, Decision IG.25/11 Post-2020 Strategic Action Programme for the Conservation of Biodiversity and Sustainable Management of Natural Resources in the Mediterranean Region (Post-2020 SAPBIO), Decision IG.25/12 Protecting and conserving the Mediterranean through well connected and effective systems of marine and coastal protected areas and other effective area-based conservation measures, including Specially Protected Areas and Specially Protected Areas of Mediterranean Importance, Decision IG.25/13 Action Plans for the conservation of species and habitats under the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean, and IG.25/19 Programme of Work and Budget for 2022-2023 Antalya, Türkiye, 7-10 December 2021).
5. The activities and deliverables of the UNEP/MAP POW 2024-2025, proposed by SPA/RAC also consider relevant current and emerging global and regional frameworks and processes, including

SDG 14.2, 14.4, 14.5, 12.2, 15.5, 15.8, 15.9, 15.a; UN Convention on Biological Diversity COP 15 outcomes and particularly the Kunming-Montreal Global Biodiversity Framework (GBF), UNFCCC and Paris Agreement, UN Decade on Ecosystem Restoration (2021-2030), UN Decade of Ocean Science for Sustainable Development (2021-2030), the international legally-binding instrument under the UN Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (BBNJ) – under negotiation, etc.

6. The activities and deliverables of the UNEP/MAP POW 2024-2025, proposed by SPA/RAC are developed mainly under six MTS Programmes, namely “Towards a pollution and litter free Mediterranean Sea and coast embracing circular economy”, “Towards Healthy Mediterranean Ecosystems and Enhanced Biodiversity”, “Towards a Climate Resilient Mediterranean”, “Governance”, “Together for a Shared Vision of the Mediterranean Sea and Coast” and “Towards a Stronger Advocacy, Awareness, Education and Communication of the Mediterranean Sea and Coast”. Particular attention will be paid to the collaboration with other MAP Components toward a more integrated MAP action and to the cooperation with relevant regional partners with the aim to achieve a more coherent and inclusive regional partnership.

**MTS Programme 1: “Towards a pollution and litter free Mediterranean Sea and coast embracing circular economy”.**

7. The primary goal of the proposed activities and deliverables for this program is to make sure that the socio-economic aspect of fisheries management is informed by biological and environmental considerations, and that the socio-economic aspect of fisheries management is considered when considering biological and environmental conservation. By developing a pilot NAP+, in collaboration with the Coordinating Unit and MEDPOL as well as GFCM, in at least one country where the use of ecosystem-based conservation and management tools will be tested, as relevant to the implementation of the Post 2020 SAP-BIO, the planned activities will aim to contribute to the alignment of national policies relating to the protection of the marine environment and the sustainable management of fisheries. More specifically, the proposed activities and deliverables aim to support:

- The development of a NAP+ including investment plan and its endorsement by decision makers in Montenegro.
- The establishment by interested CPs of a national public-private blue economy partnership and the preparation of a NAP+ including investment plans.

**MTS Programme 2: “Towards Healthy Mediterranean Ecosystems and Enhanced Biodiversity”**

8. The main objective of the activities and deliverables of the UNEP/MAP POW 2024-2025, proposed by SPA/RAC under this programme is to support the Contracting Parties in their efforts towards improving ecosystem resilience through restoration of those with best regeneration potential, to assist them in establishing, expanding and effectively managing a comprehensive, coherent and effective Mediterranean network of MCPAs and OECMs, improving the status of conservation of Mediterranean endangered and threatened species and key habitats and minimizing non-indigenous species introductions and controlling their introduction pathways. More specifically, the proposed activities and deliverables envisage to assist the Contracting Parties to identify and implement national measures to restore the most resilient marine and coastal habitats, as a means to allow successful restoration experiences during the UN Decade for Ecosystem Restoration and build capacities for more challenging ones in the future, including through the elaboration of tools and guidelines, specific training and countries’ field actions in collaboration with Plan Bleu, PAP/RAC and REMPEC as well as relevant regional and national organisations for many of the proposed activities.

- In the elaboration or updating of their national strategies and action plans for the development of MCPA and OECM networks, based on the orientations and priorities of the Post-2020

SAPBIO, Post-2020 Regional Strategy for MCPAs and OECMs, the Kunming-Montreal Global Biodiversity Framework, and other relevant global frameworks and targets.

- in extending their MPA/Specially Protected Areas of Mediterranean Importance (SPAMIs), Particularly Sensitive Sea Areas (PSSAs) and OECM networks, by extending existing areas, declaring new ones, including transboundary areas and in Areas Beyond National Jurisdictions (ABNJ), designating protected areas with enhanced protection levels, and enforcing efficient management measures for their long-term conservation. Specific support will be provided in terms of strengthening effective SPAMI management through continuing and fostering SPAMI Twinning Programmes and activities.
- to ensure continuous knowledge enhancement, management measures implementation and conservation status assessments of marine and coastal species and habitats covered by the Regional Action Plans and by the Annex II and III to the SPA/BD Protocol, in line with the IMAP requirements as well as data, knowledge and experience sharing, networking and capacity building programmes (scientific symposia and conferences, workshops and thematic regional, sub-regional and national training sessions), regional action plans/strategy update and elaboration of sub-regional and national ones, but also improvement and adaptation of measures to mitigate the impact and interaction with coastal and marine human activities and/or climate change and enhancing their adoption by the Contracting Parties.
- to undertake state of play on existing practices and measures for biodiversity restoration including their scientific evaluation and sharing best practices applicable to the Mediterranean, as well as through implementing pilot/demonstration and concrete actions, when possible and appropriate.

### **MTS Programme 3 “Towards a Climate Resilient Mediterranean”**

**9.** The main objective of the activities and deliverables of the UNEP/MAP POW 2024-2025, proposed by SPA/RAC under this programme is to support the Contracting Parties in identifying and implementing nature-based technical solutions to prevent or reduce the impact of climate change on marine and coastal ecosystems and increase resilience to climatic variability and change in collaboration with PAP/RAC, Plan Bleu and relevant regional actors. More specifically, the proposed activities and deliverables envisage assisting the Contracting Parties through:

- Assessing the nature-based technical solutions and best practices applicable to Mediterranean specific context disseminated for prevention or reduction of the impact of climate change on coastal and marine ecosystems and increasing their resilience.
- Emerging issues (mainly in relation to offshore activities and climate change) observation, analysis and identifying appropriate measures to address (prevent and/or mitigate) their impact on marine biodiversity and ecosystems.

### **MTS Programme 5 “Governance”**

**10.** The main objective of the activities and deliverables of the UNEP/MAP POW 2024-2025, proposed by SPA/RAC under this programme is to contribute to the effective implementation and enforcement by the Contracting Parties to the Barcelona Convention and its Protocols, of MAP Policies, the MSSD and Programmes of Measures achieved at regional and national levels. The aim is to ensure policy coherence and complementarity among relevant work at global, regional and national levels and among MAP-Barcelona Convention system’s policy and regulatory instruments, to enhance partnerships and multi-stakeholder engagement including with the private sector, civil society organisations and science-policy interface and the implementation of coordinated approaches to strengthen public institution capacities for the implementation of the Barcelona Convention and its Protocols with the guidance and collaboration of the Coordinating Unit. More specifically, the proposed activities and deliverables envisage to assist the Contracting Parties through:

- The organisation of the SPA/BD Focal Points Seventeenth Meeting and the SAPBIO National Correspondent and Advisory Committee meetings.
- Supporting National Biodiversity Strategic Action Programmes (NBSAPs) elaboration in alignment with the Post-2020 SAPBIO.
- Bilateral working exchanges with global and regional institutions of relevance for the implementation of the Post-2020 SAPBIO actions linked to their prerogatives.
- Promoting the title of “Partner” to the Regional Action Plans for the conservation of threatened or endangered species and marine key habitats: "Regional Action Plans Partners".
- Finalisation of funding proposals prepared within the Post-2020 SAPBIO Resource Mobilisation Strategy (RMS) elaborated during the current biennium, in consultation with the Contracting parties, the other MAP Components and regional and international partners members of the SAPBIO Advisory Committee, to support the Contracting Parties' institutions in implementing the Post-2020 SAPBIO priority actions, supported by the Post-2020 Regional Strategy for MCPAs and OECMs.

#### **MTS Programme 6 “Together for a Shared Vision of the Mediterranean Sea and Coast”**

**11.** The main objective of the activities and deliverables of the UNEP/MAP POW 2024-2025, proposed by SPA/RAC under this programme is to support and facilitate Environment and Development Observation and IMAP monitoring to provide updated and quality-assured data in support of decision-making by the Contracting Parties and assessment of GES and science-based IMAP, foresight and other assessments and assessment tools for strengthened science-policy interface and decision-making in collaboration with the other MAP Components and the Coordinating Unit, especially within the EcAp-IMAP implementation. More specifically, the proposed activities and deliverables envisage to assist the Contracting Parties through:

- Continuing the supporting of the development and implementation of National/Sub-regional Monitoring Programmes in line with the biodiversity cluster of IMAP and reporting results through the IMAP Info System, taking in consideration the MED QSR 2023 recommendations.
- Continuing the development of the IMAP Ecological Objective 4 on marine food webs under the Barcelona Convention and the development of EO1 CI1 and CI2 on pelagic habitats.
- Maintaining Biodiversity databases, as appropriate, regularly updating database content and elaborating the digitalisation of marine biodiversity data management in line with the UNEP/MAP Data Management Policy.
- Developing and updating monitoring and assessment criteria as well as the reporting processes at national, sub-regional and regional levels as necessary and appropriate for IMAP common indicators (CIs) on biodiversity.

#### **MTS Programme 7 “Towards a Stronger Advocacy, Awareness, Education and Communication of the Mediterranean Sea and Coast”**

**12.** The main objective of the activities and deliverables of the UNEP/MAP POW 2024-2025, proposed by SPA/RAC under this programme is to contribute to properly informing stakeholders and policy makers about the state of the Mediterranean Sea and coast and to let them aware of the environmental priority issues, in particular, those emphasised by the Post-2020 SAPBIO, which include area-based conservation in the Mediterranean, reduction of anthropogenic pressures on vulnerable species and habitats, sustainable fisheries, and the urgency for a transformative change necessitated to reverse the trend of biodiversity loss and erosion in the Mediterranean and to contribute to a digital transformation using digital technologies to improve networking and MAP visibility in

collaboration with INFO/RAC and the Coordinating Unit. More specifically, the proposed activities and deliverables envisage to assist the Contracting Parties through:

- Developing communication materials and organising events to enhance the engagement of key actors and decision-makers and raise their involvement in biodiversity conservation actions, including those related to marine protected areas, threatened and endangered species & habitats and the sustainable use of marine resources in the Mediterranean.
- Celebrating the SPAMI Day and delivering the SPAMI Certificates.
- Celebrating the 40<sup>th</sup> anniversary of SPA/RAC (1985-2025).
- Enhancing networking among SPAMIs and increasing the visibility of the SPAMI List through the SPAMI Collaborative Platform.

**13.** The activities and deliverables of the UNEP/MAP POW 2024-2025, proposed by SPA/RAC, are built on and aim at strengthening the result-based management (RBM) approach that has been already followed in the previous PoW cycles as well as the integration, to the extent possible, of the UNEP/MAP work.

**14.** Lessons learned from previous biennia have also been taken into consideration, particularly in terms of the feasibility of planned deliverables, implementation flexibility to be considered when programming, the number and size of planned actions and how to consolidate activities of a similar nature.

**15.** The activities and deliverables of the UNEP/MAP POW 2024-2025, proposed by SPA/RAC, consist of the following elements: the MTS 2022-2027 programmes and outcomes under which the PoW is developed. Under each outcome, are presented, respectively, the main activities and expected deliverables that would be produced, as well as the Lead Component (i.e., SPA/RAC), the other Components expected to contribute to the activity and the partners that would be involved to achieve the expected deliverables. Are, also, indicated in the tables for each main activity, the core MAP mandates and COP decisions as rationale that supports its relevance, as well as the SDG's references and global agenda to which it is linked. An idea is also given on whether only MTF budget and/or external resources are planned for the suggested activities and expected deliverables.

**16.** Main activities and deliverables led by other MAP Components where SPA/RAC is supposed to contribute to their implementation are also presented in the PoW template to give an idea on these activities to the SPA/BD focal points.



Programme 1. Towards a Pollution and Litter Free Mediterranean Sea and Coast Embracing Circular Economy							
Main activity	Expected deliverable	Lead Component	Other Component(s)	Partners	Related COP Decision	SDG Targets	MTF / External Resources / Both
<b>Outcome 1.2. A holistic and efficient response to land and sea -based pollution, as a part of overall Ecosystem Approach policy for the Mediterranean, (chemicals, contaminants, eutrophication, noise, oil and emerging pollution) for a sustainable Mediterranean coastal and marine ecosystem is implemented</b>							
<b>1.2.2 Take national and regional actions including enabling investments, to implement the adopted Regional Plans</b>	a) 21 NAPs/PoM developed including as appropriate project fiches on priority actions/interventions to achieve/maintain GES. b) NAP guidelines reviewed and updated. c) Quantifiable indicator-based evaluation of NAP implementation finalised for the period 2015-2025. d) Capacity building on policy formulation and implementation enhanced. e) Proposed indicator-based framework to monitor Marine Plastics.	MED POL	CU, SPA/RAC, PAP/RAC, Plan Bleu	WES, EBRD EIB Relevant national authorities / stakeholders, relevant regional partners	<b>LBS Protocol Article 13 COP19 Decision IG.22/8</b> - Implementation of Updated National Action Plans (NAPs), Containing Measures and Timetables for their Implementation	5.5, 5.c; 6.5; 6.6; 6.a; 12.4; 13.1; 14.1; 13.2; 14.2; 14.5	MTF  EU funded project EcAp MED PLUS  GEF (Med-Programme)  EU funded PERMAGOV

<p><b>1.2.10. Strengthen the capacity of individual coastal states to respond efficiently to marine pollution incidents</b></p>	<p>i) Effective support for the development of / integration in four (4) national contingency plans of oiled wildlife response. (2)</p>	<p>REMPEC</p>	<p>SPA/RAC</p>	<p>Sea Alarm, EUROWA, ISPRA, CEDRE</p>	<p><b>Prevention and Emergency Protocol</b> - Article 4 (Contingency plans and other means of preventing and combating pollution incidents); Article 6 (Cooperation in recovery operations); Article 8 (Communication of information and reports concerning pollution incidents); Article 11 (Emergency measures on board ships, on offshore installations and in ports); Article 12 (Assistance) <b>Offshore Protocol</b> - Article 16 (Contingency planning); Article 17 (Notification); Article 18 (Mutual assistance in case of emergency) <b>COP 8 Decision IG 3/5 (Appendix II)</b> - Mediterranean Assistance Unit for combating accidental marine pollution <b>COP 20 Decision IG.23/11</b>: Mediterranean Guide on Cooperation and Mutual Assistance in Responding to Marine Pollution Incidents <b>COP 22 Decision IG.25/16</b> - Mediterranean Strategy for the Prevention of, Preparedness, and Response to Marine Pollution from Ships (2022-2031)</p>	<p>5.5; 12.4; 14.1</p>	<p>Both</p>
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**Programme 2. Towards Healthy Mediterranean Ecosystems and Enhanced Biodiversity**

**Outcome 2.1. Ecosystem resilience improved through restoration of those with best regeneration potential**

<p><b>2.1.1. Promote the implementation of the UN Decade on Ecosystem Restoration in the Mediterranean: Identify innovative actions, capitalize and promote replication</b></p>	<p>a) Guidelines to develop species recovery Plans and implement emergency actions, elaborated.</p>	<p>SPA/RAC</p>	<p>CU, Plan Bleu, PAP/RAC and other Components as relevant</p>	<p>Action Plan Partners; H2020 Waterlands, Feu Vert, Euro Med Dialogue 4 Nature</p>	<p><b>COP22 Decision IG.25/11</b> - Post-2020 Strategic Action Programme for the Conservation of Biodiversity and Sustainable Management of Natural Resources in the Mediterranean Region (Post-2020 SAPBIO) Article 4,11,12,20 of <b>SPA/BD Protocol</b></p>	<p>14.2; 14.4; 14.5</p>	<p>MTF</p>
<p><b>2.1.1. Promote the implementation of the UN Decade on Ecosystem Restoration in the Mediterranean: Identify innovative actions, capitalize and promote replication</b></p>	<p>b) Priority actions supported for the full and effective implementation of the Restoration programme of <i>Pinna nobilis</i>.</p>	<p>SPA/RAC</p>	<p>CU and other Components as relevant</p>	<p>Action Plan Partners, relevant Project</p>	<p><b>COP22 Decision IG.25/11</b> - Post-2020 Strategic Action Programme for the Conservation of Biodiversity and Sustainable Management of Natural Resources in the Mediterranean Region (Post-2020 SAPBIO) Article 4,11,12,20 of <b>SPA/BD Protocol</b></p>	<p>14.2; 14.4; 14.5</p>	<p>Both</p>

	<p>c) Criteria for full inventory of ecosystems with the highest ecological relevance and/or regeneration potential developed.  d) Sites with best ecosystem regeneration potential identified.  e) Ecological integrity and biological diversity of the Northeast Atlantic as well as the Black, Caspian, Baltic and Mediterranean Seas, protected, preserved and restored through emphasizing of EBSAs areas and the establishment of effective MPAs within EBSAs (5 Seas Projects) and the restoration of wetlands (Waterlands and Feu Vert projects).</p>	SPA/RAC	CU, PAP RAC, Plan Bleu	<p>UNEP, GRID-ARENDAL,  UN Decade on Ecosystem Restoration,  MedWet, Tour du Valat,  H2020 Waterlands,  Feu Vert,</p>	<p><b>COP22 Decision IG.25/11</b> - Post-2020 Strategic Action Programme for the Conservation of Biodiversity and Sustainable Management of Natural Resources in the Mediterranean Region (Post-2020 SAPBIO)  Article 4,11,12,20 of <b>SPA/BD Protocol</b></p>	14.2; 14.4; 14.5	External resources - pending funding
<b>Outcome 2.2. Comprehensive, coherent Mediterranean network of well-managed MPAs and OECMs in place, expanded, effective and sustainable</b>							
<p><b>2.2.1. Support the Contracting Parties in protecting and conserving the Mediterranean Sea through well-connected, ecologically representative and effective systems of marine and coastal protected areas and other effective area-based conservation measures</b></p>	<p>a) Support given to Contracting Parties with technical tools on (i) monitoring, documenting, and communicating impacts of MCPAs with enhanced protection levels, (ii) best practices on co-management and participatory governance, and (iii) applying OECM criteria and establishing processes for identifying OECMs, to the implementation of the MCPA-OECM Strategy.</p>	SPA/RAC	CU	<p>ACCOBAMS,  GFCM, IUCN-Med, MedPAN,  WWF</p>	<p><b>COP 21 Decision IG.24/6</b> - Identification and Conservation of Sites of Particular Ecological Interest in the Mediterranean, including Specially Protected Areas of Mediterranean Importance  <b>COP 22 Decision IG.25/12</b> - Protecting and conserving the Mediterranean through well connected and effective systems of marine and coastal protected areas and other effective area-based conservation measures, including Specially Protected Areas and Specially Protected Areas of Mediterranean Importance</p>	5.5; 14.2;14.5; 15.1	MTF External Funds (EU funded SEMPA project)
	<p>b) Ad hoc Group of Experts for MPAs in the Mediterranean (AGEM) operational and effectively supported to guide the implementation of the MCPA-OECM Strategy.</p>	SPA/RAC	CU	<p>ACCOBAMS,  GFCM, IUCN-Med, MedPAN,  WWF</p>	<p><b>COP 21 Decision IG.24/6</b> - Identification and Conservation of Sites of Particular Ecological Interest in the Mediterranean, including Specially Protected Areas of Mediterranean Importance  <b>COP 22 Decision IG.25/12</b> - Protecting and conserving the Mediterranean through well connected and effective systems of marine and coastal protected areas and other effective area-based conservation measures, including Specially Protected Areas and Specially Protected Areas of Mediterranean Importance</p>	5.5; 14.2;14.5; 15.1	MTF External Funds (EU funded SEMPA project)

<p>c) Management and business plans elaborated for MCPAs in Egypt, Libya, Morocco and Tunisia based on sound scientific knowledge, comprehensive consultation and engagement of stakeholders.</p>	<p>SPA/RAC, Respective Contracting Parties</p>	<p>CU</p>	<p>Relevant national authorities, relevant regional partners</p>	<p><b>COP22 Decision IG.25/11</b> - Post-2020 Strategic Action Programme for the Conservation of Biodiversity and Sustainable Management of Natural Resources in the Mediterranean Region (Post-2020 SAPBIO)  <b>COP 22 Decision IG.25/12</b> - Protecting and conserving the Mediterranean through well connected and effective systems of marine and coastal protected areas and other effective area-based conservation measures, including Specially Protected Areas and Specially Protected Areas of Mediterranean Importance</p>	<p>5.5 14.2;14.5; 15.1</p>	<p>External Funds (EU funded SEMPA project) - Med Programme CP 3.1</p>
<p>d) MCPA management effectiveness improved through the implementation of management plans and capacity building programme in Algeria, Egypt, Lebanon, Libya, Morocco, and Tunisia.</p>	<p>SPA/RAC, Respective Contracting Parties</p>	<p>CU</p>	<p>Relevant national authorities, relevant regional partners</p>	<p><b>COP22 Decision IG.25/11</b> - Post-2020 Strategic Action Programme for the Conservation of Biodiversity and Sustainable Management of Natural Resources in the Mediterranean Region (Post-2020 SAPBIO)  <b>COP 22 Decision IG.25/12</b> - Protecting and conserving the Mediterranean through well connected and effective systems of marine and coastal protected areas and other effective area-based conservation measures, including Specially Protected Areas and Specially Protected Areas of Mediterranean Importance</p>	<p>5.5 14.2;14.5; 15.1</p>	<p>External Funds (EU funded SEMPA project) - Med Programme CP 3.1</p>
<p>e) Management effectiveness assessed in existing MCPAs/SPAMIs in Algeria, Lebanon, Morocco, and Tunisia using the Integrated Management effectiveness Tool (IMET).</p>	<p>SPA/RAC, Respective Contracting Parties</p>	<p>CU</p>	<p>Relevant national authorities, relevant regional partners</p>	<p><b>COP22 Decision IG.25/11</b> - Post-2020 Strategic Action Programme for the Conservation of Biodiversity and Sustainable Management of Natural Resources in the Mediterranean Region (Post-2020 SAPBIO)  <b>COP 22 Decision IG.25/12</b> - Protecting and conserving the Mediterranean through well connected and effective systems of marine and coastal protected areas and other effective area-based conservation measures, including Specially Protected Areas and Specially Protected Areas of Mediterranean Importance</p>	<p>5.5 14.2;14.5; 15.1</p>	<p>External Funds (EU funded SEMPA project)</p>

	<p>f) Fifth edition of the Forum of Marine Protected Areas in the Mediterranean successfully held; Direct and indirect MPA-related community gathered to allow networking and best practices shared; Priority action for effective implementation of the MCPA-OECM Strategy identified; Increased visibility and advocacy on MPAs in the Mediterranean achieved</p>	<p>SPA/RAC</p>	<p>CU and other Components as relevant</p>	<p>MedPAN (co-organizer with SPA/RAC), ACCOBAMS, GFCM, IUCN-Med, WWF (technical partners), host country environmental authorities, local partners.</p>	<p><b>COP 22 Decision IG.25/11</b> - Post-2020 Strategic Action Programme for the Conservation of Biodiversity and Sustainable Management of Natural Resources in the Mediterranean Region (Post-2020 SAPBIO)</p> <p><b>COP 22 Decision IG.25/12</b> - Protecting and conserving the Mediterranean through well connected and effective systems of marine and coastal protected areas and other effective area-based conservation measures, including Specially Protected Areas and Specially Protected Areas of Mediterranean Importance</p>	<p>5.5; 14.2;14.5; 15.1</p>	<p>MTF External Funds (EU funded SEMPA project)</p>
	<p>g) Training and capacity building activities undertaken at national and sub-regional level to enhance CPs ability for identification, recognition and reporting of OECM.</p>	<p>SPA/RAC, Respective Contracting Parties</p>	<p>CU, REMPEC, PAP/RAC</p>	<p>FAO, GFCM, IMO and other relevant organisations</p>	<p><b>COP22 Decision IG.25/11</b> - Post-2020 Strategic Action Programme for the Conservation of Biodiversity and Sustainable Management of Natural Resources in the Mediterranean Region (Post-2020 SAPBIO)</p> <p><b>COP 22 Decision IG.25/12</b> - Protecting and conserving the Mediterranean through well connected and effective systems of marine and coastal protected areas and other effective area-based conservation measures, including Specially Protected Areas and Specially Protected Areas of Mediterranean Importance</p>	<p>5.5; 14.2;14.5; 15.0</p>	<p>MTF External Funds (EU funded SEMPA project) – Med-Programme CP 3.1</p>

	<p>h) Further promote the uptake of the Ecosystem approach at national and regional level, under UNEP/MAP 2022-2027 Medium-Term Strategy Programme 2: Towards healthy Mediterranean ecosystems and enhanced biodiversity:</p> <p>i) .Needs assessment for the implementation, further elaboration and upgrade of Programmes of Measures (Pomp) and National Action Plans (NAPs) under UNEP/MAP 2022-2027 Medium-Term</p> <p>ii) further elaborated and upgraded Programmes of Measures (Pomp) and National Action Plans (NAPs)</p> <p>iii) Periodic regional and sub-regional training/capacity /Best practices sharing sessions</p>	<p>SPA/RAC</p>	<p>CU, Plan Bleu</p>	<p>Relevant national authorities / stakeholders, relevant regional partners</p>	<p><b>COP 22 Decision IG.25/11</b> - Post-2020 Strategic Action Programme for the Conservation of Biodiversity and Sustainable Management of Natural Resources in the Mediterranean Region (Post-2020 SAPBIO); <b>Decision IG.25/12</b> - Protecting and conserving the Mediterranean through well connected and effective systems of marine and coastal protected areas and other effective area-based conservation measures, including Specially Protected Areas and Specially Protected Areas of Mediterranean Importance; <b>Decision IG.25/13</b> - Action Plans for the conservation of species and habitats under the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean</p> <p><b>COP 21 Decision IG.24/7</b> - Strategies and Action Plans under the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean, including the SAP BIO, the Strategy on Monk Seal, and the Action Plans concerning Marine Turtles, Cartilaginous Fishes and Marine Vegetation; Classification of Benthic Marine Habitat Types for the Mediterranean Region, and Reference List of Marine and Coastal Habitat Types in the Mediterranean</p> <p><b>COP 20 Decision IG.23/8</b>: Updated Action Plan for the Conservation of Marine and Coastal Bird Species listed in annex II to the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean - Updated Reference List of Marine and Coastal Habitat Types in the Mediterranean</p> <p><b>COP 19 Decision IG.22/7</b> - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria; <b>Decision IG.22/12</b> - Updated Action Plans Concerning "Cetaceans"• , "Coralligenous and Other Calcareous Bioconcretions"• , and "Species Introductions and Invasive Species"• ; Mandate for update of the "Action Plan on Marine and Coastal Birds" and revision of the "œReference List of Marine and Coastal Habitat Types in the Mediterranean</p>	<p>5.5; 13.2; 14.2; 14.4</p>	<p>MTF and EU funded project EcAp MED PLUS</p>
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				<p><b>COP 18 Decision IG.21/3</b> - Ecosystems Approach including adopting definitions of Good Environmental Status (GES) and targets / <b>Decision IG.21/4</b> - Action Plans under the Specially Protected Areas and Biological Diversity Protocol including Monk Seal, Marine Turtles, Birds, Cartilaginous Fishes, and Dark Habitats</p> <p><b>COP 17 Decision IG.20/4</b> - Implementing MAP ecosystem approach roadmap: Mediterranean Ecological and Operational Objectives, Indicators and Timetable for implementing the ecosystem approach roadmap</p>		
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<p><b>2.2.2. Ensure effective SPAMI management and evaluation</b></p>	<p>a) SPAMI management status kept under review: SPAMI ordinary and extraordinary reviews undertaken: 2024 ordinary reviews (05): The Blue Coast Marine Park (FR), The Embiez Archipelago - Six Fours (FR), Capo Carbonara Marine Protected Area (IT), Penisola del Sinis - Isola di Mal di Ventre Marine Protected Area (IT), Porto Cesareo Marine Protected Area (IT) ; 2025 ordinary reviews (14): Lara-Toxeftra Turtle Reserve (CY), Port-Cros National Park (FR), Cerbère-Banyuls Marine Nature Reserve (FR), Pelagos Sanctuary for the Conservation of Marine Mammals (FR-IT-MC), Egadi Islands Marine Protected Area (IT), Landscape Park Strunjan (SI), Alboran Island (ES), Cabo de Gata-Nijar Natural Park (ES), Cap de Creus Natural Park (ES), Columbretes Islands (ES), Mar Menor and Oriental Mediterranean zone of the Region of Murcia coast (ES), Medes Islands (ES), Sea Bottom of the Levante of Almeria (ES), Cetaceans Migration Corridor in the Mediterranean (ES); and 2025 extraordinary reviews (05): Palm Islands Nature Reserve (LB), Tyre Coast Nature Reserve (LB), La Galite Archipelago (TN), Kneiss Islands (TN), Zembra and Zembretta National Park (TN).</p>	<p>SPA/RAC</p>	<p>CU</p>	<p>SPA/BD Focal Points, SPAMI managers</p>	<p><b>COP 22 Decision IG.25/12</b> - Protecting and conserving the Mediterranean through well connected and effective systems of marine and coastal protected areas and other effective area-based conservation measures, including Specially Protected Areas and Specially Protected Areas of Mediterranean Importance</p>	<p>5.5; Targets of SDG 14 and 15</p>	<p>MTF</p>
	<p>b) SPAMI Twinning Programmes developed: (i) exchange visits implemented for management issues diagnosis, habitats conservation &amp; fishing impacts, (ii) Medium-term on-the-job training implemented in twinned SPAMIs,</p>	<p>SPA/RAC</p>	<p>CU and other Components as relevant</p>	<p>SPAMI managers, SPA/BD Focal Points, SPAMI stakeholders,</p>	<p><b>COP 22 Decision IG.25/12</b> - Protecting and conserving the Mediterranean through well connected and effective systems of marine and coastal protected areas and other effective area-based conservation measures, including Specially Protected Areas and Specially Protected Areas of Mediterranean Importance</p>	<p>5.5, All SDG 14 Targets</p>	<p>External resources - pending funding</p>



	(iii) Peer-to-peer support and mentoring: actions to strengthen management effectiveness in twinned SPAMIs and/or joint monitoring programmes implemented.			CSOs and the private sector			
	c) Local stakeholders and civil society involved in SPAMI/MPA management.	SPA/RAC	CU and other Components as relevant	SPAMI managers, SPA/BD Focal Points, CSOs and the private sector	<b>COP 22 Decision IG.25/12</b> - Protecting and conserving the Mediterranean through well connected and effective systems of marine and coastal protected areas and other effective area-based conservation measures, including Specially Protected Areas and Specially Protected Areas of Mediterranean Importance	5.5; All SDG 14 Targets	External resources - pending funding
	d) SPAMI Collaborative Platform maintained, including through the intervention of other MAP Components in SPAMIs (management effectiveness, ICZM, MSP, sustainable tourism, etc.).	SPA/RAC	CU, PAP/RAC, Plan Bleu, the UNEP/MAP Regional Activity Centre for SCP (MedWaves) and other Components as relevant	SPAMI managers, SPA/BD Focal Points, SPAMI stakeholders, CSOs and the private sector	<b>COP 22 Decision IG.25/12</b> - Protecting and conserving the Mediterranean through well connected and effective systems of marine and coastal protected areas and other effective area-based conservation measures, including Specially Protected Areas and Specially Protected Areas of Mediterranean Importance	All SDG 14 Targets	Both

<p>e) Collaboration processes facilitated among neighbouring countries aiming at undertaking coordinated joint research and at identifying potential SPAMIs located wholly or partly in ABNJs.</p>	<p>SPA/RAC</p>	<p>CU and other Components as relevant</p>	<p>SPA/BD Focal Points, relevant national authorities, IMO, GFCM, FAO, ACCOBAMS</p>	<p><b>COP 22 Decision IG.25/12</b> - Protecting and conserving the Mediterranean through well connected and effective systems of marine and coastal protected areas and other effective area-based conservation measures, including Specially Protected Areas and Specially Protected Areas of Mediterranean Importance</p>	<p>All SDG 14 Targets</p>	<p>Both</p>
<p>f) A platform for Climate Change Monitoring in SPAMIs developed.</p>	<p>SPA/RAC</p>	<p>CU and other Components as relevant</p>	<p>SPAMI managers, SPA/BD Focal Points, SPAMI stakeholders</p>	<p><b>COP 22 Decision IG.25/12</b> - Protecting and conserving the Mediterranean through well connected and effective systems of marine and coastal protected areas and other effective area-based conservation measures, including Specially Protected Areas and Specially Protected Areas of Mediterranean Importance</p>	<p>All SDG 14 Targets</p>	<p>Both</p>

**Outcome 2.3. Mediterranean endangered and threatened species and key habitats in favourable status of conservation**

<p><b>2.3.1. Implement regional and national actions to boost the implementation of the Action Plans on marine key habitats</b></p>	<p>a) Status of implementation of the Action Plan for the conservation of the coralligenous and other calcareous bio-concretions in the Mediterranean Sea assessed and Action Plan updated</p>	<p>SPA/RAC</p>	<p>CU and other Components as relevant</p>	<p>National experts and organizations, NGOs, SPA/BD Focal Points, Action Plans Partners; relevant partners such as GFCM</p>	<p><b>COP 19 Decision IG.22/12</b> - Updated Action Plans Concerning "Cetaceans", "Coralligenous and Other Calcareous Bioconcretions", and "Species Introductions and Invasive Species"; Mandate for update of the "Action Plan on Marine and Coastal Birds" and revision of the "Reference List of Marine and Coastal Habitat Types in the Mediterranean ,  <b>COP 15 Decision IG.17/6</b> - Implementation of the ecosystem approach to the management of human activities that may affect the Mediterranean marine and coastal environment  <b>COP 19 Decision IG.22/7</b> - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria  <b>COP 22 Decision IG.25/11</b> - Post-2020 Strategic Action Programme for the Conservation of Biodiversity and Sustainable Management of Natural Resources in the Mediterranean Region (Post-2020 SAPBIO)</p>	<p>14.1; 14.2; 14.4; 14.6</p>	<p>MTF</p>
	<p>b) Guidelines suited to the inventorying and monitoring of dark habitats and associated assemblages updated</p>	<p>SPA/RAC</p>			<p><b>COP 22 Decision IG.25/13</b> - Action Plans for the conservation of species and habitats under the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean  <b>COP 15 Decision IG.17/6</b> - Implementation of the ecosystem approach to the management of human activities that may affect the Mediterranean marine and coastal environment  <b>COP 19 Decision IG.22/7</b> - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria  <b>COP 22 Decision IG.25/11</b> - Post-2020 Strategic Action Programme for the Conservation of Biodiversity and Sustainable Management of Natural Resources in the Mediterranean Region (Post-2020 SAPBIO)</p>	<p>14.1; 14.2; 14.4; 14.6</p>	<p>MTF</p>

	<p>c) Detailed guidelines for effective management measures of dark habitats developed in collaboration with relevant partners</p>	<p>SPA/RAC</p>		<p><b>COP 22 Decision IG.25/11</b> - Post-2020 Strategic Action Programme for the Conservation of Biodiversity and Sustainable Management of Natural Resources in the Mediterranean Region (Post-2020 SAPBIO)  <b>COP 22 Decision IG.25/12</b> - Protecting and conserving the Mediterranean through well connected and effective systems of marine and coastal protected areas and other effective area-based conservation measures, including Specially Protected Areas and Specially Protected Areas of Mediterranean Importance  <b>COP 22 Decision IG.25/13</b> - Action Plans for the conservation of species and habitats under the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean  <b>COP 15 Decision IG.17/6</b> - Implementation of the ecosystem approach to the management of human activities that may affect the Mediterranean marine and coastal environment  <b>COP 19 Decision IG.22/7</b> - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria</p>	<p>14.1; 14.2; 14.4; 14.6</p>	<p>MTF</p>
	<p>d) Measures related to conservation in the Mediterranean marine ecosystems to respond to mass mortality events linked to heatwaves' events identified</p>	<p>SPA/RAC</p>		<p><b>COP 22 Decision IG.25/11</b> - Post-2020 Strategic Action Programme for the Conservation of Biodiversity and Sustainable Management of Natural Resources in the Mediterranean Region (Post-2020 SAPBIO)  <b>COP 15 Decision IG.17/6</b> - Implementation of the ecosystem approach to the management of human activities that may affect the Mediterranean marine and coastal environment  <b>COP 19 Decision IG.22/7</b> - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria</p>	<p>14.1; 14.2; 14.4; 14.6</p>	<p>MTF</p>

<p><b>2.3.2. Effectively implement the updated regional Strategy and Action Plans for the conservation of threatened and endangered species and share related best practices</b></p>	<p>a) Status of implementation of the Action plans on marine turtles and cartilaginous fish species listed in annex II of SPA/BD Protocol assessed and action plans updated</p>	SPA/RAC	CU and other Components as relevant	<p>National experts and organizations, NGOs, SPA/BD Focal Points, Action Plans Partners; BlueSeeds BirdLife Europe and Central Asia, GFCM, ACCOBAMS, IUCN Med, MEDASSET, WWF, Medpan, DEKAMER, ARCHELON,</p>	<p><b>COP Decisions on Species Action Plans</b> (Monk Seal Action Plan; Action Plan for the Conservation of Mediterranean Marine Turtles; Action Plan for the Conservation of Cetaceans in the Mediterranean Sea; Action Plan for the Conservation of Bird Species inventoried in the annex II of the SPA Protocol; Action Plan on Cartilaginous Fishes in the Mediterranean Sea; Action Plan on Introduction of Species and Invasive Species in the Mediterranean Sea; Action Plan on Coralligenous &amp; other Calcareous Bio-concretions in the Mediterranean)</p> <p><b>COP 15 Decision IG.17/6:</b> Implementation of the ecosystem approach to the management of human activities that may affect the Mediterranean marine and coastal environment</p> <p><b>COP 19 Decision IG.22/7</b> - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria</p> <p><b>COP 22 Decision IG.25/11</b> - Post-2020 SAPBIO; <b>Decision IG.25/13</b> - Action Plans for the conservation of species and habitats under the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean; <b>Decision IG.25/12</b> - Protecting and conserving the Mediterranean through well connected and effective systems of marine and coastal protected areas and other effective area-based conservation measures, including Specially Protected Areas and Specially Protected Areas of Mediterranean Importance</p>	14.2; 14.4; 14.5	MTF
	<p>b) Status of the Monk seal regional strategy implementation in the Mediterranean assessed and strategy updated</p>						MTF
	<p>c) Knowledge enhanced and awareness actions on monk seal in the Mediterranean implemented</p>						Both
	<p>d) Priority actions to fill key knowledge gaps for threatened and endangered species supported including monitoring of interactions with fisheries, mainly bycatch and other threats (i.e., Marine Litter, Underwater Noise, Collision, CC, etc.) and their mitigation.</p>						Both
	<p>e) Conservation status of threatened and endangered species improved at national and regional levels as provided for in the related updated regional Action Plans (Cartilaginous fishes, marine turtles, cetaceans and marine &amp; coastal Birds).</p>	Both					
	<p>f) Assessment of the status and vulnerability of habitats and species included in the Annex II and III of the SPA/BD Protocol which are not in EcAp-IMAP/GES category, including recent updates and the new 2019 habitat classification, elaborated and a list of priority established.</p>	SPA/RAC	CU, Plan Bleu	Action Plans Partners, IUCN-Med,			Both
	<p>g) A Mediterranean horizon scan of emerging issues impacting marine and coastal biodiversity conservation</p>	SPA/RAC	Plan Bleu				Pending funding

	h) NAP + integrating fisheries and aligned with the Post 2020 SAPBIO goals and targets, including investment plan, drafted and endorsed by decision makers in Montenegro.	CU, SPA/RAC		GFCM and GEF FishEBM Med partners and beneficiary countries	<p><b>COP 15 Decision IG.17/6</b> - Implementation of the ecosystem approach to the management of human activities that may affect the Mediterranean marine and coastal environment</p> <p><b>COP 19 Decision IG.22/7</b> - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria</p> <p><b>COP 22 Decision IG.25/11</b> - Post-2020 SAPBIO; Decision IG.25/13 - Action Plans for the conservation of species and habitats under the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean</p>	5.5; 14.1; 14.2; 14.4; 14.5	External  GEF funds (FishEBM Med project)			
	i) Interested CPs supported in the establishment of a national public-private blue economy partnership.									
<p><b>2.3.3. Implement conservation measures and share best practices related to threatened and endangered species listed in Annex II to SPA/BD Protocol</b></p>	a) Conservation of threatened and vulnerable species improved through related awareness activities, including best practices promotion to mitigate interaction with human activities (bycatch, depredation, marine litter, underwater noise, stranding, habitat loss, etc.) at national and regional levels.	SPA/RAC	CU and other Components as relevant	National experts and organizations, NGOs, SPA/BD Focal Points, Action Plans Partners; BlueSeeds BirdLife Europe and Central Asia, GFCM, ACCOBAMS, IUCN Med, MEDASSET, WWF, Medpan, DEKAMER, ARCHELON,	<p><b>COP Decisions on Species Action Plans</b> (Action Plan for the management of the Monk Seal in the Mediterranean, regional Strategy for the conservation of the Monk Seal in the Mediterranean ; Action Plan for the Conservation of Marine Turtles; Action Plan for the Conservation of Cetaceans in the Mediterranean Sea; Action Plan for the Conservation of Bird Species inventoried in the annex II of the SPA/DB Protocol; Action Plan on Cartilaginous Fishes in the Mediterranean Sea; Action Plan on Introduction of Species and Invasive Species in the Mediterranean Sea; Action Plan on Coralligenous &amp; other Calcareous Bio -concretions in the Mediterranean)</p> <p><b>COP 15 Decision IG.17/6</b> - Implementation of the ecosystem approach to the management of human activities that may affect the Mediterranean marine and coastal environment</p> <p><b>COP 19 Decision IG.22/7</b> - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria</p> <p><b>COP 22 Decision IG.25/11</b> - Post-2020 SAPBIO; <b>Decision IG.25/13</b> - Action Plans for the conservation of species and habitats under the SPA/DB Protocol; <b>Decision IG.25/12</b> - Protecting and conserving the Mediterranean through well connected and effective systems of marine and coastal</p>	14.2; 14.4; 14.5	Both			
	b) Conservation status of vulnerable species improved through communication and advocacy/policy materials including best practices (Infographics, videos, reports, etc.) at national and regional levels.									
	c) Most recent collected data on vulnerable mobile species is analysed, gathered, promoted and made available to the contracting parties via the Marine Biodiversity Platform.								14.2; 14.4; 14.5	both

					protected areas and other effective area-based conservation measures, including Specially Protected Areas and Specially Protected Areas of Mediterranean Importance		
<b>2.3.4 Evaluation of the approach based on regional action plans for selected species and habitats adopted under the SPA/BD Protocol, in the light of the New Global Biodiversity Framework and the EcAp/IMAP process of the Barcelona Convention</b>	a) Approach based on regional Action Plans for selected species and habitats adopted under the SPA/BD Protocol evaluated and recommendations for the way forward identified.	SPA/RAC	CU and other Components as relevant		<p><b>COP 15 Decision IG.17/6</b> - Implementation of the ecosystem approach to the management of human activities that may affect the Mediterranean marine and coastal environment</p> <p><b>COP 19 Decision IG.22/7</b> - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria</p> <p><b>COP 22 Decision IG.25/11</b> - Post-2020 SAPBIO; Decision IG.25/13 - Action Plans for the conservation of species and habitats under the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean</p>	14,2	MTF
<b>Outcome 2.4. Non -indigenous species introductions minimized and introduction pathways under control</b>							
<b>2.4.1. Update and implement the regional action plan on Non-Indigenous Species (NIS) and species introductions, as well as targeted measures of the Ballast Water Management Strategy for the Mediterranean Sea (2022-2027)</b>	a) Implementation of targeted NAPs measures on NIS by at least 4 Contracting Parties (Egypt, Tunisia, Libya, Lebanon) supported in coordination with IMAP implementation.	SPA/RAC	CU, REMPEC	Concerned CPs	<p>Article 13 of the <b>SPA/BD Protocol</b></p> <p><b>COP 22 Decision IG.25/11</b> - Post-2020 SAPBIO; Decision IG.25/13 - Action Plans for the conservation of species and habitats under the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean</p> <p><b>COP 19 Decision IG.22/12</b> - Updated Action Plans Concerning "Cetaceans", "Coralligenous and Other Calcareous Bioconcretions", and "Species Introductions and Invasive Species"; Mandate for update of the "Action Plan on Marine and Coastal Birds" and revision of the "Reference List of Marine and Coastal Habitat Types in the Mediterranean"</p> <p><b>COP 19 Decision IG.22/7</b> - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria</p> <p><b>COP 15 Decision IG.17/6</b> - Implementation of the</p>	14.1; 14.2; 14.4; 14.6	MTF

	<p>b) Priority actions supported for the full and effective implementation of the updated regional NIS Action Plan.</p>	<p>SPA/RAC</p>	<p>CU, REMPEC</p>	<p>Relevant CPs</p>	<p>ecosystem approach to the management of human activities that may affect the Mediterranean marine and coastal environment</p> <p>Article 13 of the <b>SPA/BD Protocol</b>  <b>COP 22 Decision IG.25/11</b> - Post-2020 SAPBIO; Decision IG.25/13 - Action Plans for the conservation of species and habitats under the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean;  <b>Decision IG.25/12</b> - Protecting and conserving the Mediterranean through well connected and effective systems of marine and coastal protected areas and other effective area-based conservation measures, including Specially Protected Areas and Specially Protected Areas of Mediterranean Importance  <b>COP 19 Decision IG.22/12</b> - Updated Action Plans Concerning "Cetaceans", "Coralligenous and Other Calcareous Bioconcretions", and "Species Introductions and Invasive Species"; Mandate for update of the "Action Plan on Marine and Coastal Birds" and revision of the "Reference List of Marine and Coastal Habitat Types in the Mediterranean"  <b>COP 19 Decision IG.22/7</b> - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria  <b>COP 15 Decision IG.17/6</b> - Implementation of the ecosystem approach to the management of human activities that may affect the Mediterranean marine and coastal environment</p>	<p>14.1; 14.2; 14.4; 14.6</p>	<p>MTF</p>
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	<p>c) Measures to cope with the negative effects of non-indigenous species on biodiversity as well as those of other potential stressors identified and disseminated.</p>	<p>SPA/RAC</p>	<p>CU, INFO/RAC</p>	<p>CPs and relevant national &amp; regional scientific partners</p>	<p>Article 13 of the <b>SPA/BD Protocol</b>  <b>COP 22 Decision IG.25/11</b> - Post-2020 SAPBIO; Decision IG.25/13 - Action Plans for the conservation of species and habitats under the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean  <b>COP 19 Decision IG.22/12</b> - Updated Action Plans Concerning "Cetaceans", "Coralligenous and Other Calcareous Bioconcretions", and "Species Introductions and Invasive Species"; Mandate for update of the "Action Plan on Marine and Coastal Birds" and revision of the "Reference List of Marine and Coastal Habitat Types in the Mediterranean"  <b>COP 19 Decision IG.22/7</b> - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria  <b>COP 15 Decision IG.17/6</b> - Implementation of the ecosystem approach to the management of human activities that may affect the Mediterranean marine and coastal environment</p>	<p>14.1; 14.2; 14.4; 14.6</p>	<p>MTF and FishEBM fund</p>
	<p>d) Assistance provided to contracting Parties to implement target measures to control and manage ships' ballast water and biofouling, to minimize the transfer of invasive aquatic species</p>	<p>SPA/RAC, REMPEC</p>	<p>CU</p>	<p>CPs and relevant national &amp; regional scientific partners</p>	<p>Article 13 of the <b>SPA/BD Protocol</b>  <b>COP 22 Decision IG.25/11</b> - Post-2020 SAPBIO; Decision IG.25/13 - Action Plans for the conservation of species and habitats under the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean;  <b>Decision IG.25/17</b> - Ballast Water Management Strategy for the Mediterranean Sea (2022-2027)  <b>COP 19 Decision IG.22/12</b> - Updated Action Plans Concerning "Cetaceans", "Coralligenous and Other Calcareous Bioconcretions", and "Species Introductions and Invasive Species"; Mandate for update of the "Action Plan on Marine and Coastal Birds" and revision of the "Reference List of Marine and Coastal Habitat Types in the Mediterranean"  <b>COP 19 Decision IG.22/7</b> - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria  <b>COP 15 Decision IG.17/6</b> - Implementation of the</p>	<p>14.1; 14.2; 14.4; 14.6</p>	<p>MTF</p>

				ecosystem approach to the management of human activities that may affect the Mediterranean marine and coastal environment		
e) Targeted technical support provided to CPs, which so request, for the ratification and implementation of the Ballast Water Management Convention as well as for the implementation of the 2011 Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species.	REMPEC, SPA/RAC	CU	IMO, GEF, UNDP, EBRD	<p><b>Prevention and Emergency Protocol</b> - Article 4 (Contingency plans and other means of preventing and combating pollution incidents)</p> <p><b>SPA/BD Protocol</b> - Article 13 (Introduction of non-indigenous or genetically modified species)</p> <p><b>COP 15 Decision IG.17/6</b> - Implementation of the ecosystem approach to the management of human activities that may affect the Mediterranean marine and coastal environment</p> <p><b>COP 19 Decision IG.22/12</b> - Updated Action Plans Concerning "Cetaceans"• , "Coralligenous and Other Calcareous Bioconcretions"• , and "Species Introductions and Invasive Species"• ; Mandate for update of the "Action Plan on Marine and Coastal Birds" and revision of the "œReference List of Marine and Coastal Habitat Types in the Mediterranean"</p> <p><b>COP 22 Decision IG.25/16</b> - Mediterranean Strategy for the Prevention of, Preparedness, and Response to Marine Pollution from Ships (2022-2031)</p> <p><b>COP 22 Decision IG.25/17</b> - Ballast Water Management Strategy for the Mediterranean Sea (2022-2027)</p>	14,2	Both
f) Joint Conference on BWM organised with neighbouring regions to share experiences and promote further alignment.		CU				Both
g) Study to develop a regional information and decision support system or tool undertaken.		CU, INFO/RAC				Both

	h) Mid-term review of the Ballast Water Management Strategy for the Mediterranean Sea (2022-2027) undertaken; recommendations on the way forward elaborated.		CU				Both
<b>Programme 3. Towards a Climate Resilient Mediterranean</b>							
<b>Outcome 3.1. Legal, policy and institutional framework strengthened at the regional and national level to efficiently address climate change related challenges (flooding, erosion, land degradation, pollution, disasters etc.)</b>							
<b>3.1.1. Mainstream adaptation to climate change into local ICZM plans</b>	b) Climate change adaptation planning capacities improved and supported, in particular to address issues affecting marine resources and fisheries sector.	CU, SPA/RAC		GFCM and GEF FishEBM Med partners and beneficiary countries	<b>COP 15 Decision IG.17/6</b> - Implementation of the ecosystem approach to the management of human activities that may affect the Mediterranean marine and coastal environment; <b>COP 19 Decision IG.22/7</b> - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria ; <b>COP 22 Decision IG.25/11</b> - Post-2020 SAPBIO and <b>Decision IG.25/13</b> - Action Plans for the conservation of species and habitats under the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean	5.5; 13.2; 13.b	GEF funds (FishEBM Med project)
<b>Outcome 3.2. Nature-based, technical solutions promoting prevention or reduction of the impact of climate change on coastal and marine ecosystems and increase resilience to climatic variability and change</b>							
<b>3.2.1. Mainstream nature-based solutions into regional policies implementation, including for adaptation and mitigation to climate change,</b>	a) An assessment on nature-based technical solutions promoting prevention or reduction of the impact of climate change on coastal and marine ecosystems and increasing their resilience.  b) Best practices applicable to Mediterranean specific context disseminated.	SPA/RAC	CU, PB/RAC, PAP/RAC	IUCN-Med and other relevant organisations	<b>COP 22 Decision IG.25/11</b> - Post-2020 SAPBIO; <b>Decision IG.25/12</b> - Protecting and conserving the Mediterranean through well connected and effective systems of marine and coastal protected areas and other effective area-based conservation measures, including Specially Protected Areas and Specially Protected Areas of Mediterranean Importance	14.1; 14.2; 14.4; 14.6	MTF and External Resources (to be identified)

disaster risk reduction and sustainable development/ green economy.	c) Guidelines for nature-based solutions applicable in various coastal typologies to combat impacts of climate change finalised and disseminated.	PAP/RAC	SPA/RAC, PB/RAC	MedECC	Art. 5, 22 and 23 of the <b>ICZM Protocol</b> ; <b>COP 21 Decision IG.24/5</b> - Common Regional Framework for Integrated Coastal Zone Management	SDG 13 Targets	MTF
	d) Conceptual framework for the establishment of institutional dialogues on restoration and Nature-based Solutions produced. e) Links assessed between legislative processes at different governance levels affecting the adoption of nature policies that will be implemented.	Plan Bleu	SPA/RAC	Dialogue4Nature	<b>COP22 Decision IG25/11</b> - Post-2020 SAPBIO and <b>Decision IG.25/1</b> - UNEP/MAP Medium-Term Strategy 2022-2027	14.1; 14.2; 14.4; 14.6	Both
	f) 2016 Regional Climate Change Adaptation Framework for the Mediterranean Marine and Coastal Areas updated to consider new challenges, tools, and nature-based solutions	CU	All MAP Components	UfM, PRIMA, MedECC, UNFCCC	<b>COP 19 Decision IG. 22/6</b> - Regional Climate Change Adaptation Framework for the Mediterranean Marine and Coastal Areas	SDG 13 Targets	Both

**Programme 4. Towards the Sustainable Use of Coastal and Marine Resources Including Circular and Blue Economy**

**Outcome 4.1. Sustainability of coastal and marine resources achieved through the synergetic implementation of planning and management approaches, including the adequate consideration of Land-Sea Interactions (LSI)**

<b>4.1.2. Implement CAMP Projects</b>	a) CAMP Israel finalised, and Final Presentation Conference organised. b) Feasibility study for a new CAMP project prepared. c) Agreement signed for a new CAMP.	PAP/RAC	All MAP Components	Participating CPs	Art. 18 of the <b>ICZM Protocol</b> ; <b>COP 21 Decision IG.24/5</b> - Common Regional Framework for Integrated Coastal Zone Management	All SDGs, as appropriate	MTF
<b>4.1.4. Assist CPs in implementing MSP</b>	a) Baseline studies for MSP/Blue Economy prepared in Albania as a follow-up of the CAMP Otranto project, and in Tunisia following the ratification of the ICZM Protocol.	PAP/RAC	All MAP Components	Participating CPs, IOC-UNESCO	Art. 3, 6 and 9 of the <b>ICZM Protocol</b> ; <b>COP 21 Decision IG.24/5</b> - Common Regional Framework for Integrated Coastal Zone Management	Targets of SDGs 8, 9, 10, 12, 13, 14 and 15	MTF

<p><b>4.1.5. Update methodological guidance for reaching GES through ICZM</b></p>	<p>a) Methodological guidance proposed in the Common Regional Framework for ICZM updated and disseminated. b) Matrix of interactions between the ICZM Protocol provisions and EOs for the Adriatic sub-region prepared.</p>	<p>PAP/RAC</p>	<p>All MAP Components</p>	<p>CPs</p>	<p><b>COP 21 Decision IG.24/5</b> - Common Regional Framework for Integrated Coastal Zone Management</p>	<p>All SDGs, as appropriate</p>	<p>External non secured</p>
<p><b>4.1.7. Analyse key barriers and levers for improving marine policies coherence</b></p>	<p>a) State of the art on key barriers and levers prepared. b) Science-policy dialogue facilitated and recommendations drafted for strengthening biodiversity protection within MSP.</p>	<p>PAP/RAC</p>	<p>SPA/RAC</p>	<p>MSP4BIO project partners (CEREMA, WWF, HELCOM, VLIZ, SYKE, UAC, NMRD, SEASCAPE)</p>	<p>Art. 3, 6, 9 and 10 of the <b>ICZM Protocol</b></p>	<p>5.5, and Targets of SDG 8, 9, 10, 12, 13, 14 and 15</p>	<p>EU Horizon Europe project MSP4BIO</p>

**Outcome 4.2. Sustainable Blue and Green Economy tools and approaches in the context of Sustainable Development and MSSD implementation**

<p><b>4.2.5. Create community of MSP practice in the Mediterranean</b></p>	<p>a) A position paper and agenda for the MSP implementation within the BC system prepared.          b) Interactive MSP Workspace maintained and regularly updated with new material.          c) Task Force for MSP implementation set-up.          d) Cooperation with other MSP players in the Region strengthened and formalised.</p>	<p>PAP/RAC</p>	<p>All MAP Components</p>	<p>IOC-UNESCO, UfM, National MSP authorities</p>	<p>Art. 3, 6 and 9 of the <b>ICZM Protocol</b></p>	<p>5.5, and Targets of SDG 8, 9, 10, 12, 13, 14 and 15</p>	<p>MTF</p>
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<b>Outcome 4.3. Innovative environmental management and economic instruments implemented for the protection and efficient use of coastal and marine resources</b>							
<p><b>4.3.1. Support the effective use by CPs of economic instruments and other tools for nature conservation and sustainable development in order to diversify the policy mix in the Mediterranean</b></p>	<p>a) Cross-sectoral exchanges organized on environmental economic instruments in the Mediterranean, sharing good practices across sectors (climate, water, biodiversity, pollution, fisheries), and tools (such as payment for environmental services, subsidies, conservative easement tools)- at a regional level, and upon agreement with volunteering countries, at national level. b) Lessons learned shared through publication.</p>	<p>Plan Bleu</p>	<p>SPA/RAC</p>		<p><b>COP22 Decision IG.25/1</b> - UNEP/MAP Medium-Term Strategy 2022-2027</p>	<p>SDG 14.6 but also cross-cutting, in particular SDGs 8, 11, 12, 14</p>	<p>Both</p>
<b>Outcome 4.4. Measures defined within the Mediterranean Offshore Action Plan applied at regional level and by each Contracting Party within their jurisdiction to ensure the safety of offshore activities and reduce their potential impact on the marine environment and its ecosystem</b>							
<p><b>4.4.1. Implement key targeted measures of the Mediterranean Offshore Action Plan</b></p>	<p>a) Meeting of the Barcelona Convention Offshore Oil and Gas Group (OFOG) organised and held; Offshore Protocol implementation and Annexes to the Offshore Protocol kept under review; best practices and latest relevant developments shared.</p>	<p>REMPEC, CU</p>	<p>MED POL, SPA/RAC, INFO/RAC</p>	<p>IOGP, IPIECA, MOIG</p>	<p><b>Offshore Protocol</b> - Article 16 (Contingency planning); Article 17 (Notification); Article 18 (Mutual assistance in case of emergency) <b>COP 17 Decision IG.20/12</b> - Action Plan to implement the Protocol of the Barcelona Convention concerning the Protection of the Mediterranean Sea Against Pollution Resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and its Subsoil <b>COP 19 Decision IG.22/3</b> - Mediterranean Offshore Action</p>	<p>5.5, 9.4; 14.2</p>	<p>MTF</p>

	<p>b) Training organised on Offshore platform Preparedness and Response and Contingency Plan Assessment, as set out in Appendix 2 of the Mediterranean Offshore Action Plan (2016-2024) and defined by the 2023 OFOG Meeting.</p>			<p>Plan in the framework of the Protocol for the Protection of the Mediterranean Sea against Pollution resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and its Subsoil  <b>COP 21 Decision IG.24/9 - Mediterranean Offshore Guidelines and Standards:</b> (a) Common Standards and Guidance on the Disposal of Oil and Oily Mixtures and the Use and Disposal of Drilling Fluids and Cuttings; (b) Common Standards and Guidelines for Special Restrictions or Conditions for Specially Protected Areas (SPA) within the Framework of the Mediterranean Offshore Action Plan  <b>COP 22 Decision IG.25/7</b> - Amendments to the Annexes to the Protocol for the Protection of the Mediterranean Sea against Pollution Resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and its Subsoil  <b>COP 22 Decision IG.25/15</b> - Guidelines for the Conduct of Environmental Impact Assessment (EIA) under the Protocol for the Protection of the Mediterranean Sea against Pollution Resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and its Subsoil</p>		<p>Both</p>
	<p>c) Mediterranean Offshore Action Plan (2016-2024) extended and updated, as defined by the 2023 OFOG Meeting.</p>					<p>MTF</p>

**Programme 5. Governance**

**Outcome 5.1. Effective Implementation and Enforcement by the Contracting Parties of the Barcelona Convention, its Protocols, MAP Policies, including Ecosystem Approach related COP decisions, the MSSD and Programmes of Measures achieved at regional and national levels**

<p><b>5.1.1. Strengthen Contracting Parties action to comply with legally binding obligations under Barcelona Convention and its Protocols</b></p>	<p>a) Progress on ratification of the Protocols of the Barcelona Convention; Facilitation and/or technical support provided upon request.</p>	<p>CU</p>	<p>MAP Components</p>	<p>Participating CPs and their relevant authorities and institutions</p>	<p><b>COP 22 Decision IG.25/1</b> - UNEP/MAP Medium-Term Strategy 2022-2027, <b>Decision IG.25/2</b> - Compliance Committee</p>	<p>All SDG 14 Targets; 17.14</p>	<p>MTF</p>
	<p>b) Contracting Parties develop national policies, legislation and mechanisms for the implementation and enforcement of the BC Protocols.  c) Technical assistance to CPs to develop national policies, regulatory frameworks</p>	<p>CU, Compliance Committee</p>	<p>MAP Components</p>	<p>MEAs, UNEP</p>	<p><b>COP 22 Decision IG.25/2</b> - Compliance Committee</p>	<p>All SDG 14 Targets; 17.14</p>	<p>Both</p>



	<p>and which are consistent with the BC and its Protocols is provided.</p> <p>d) Status of implementation of the Barcelona Convention and its protocols reviewed, achievements and issues at stake identified.</p> <p>e) Coordinated assistance to address cases of implementation difficulties and or possible noncompliance situations.</p>						
	<p>f) Coastal and marine law for Bosnia-Herzegovina drafted, in line with the provisions of the ICZM Protocol.</p>	PAP/RAC	CU /Other MAP Components	National authorities and institutions	<b>COP 22 Decision IG.24/5</b> - Common Regional Framework for Integrated Coastal Zone Management	Targets of SDG2 5, 8, 9, 11, 12, 13, 14 and 15	GEF MedProgram me
<b>5.1.2 Advance the implementation of Ecosystem Approach in the Mediterranean and IMAP in coherence with regional and global developments</b>	<p>a) Prepare a renewed EcAp Roadmap/ policy for the implementation of the ecosystem approach and the achievement of GES beyond 2023, for review of EcAp/IMAP Governance bodies.</p> <p>b) Review IMAP and prepare proposals for a renewed IMAP, following the experience with QSR 2023 preparation and its findings and recommendations.</p> <p>c) Coordinated implementation of IMAP ensured through IMAP Task Force and CORMON and as appropriate online working group meetings.</p> <p>d) synergies maximised on ecosystem approach implementation with global and regional partners with a particular focus on EU MSFD CIS.</p>	CU	All MAP Components	<p>UN Ocean Science Decade, EU MSFD, GFCM, ACCOBAMS, IUCN, IAEA, EEA, BRSC, IMO, GEF, FM, RS of UNEP, UNEP Regional Seas work on indicators, Global Assessments, OSPAR, HELCOM, Black Sea Commission</p>	<p><b>COP 15 Decision IG.17/6</b> - Implementation of the ecosystem approach to the management of human activities that may affect the Mediterranean marine and coastal environment</p> <p><b>COP 17 Decision IG.20/4</b> - Implementing MAP ecosystem approach roadmap: Mediterranean Ecological and Operational Objectives, Indicators and Timetable for implementing the ecosystem approach roadmap</p> <p><b>COP 18 Decision IG.21/3</b> - Ecosystems Approach including adopting definitions of Good Environmental Status (GES) and targets</p> <p><b>COP 19 Decision IG.22/7</b> - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria.</p> <p><b>COP 22 Decision IG.25/3</b> (Annex I)- Governance</p>	All SDG 14 Targets; 17.14; to a lesser extent SDGs 6, 12, 13	MTF, external funds, (b) & (c) SEMPA, EcAp Med PLUS & ML Med PLUS

<p><b>5.1.4. Ensure MAP Data Policy full implementation at regional and as appropriate at national levels</b></p>	<p>a) MAP Data Policy Annexes related to each UNEP/MAP data flow tuned and updated.  b) Dissemination activities carried out among CPs in order to facilitate the Data Policy implementation.  c) Assistance/training workshops for CPs for MAP data sharing Policy implementation on general and particular (at country level) issues (at least one workshop for each beneficiary country.  d) Evaluate the effectiveness of MAP Data Policy principles application in time (e.g., though monitoring on data retrieved from Countries).  e) Support MAP Components and CU in the correct and full interpretation of MAP Data Policy and its application at country level.</p>	<p>INFO/RAC</p>	<p>CU, MAP Components</p>		<p><b>COP 19 Decision IG.22/7</b> - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria  <b>COP 22 Decision IG.25/3</b> - Governance  <b>COP22 Decision IG.25/10</b> - MAP Data Policy</p>	<p>SDG 14 Targets</p>	<p>MTF</p>
<p><b>5.1.5. Effective Implementation and Enforcement of Post-2020 SAPBIO</b></p>	<p>a) Mid-term assessment of the collective implementation of the Post-2020 SAPBIO elaborated in 2025, based on the timeline adopted part of the Post-2020 SAPBIO.</p>	<p>SPA/RAC</p>	<p>All MAP Components</p>	<p>CPs (SPA/BD FPs, SAPBIO Correspondents ), advisory committee members</p>	<p><b>Decision IG.25.11</b> - Post-2020 Strategic Action Programme for the Conservation of Biodiversity and Sustainable Management of Natural Resources in the Mediterranean Region (Post-2020 SAPBIO)</p>	<p>SDG 14 Targets</p>	<p>MTF</p>
	<p>b) Two meetings of the SAP BIO National Correspondents organised (one virtual meeting in 2024; one presential meeting in 2025) preceded by SAPBIO Advisory Committee meeting (both online) and reports available.</p>	<p>SPA/RAC</p>	<p>All MAP Components</p>	<p>CPs (SPA/BD FPs, SAPBIO Correspondents )</p>	<p><b>COP 22 Decision IG.25.11</b> - Post-2020 Strategic Action Programme for the Conservation of Biodiversity and Sustainable Management of Natural Resources in the Mediterranean Region (Post-2020 SAPBIO)</p>	<p>Targets of SDG 14, 13 and 17</p>	<p>MTF</p>
<p><b>Outcome 5.2. Systemic strengthening and effective functioning and delivery of MAP decision-making and advisory bodies ensured, and efficiency enhanced with new digital approaches</b></p>							
<p><b>5.2.1. Deliver successfully COP 24 of MAP Barcelona Convention</b></p>	<p>a) COP 24 Declaration, Decisions including the PoW 2026-2027 reviewed and adopted, recommendations of the Compliance Committee and the MCSD reviewed.</p>	<p>CU</p>	<p>MED POL, RACs</p>	<p>Egypt, the Host Country, CPs, MAP Partners</p>	<p><b>COP 15 Decision IG.17/5</b> - Governance paper</p>	<p>All SDG 14 targets; 17.14</p>	<p>Both</p>

	<p>b) Progress achieved during the biennium 2024-2025 reviewed and acknowledged.</p> <p>c) Status of implementation of the Convention and its Protocols reviewed.</p> <p>d) MAP visibility and outreach enhanced.</p>						
<p><b>5.2.2. Deliver successfully the 21st Meeting of the MCSD</b></p>	<p>a) 21st Meeting of the MCSD successfully convened; Strengthened Partnerships for Sustainable Development in the Mediterranean.</p> <p>b) MCSD Meeting organized with Partners, Inputs provided to COP 24 to the Contracting Parties.</p> <p>c) 2 meetings of the MCSD Steering Committee.</p>	CU	<p>Plan Bleu, the UNEP/MAP Regional Activity Centre for SCP (MedWaves and other MAP Components</p>	<p>Host Country, MCSD Members, MAP Partners</p>	<p><b>Decision IG.25/3 - Governance</b></p>	<p>crosscutting especially on SDGs 2, 5.5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17</p>	Both
<p><b>5.2.3. Deliver successfully the main institutional meetings of MAP (Bureau, Consultation FP Meeting, MAP Focal Point, EcAp Coordination Group and Thematic/Components Focal Points).</b></p>	<p>a) The 95<sup>th</sup>, 96<sup>th</sup> and 97<sup>th</sup> Meetings of the Bureau as well as a Bureau meeting on the eve of COP 24 successfully held.</p> <p>b) Progress of implementation of the MAP PoW 2024-2025 reviewed on a 6-monthly basis.</p> <p>c) Guidance provided to the Secretariat and the Contracting Parties on specific issues.</p> <p>d) Main directions of the new PoW 2026-2027 defined.</p>	CU	All MAP Components	<p>UNEP, MEA, IMO and all REMPEC's Partners, Host country authorities, MAP Partners, SPA/RAC partner organizations (observers)</p>	<p><b>COP 22 Decision IG.25/1 - UNEP/MAP Medium-Term Strategy 2022-2027</b></p>	All SDG 14 targets, 17.14	MTF/Both
	<p>e) Meeting of the MAP Focal Points preceded by the MAP Component/Thematic Focal Points and back-to-back with the EcAp Coordination Group Meetings.</p> <p>f) Progress on POW implementation reviewed; EcAp Roadmap Implementation and other related COP decisions implementation reviewed.</p> <p>g) Draft decisions to COP 24 reviewed and negotiated, PoW and Budget reviewed, etc.</p>	SPA/RAC	All MAP components	<p>UNEP, MEA, IMO and all REMPEC's Partners, Host country authorities, MAP Partners, SPA/RAC partner organizations (observers)</p>	<p><b>COP 22 Decision IG.25/1 - UNEP/MAP Medium-Term Strategy 2022-2027</b></p>	All SDG 14 targets, 17.14	MTF

	<p>h) Technical products of MAP components reviewed by the Components Focal Points meetings.</p> <p>i) Integrated sessions organised based on thematic approach.</p>						
<p><b>5.2.5. Strengthen the MAP result-based programmatic framework including gender mainstreaming and sustainability of operations</b></p>	<p>a) Methodology/ tool for the monitoring and evaluation of MTS and POW indicators and targets developed; Integration of/links with other sets of MAP indicators and targets assessed.</p> <p>b) Resource Mobilisation Strategy updated; New project concept notes developed.</p> <p>c) Externally funded projects executed effectively and in coordination with PoW.</p> <p>d) MAP sustainable operations and meetings/events (paperless meetings, CO2 calculation etc.); Staff capacities enhanced.</p> <p>e) Gender is mainstreamt in MTS, Projects and MAP Component activities Implementation</p>	CU	MEDPOL, RACs	MEAs, MAP Partners	<p><b>COP 15 Decision IG.17/5</b> - Governance paper</p> <p><b>COP 16 Decision IG.19/5</b> - Mandates of the Components of MAP</p> <p><b>COP 21 Decision IG.24/2</b> - Governance</p> <p><b>COP 22 Decision IG.25/1</b> - UNEP/MAP Medium-Term Strategy 2022-2027</p> <p>[Potential COP23 Decision - Governance]</p>	5.5; 5.a; 5.b; 5.c	MTF and external funds: SEMPA, EcAp Med PLUS & ML Med PLUS
<p><b>5.2.6. Establish and enhance Inter-Ministerial Coordination (IMC) frameworks at national level</b></p>	<p>a) IMAP national steering committees fully operational in several Contracting Parties with stakeholder participation.</p>	CU	MAP components	CPs in particular the beneficiaries of relevant projects	<p><b>COP 15 Decision IG.17/6</b> - Implementation of the ecosystem approach to the management of human activities that may affect the Mediterranean marine and coastal environment</p> <p><b>COP 19 Decision IG.22/7</b> - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria</p>	All SDG 14 Targets; 17.14	External

<p><b>5.2.7. Review the MSSD through an inclusive, participatory process</b></p>	<p>a) MSSD 2016-2025 evaluation successfully delivered. b) Next, reviewed, MSSD successfully prepared and submitted to MAP governing bodies through a participatory process, taking into account MED2050 results and preliminary work on sustainability indicators.</p>	<p>CU, Plan Bleu</p>	<p>Other MAP Components</p>	<p>MCSDD members, MAP Partners</p>	<p><b>COP 19 Decision IG.22/2</b> - Mediterranean Strategy for Sustainable Development 2016-2025</p>	<p>crosscutting especially on SDGs 2,5.5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17</p>	<p>MTF</p>
<p><b>Outcome 5.3. Policy coherence and complementarity ensured among relevant work at global, regional and national levels and among MAP-Barcelona Convention system's policy and regulatory instruments</b></p>							
<p><b>5.3.1. Adapt the Simplified Peer Review Mechanism (SIMPEER) to thematic strategies</b></p>	<p>a) Prepare methodology and identify volunteer countries for a BioSimpeer (Simpeer peer-to-peer methodology adapted to SDG 14, Montreal-Kunming Declaration, SAPBIO and National Biodiversity Strategies), for implementation in following biennium.</p>	<p>CU, Plan Bleu</p>	<p>CU, SPA/RAC</p>	<p>UNDESA - HPLF, OECD, UNECA, UNECE, UNESCWA, EPLO)</p>	<p><b>COP 21 Decision IG.24/3</b> - Implementation, Monitoring and Mid-Term Evaluation of the Mediterranean Strategy for Sustainable Development 2016–2025 and of the Regional Action Plan on Sustainable Consumption and Production in the Mediterranean</p>	<p>crosscutting especially on SDGs 2, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17</p>	<p>External</p>
<p><b>5.3.2. Maximize synergies with Post 2020 Global agenda for the implementation of SAP BIO</b></p>	<p>a) Effective working exchanges with Global institutions of relevance for the implementation of Post-2020 SAPBIO actions linked to their prerogatives ensured.</p>	<p>SPA/RAC</p>	<p>CU, PAP/RAC, REMPEC, Plan Bleu</p>	<p>Relevant CPs, SCBD, FAO GFCM, UNFCCC, IUCN, IMO, UN-Oceans, UNESCO- IOC, IPBS</p>	<p><b>COP 22 Decision IG.25.11</b> - Post-2020 Strategic Action Programme for the Conservation of Biodiversity and Sustainable Management of Natural Resources in the Mediterranean Region (Post-2020 SAPBIO)</p>	<p>Targets of SDG 14 and 17</p>	<p>MTF mainly</p>
<p><b>Outcome 5.4. Enhanced partnerships and multi-stakeholder engagement, including with the private sector and science policy interface</b></p>							
<p><b>5.4.1. Promote dialogue and enhanced engagement of global and regional organizations, including Conventions'</b></p>	<p>a) Leading role of MAP further defined and strengthened in existing and new areas. b) New areas of cooperation identified and added to existing bilateral cooperation agendas: Focus GFCM, UfM, CBD and other Biodiversity related organisations incl, ACCOBAMS, Marine Litter, BRS Conventions, EEA, IMO Conventions, PAMEX, PLIFF, Blue Economy Partnership,</p>	<p>CU</p>	<p>RACs, MED POL</p>	<p>International and regional organizations, private sector/donors, UNEP, MEAs, CPs</p>	<p><b>COP 22 Decision IG.25/3</b> - Governance</p>	<p>17.14, 17.16</p>	<p>MTF mainly</p>

<p><b>Secretariats and Partners</b></p>	<p>Ocean Missions, ScineMeet, UNEP GPA, UNEP Regional Seas, HELCOM, OSPAR, Black Sea Commission, EU WES, EUSAIR, WestMed, IOC UNESCO, BBNJ, Plastic Treaty, INTERREG EURO-MED, Interreg NEXT MED, INTERREG IPA ADRIATIC IONIAN etc. c) Cooperation with new partner institutions, including form private sector, initiated. d) Technical Secretariat of PAMEx delivered and Steering Committee meetings organised.</p>					
	<p>d) Lessons learnt and best practices promoted to showcase the benefits of the concerted MAP-GFCM approach in aligning different national and regional priorities of RSO and RFBs.</p>	<p>CU, SPA/RAC</p>		<p>GFCM, CBD, and International and regional seas and fisheries organisations</p> <p><b>COP Decisions</b> on Species Action Plans (Action Plan for the management of the Monk Seal in the Mediterranean, regional Strategy for the conservation of the Monk Seal in the Mediterranean; Action Plan for the Conservation of Marine Turtles; Action Plan for the Conservation of Cetaceans in the Mediterranean Sea; Action Plan for the Conservation of Bird Species inventoried in the annex II of the SPA/DB Protocol; Action Plan on Cartilaginous Fishes in the Mediterranean Sea; Action Plan on Introduction of Species and Invasive Species in the Mediterranean Sea; Action Plan on Coralligenous &amp; other Calcareous Bio - concretions in the Mediterranean) <b>COP 15 Decision IG.17/6:</b> Implementation of the ecosystem approach to the management of human activities that may affect the Mediterranean marine and coastal environment. <b>COP 19 Decision IG.22/7</b> - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria <b>COP 22 Decision IG.25/11</b> - Post-2020 SAPBIO; <b>Decision IG.25/13</b> - Action Plans for the conservation of species and habitats under the SPA/DB Protocol; <b>Decision IG.25/12</b> - Protecting and conserving the Mediterranean through well connected and effective systems of marine and coastal protected areas and other effective area-based conservation</p>	<p>14.1; 14.2; 14.4; 14.5; 14.7</p>	<p>External GEF funds (FishEBM Med project)</p>

					measures, including Specially Protected Areas and Specially Protected Areas of Mediterranean Importance		
<b>5.4.2. Strengthen participation and contribution of civil society including MAP partners and private sector to the work of MAP BC system</b>	<p>a) MAP Policy on Partnerships updated including an Engagement mechanism/strategy for Civil Society Organisations.</p> <p>b) New MAP Partners added, and existing MAP Partners renewed, Enhanced engagement of MAP Partners in policy development and implementation.</p> <p>c) Annual round table discussions held (back-to-back with other meetings).</p> <p>d) Comprehensive plan of actions implemented.</p>	CU	RACs, MEDPOL	MAP Partners, NGOs, CPs	<b>COP 22 Decision IG.25/3 - Governance</b>	17.6; 17.9; 17.14; 17.16; 17.17	MTF
<b>5.4.3. Strengthen SPI networks and enhance partnership with scientific institutions to support MAP Barcelona Convention system</b>	<p>a) Partnership Agreement signed with scientific Institutions to support integrated assessment of GES.</p> <p>b) SPI platform set up to support IMAP implementation at national and regional levels.</p>	CU	All MAP Components, IMAP Task Force	Scientific institutions ; UNESCO ; IOC; CNR	<b>COP 22 Decision IG.25/4 - Assessment Studies</b>	SDG 14 Targets; SDG 17.14; 17.16; 17.17	Both
<b>5.4.4. Promote the title of Partner to Regional Action Plan for the conservation of</b>	<p>a) Regional Action Plans Partners Title promoted, and the list of Action Plan Partners established for each Regional Action Plan</p>	SPA/RAC	CU, relevant RACs	RAPs Partners, MedPAN, Partner	<b>COP 16 Decision IG.19/6 - MAP/Civil society cooperation and partnership</b>	5.5; 14.1; 15.1	External fund (SEMPA) MTF

threatened species and marine key habitats "Regional Action Plans Partners"							
<b>Outcome 5.5. Coordinated approaches implemented to strengthen public institution capacities for the implementation of the Barcelona Convention and its Protocols</b>							
5.5.1. Strengthening national governance frameworks for the implementation of the BC and its Protocols through education	a) Short courses designed and organized linked to the implementation and enforcement of the BC and its Protocols in universities and other academic institutions.	CU	RACs, MEDPOL	MEAS, UNEP, Academic institutions, InforMea	<b>COP 22 Decision IG.25/1</b> - UNEP/MAP Medium-Term Strategy 2022-2027	4.7; 4.5; 14.a	Both



<p><b>5.5.2. Development of project proposals to support Parties' institutions on initial implementation of Post-2020 SAPBIO</b></p>	<p>a) Finalization of project portfolio with donors and inception of regional/subregional level projects for key priority strategic actions of the Post-2020 SAPBIO insured.</p>	<p>SPA/RAC</p>	<p>CU /Other RACs as per thematic</p>	<p>CPs, SPA/BD FPs, SAPBIO National Correspondents , technical partners, Public and private donors</p>	<p><b>COP 22 Decision IG.25.11</b> - Post-2020 Strategic Action Programme for the Conservation of Biodiversity and Sustainable Management of Natural Resources in the Mediterranean Region (Post-2020 SAPBIO)</p>	<p>Targets of SDG 14, 13 and 17</p>	<p>External Resources</p>
<p><b>Programme 6. Towards Monitoring, Assessment, Knowledge and Vision of the Mediterranean Sea and Coast for Informed Decision-Making</b></p>							
<p><b>Outcome 6.2. Science-based IMAP, foresight and other assessments and assessment tools for strengthened science-policy interface and decision making (in-house expertise, consultancy, publication, toolbox, national technical support, pilots(s))</b></p>							
<p><b>6.2.1. Strengthen the implementation of national IMAP-based monitoring programmes for all clusters and deliver quality assured data</b></p>	<p>a) 21 CPs implement national IMAP and report quality assured data to the IMAP InfoSystem in a timely manner on biodiversity and NIS. b) At least 7 CPs supported through capacity building, monitoring directives application and quality assured data production.</p>	<p>SPA/RAC</p>	<p>Relevant RACs, CU</p>	<p>National IMAP competent laboratories/ authorities; relevant national and international scientific institutions</p>	<p><b>COP 19 Decision IG.22/7</b> - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria <b>COP 20 Decision IG.23/6</b> - 2017 Mediterranean Quality Status Report <b>COP 21 Decision IG.24/4</b> - Assessment Studies</p>	<p>14.1; 14.2; 14.4; 14.5</p>	<p>MTF and External Funds (b) SEMPA Project</p>

<p>c) 21 CPs implement national IMAP and report quality assured data to the IMAP InfoSystem in a timely manner on pollution and litter. d) Capacity building programme prepared and conducted to support the application of the Monitoring Guidelines for IMAP CIs 13, 14, 17, 18 and 20 in up to 4 CPs. e) Support is provided to monitoring of IMAP Ecological Objective 10 (EO10) Marine Litter including (i) monitoring of IMAP Common Indicator 22 (beach macro-litter) and Common Indicator 23 (seafloor and floating marine litter/microplastics); (ii) pilot monitoring for riverine inputs of marine litter and microplastic coming from WWTP; (iii) data flow and upload from CPs into IMAP InfoSystem for all IMAP EO10 Common Indicators; and (iv) National capacities in monitoring IMAP Candidate Indicator 24 through the establishment and operationalization of national IMAP-based monitoring programmes across the region and enabling data submission to IMAP InfoSystem.</p>	<p>MED POL</p>	<p>IMAP Task Force CU, SPA/RAC</p>	<p>National IMAP competent laboratories/authorities; relevant national and international scientific institutions; EU MSFD technical bodies;</p>	<p><b>COP 19 Decision IG.22/7</b> - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria <b>COP 20 Decision IG.23/6</b> - 2017 Mediterranean Quality Status Report <b>COP 21 Decision IG.24/4</b> - Assessment Studies</p>	<p>Both</p>
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<p><b>6.2.2. Upgrade the assessment component of IMAP including possible integrated assessment for all IMAP clusters. Focus on assessment criteria and thresholds (CI 1, 2, 6, 13, 14, 16, 17, 21, 22, 23, CCI 25)</b></p>	<p>a) National capacities enhanced to use the assessment methodologies (NEAT GES Assessment; CHASE+ assessment; Conversation of satellite products into eutrophication data; EQR assessment) including provision of software and capacity building needed for application of related statistical calculations as appropriate.</p> <p>b) A review is undertaken of all sources of relevance for setting database for the calculation of the CI 17 EACs in the Mediterranean (at sub-regional and regional levels), i.e., undertake survey of available literature sources; prepare a questionnaire aimed at collecting ecotoxicological data that might be available at national and international levels for setting the methodology for calculation of the EACs by using available data.</p> <p>c) Assessment criteria for CI 18 elaborated based on biological effects data available from various sources.</p> <p>d) In one MED sub-region (e.g., in AEL, CEN or WMS) the methodology for setting DIN and TP reference and boundary values is developed and applied similar to the Adriatic Sea Sub-region based on various sources.</p> <p>e) IMAP pollution and marine Cluster CIs Guidance Factsheets updated.</p> <p>f) DS-DDs prepared for reporting data on monitoring for riverine inputs of marine litter and microplastic coming from WWTP</p> <p>g) IMAP Ecological Objective 10 (EO10)</p>	<p>MED POL</p>	<p>IMAP Task Force, CU, SPA/RAC (g-h), INFO-RAC (g)</p>	<p>National IMAP competent authorities; Scientific Partners/scientific national institutions; bodies EU MSFD</p>	<p><b>COP 19 Decision IG.22/7</b> - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria  <b>COP 20 Decision IG.23/6</b> - 2017 Mediterranean Quality Status Report  <b>COP 21 Decision IG.24/4</b> - Assessment Studies  <b>COP 22 Decision IG.25/9</b> - Amendments to the Regional Plan on Marine Litter Management in the Mediterranean in the Framework of Article 15 of the Land Based Sources Protocol</p>	<p>14.2; 14.a</p>	<p>MTF (a-f) &amp; External [EcAp MED Plus]</p>
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<p>Marine Litter is upgraded including IMAP EO10 Indicators in order to reflect riverine input of marine litter and microplastics coming from wastewater treatment plants; as well as (ii) supporting the transformation of IMAP Candidate Indicator 24 among IMAP Common Indicators</p> <p>h) CORMON Pollution meeting organized annually (one online)</p> <p>i) CORMON ML meeting organized annually (one online)</p> <p>j) Contribution provided to organize, in cooperation with OSPAR, HELCOM, BSC an international conference on riverine sources of marine litter.</p>						
<p>k) Assessment methodologies concluded for biodiversity common indicators CI1 and CI 2) based on MedQSR 2023 recommendation</p> <p>l) Assessment criteria and thresholds defined for biodiversity (CI1 and 2) based on MedQSR 2023 recommendation</p> <p>m) CORMON meetings on biodiversity and NIS organized annually</p>	SPA/RAC	CU, IMAP Task Force	National IMAP competent authorities; relevant national and international scientific institutions; EU MSFD technical bodies;	<p><b>COP 19 Decision IG.22/7</b> - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria</p> <p><b>COP 20 Decision IG.23/6</b> - 2017 Mediterranean Quality Status Report</p> <p><b>COP 21 Decision IG.24/4</b> - Assessment Studies</p>	14.1; 14.2; 14.4; 14.6	MTF
<p>n) Monitoring of good environmental status of Mediterranean ecosystems and biodiversity is ensured in the framework of ecosystem-based management tools and circular economy by establishing link with pollution impacts and sustainable use of marine ecosystem services</p>	CU, SPA/RAC	Other Component(s) as relevant	GFCM and GEF FishEBM Med partners and beneficiary countries	<p><b>COP 15 Decision IG.17/6</b>- Implementation of the ecosystem approach to the management of human activities that may affect the Mediterranean marine and coastal environment</p> <p><b>COP 19 Decision IG.22/7</b> - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria</p> <p><b>COP 22 Decision IG.25/11</b> - Post-2020 SAPBIO</p>	5.5; 14.1; 14.2; 14.4; 14.5	External GEF funds (FishEBM Med project)

<p><b>6.2.3. Further develop IMAP Common Indicators</b></p>	<p>a) Further development of the IMAP Ecological Objective 4 on marine food webs under the Barcelona Convention. b) Development of EO1 CI1 and CI2 on pelagic habitats.</p>	<p>SPA/RAC</p>	<p>CU, IMAP Task Force</p>	<p>National IMAP competent authorities; relevant national and international scientific institutions; EU MSFD technical bodies;</p>	<p><b>COP 19 Decision IG.22/7</b> - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria <b>COP 20 Decision IG.23/6</b> - 2017 Mediterranean Quality Status Report <b>COP 21 Decision IG.24/4</b> - Assessment Studies</p>	<p>14.1; 14.2; 14.4; 14.7</p>	<p>MTF</p>
<p><b>6.2.4. Review and update of the common indicators factsheets related to Biodiversity (EO1) and fisheries (EO3)</b></p>	<p>a) Common indicators factsheets updated as appropriate for biodiversity. b) Common indicators factsheets updated as appropriate for fisheries in collaboration with GFCM. c) Preparatory work undertaken on the needs to revise/develop CI factsheets of the upgraded IMAP.</p>	<p>SPA/RAC</p>	<p>CU, IMAP Task Force</p>	<p>GFCM, National IMAP competent authorities; relevant national and international scientific institutions; GFCM; EU MSFD technical bodies;</p>	<p><b>COP 19 Decision IG.22/7</b> - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria <b>COP 20 Decision IG.23/6</b> - 2017 Mediterranean Quality Status Report <b>COP 21 Decision IG.24/4</b> - Assessment Studies</p>	<p>14.1; 14.2; 14.4; 14.8</p>	<p>Potential new project</p>

**Outcome 6.3. IMAP implementation and Environment and Development Observation provide updated and quality assured data in support of decision-making by Contracting Parties and assessment of GES.**

<p><b>6.3.6. Maintain and update IMAP Info System with all IMAP Common Indicators fully implemented</b></p>	<p>a) IMAP Info System hardware and software platform upgraded and expanded to include all mandatory and candidate IMAP Cis in order to ensure fully operational reporting by CPs.                  b) Data Standards (DSs) and Data Dictionaries (DDs) developed for remaining Candidate IMAP Common Indicators.                  c) Data Standards (DSs) and Data Dictionaries (DDs) tuned for IMAP Common Indicators already in place;                  d) QA/QC tool upgraded and developed for all the remaining IMAP CIs data flows on the basis of the nature of the indicator.                  e) QA/QC tool tuned and integrated for all the existing IMAP CIs data flows.                  f) Helpdesk human resources dedicated to support h24 Contracting Parties in the reporting process.                  g) An additional automatic “Helpdesk” section implemented into the IMAP Info System to support CPs into the reporting process, recording all the requests to be used for statistical purposes.                  h) IMAP Assistance/Training meetings organized with Contracting Parties (at least un workshop for each beneficiary country) dedicated to the IMAP reporting process.                  i) Cooperation with relevant Regional Organization (i.e. ACCOBAMS, GFCM, etc.) in order to facilitate the interoperability between IMAP and their</p>	<p>INFO/RAC</p>	<p>MEPOL, PAP/RAC, SPA/RAC</p>	<p>ACCOBAMS, GFCM</p>	<p><b>COP 19 Decision IG.22/7</b> - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria  <b>COP 21 Decision IG.24/4</b> - Assessment Studies  <b>COP 22 Decision IG.25/10</b> - MAP Data Policy</p>	<p>Crosscutting to all SDG 14 targets, especially 14.a but also 5, 6,8,9,12,13, 15</p>	<p>MTF</p>
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	<p>Infosystems and databases as appropriate.</p> <p>j) A specific section implemented into the IMAP Info System, as webform, to allow the CPs to officially provide information about the state of reporting in the country.</p> <p>k) "User management" system upgraded and adapted to MAP CU and MAP Components needs.</p> <p>l) A Data Analytics dashboard implemented into the IMAP Info System providing aggregation of monitoring data, dedicated to MAP Components assessment and also accessible to public users.</p> <p>m) Geographical section upgraded and customized for IMAP monitoring data visualization into the IMAP Info System and fully integrated in InfoMAP Node and KMP.</p> <p>n) Additional functionalities implemented in the IMAP Info System dedicated to MAP Components: data analysis and data export in different formats through specific tools implemented ad hoc; possibility of queries and layout the results in tables with data filtering; extensive customization, analysis and data visualization through Python modules (Python notebook, ex. Jupiter lab of WEKEO DIAS-CMEMS).</p>						
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<p><b>6.3.7. Ensure full implementation of the InfoMAP Spatial Data Infrastructure for the geographical data and maps (InfoMAP Node)</b></p>	<p>a) InfoMAP Node maintained, tuned and upgraded. Implementation in the InfoMAP Node of information layers provided. Interoperability with CPs information systems strengthened.  b) Dedicated assistance and support trainings to CPs to organize, upload and consult Spatial Data (at least one workshop for each beneficiary country).  c) Creation of user profiles and groups for InfoMAP Node ensured.  d) Geoviewer for the visualization of georeferenced data developed and implemented.  e) Basic and thematic layers collected, developed and visualized.  f) Spatial data and metadata from UNEP/MAP, CPs, RACs and other sources integrated in the InfoMap Node platform.  g) Integration of InfoMAP Node into the Knowledge Management Platform.</p>	<p>INFO/RAC</p>	<p>MAP Components</p>		<p><b>COP 19 Decision IG.22/7</b> - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria  <b>COP 21 Decision IG.24/4</b> - Assessment Studies  <b>COP 22 Decision IG.25/10</b> - MAP Data Policy</p>	<p>Crosscutting to all SDG 14 targets, especially 14.a but also 5, 6,8,9,12,13, 15</p>	<p>MTF</p>
<p><b>6.3.10. Undertake Copernicus data analysis/integration of Copernicus Service to support indicator and data collection and ingestion</b></p>	<p>a) Analysis of Copernicus Services products in cooperation with EEA to promote fully exploitation for IMAP data collection.  b) Use of Copernicus Services products and integration in IMAP Contracting Parties' national programmes.</p>	<p>INFO/RAC</p>	<p>MAP Components</p>	<p>EEA</p>	<p><b>COP 19 Decision IG.22/7</b> - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria  <b>COP 21 Decision IG.24/4</b> - Assessment Studies  <b>COP 22 Decision IG.25/3</b> - Governance</p>	<p>Crosscutting to all SDG 14 targets, especially 14.a but also 5, 6,8,9,12,13, 15</p>	<p>MTF</p>
<p><b>6.3.11. Expand and improve the monitoring and forecasting capacities in the marine environment through integrating</b></p>	<p>a) Capacity building and workshops coordinated and organized for interfacing oceanographic digital data and tools among CPs and Mediterranean countries beneficiaries of EU ILIAD Project Consortium to support an enhanced</p>	<p>SPA/RAC</p>	<p>CU, INFO/RAC, REMPEC other components as per</p>	<p>Consortium of 56 Euro-Mediterranean Partners</p>	<p><b>COP 19 Decision IG.22/7</b> - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria  <b>COP 22 Decision IG.25/11</b> - Post-2020 SAPBIO  <b>COP 22 Decision IG.25/13</b> - Action Plans for the conservation of species and habitats under the Protocol</p>	<p>14.1; 14.2; 14.4; 14.5</p>	<p>external (EU funds, ILIAD project)</p>



<p><b>networks of observing and forecasting systems (oceanographic observatories) across the Mediterranean Sea</b></p>	<p>implementation of the Post 2020 SAPBIO, the IMAP and the ballast water Strategy.</p>		<p>parameter monitored</p>		<p>concerning Specially Protected Areas and Biological Diversity in the Mediterranean</p>		
<p><b>6.3.12. Maintain Biodiversity databases as appropriate, regularly update databases content and elaborate an operational strategy for marine biodiversity data management, in line with the UNEP/MAP Data Management Policy</b></p>	<p>a) SPA Directory web application operational and linked to the Mediterranean biodiversity Platform.                  b) Data and metadata made available in the Mediterranean Biodiversity Platform (MBP) and other biodiversity databases such as MAPAMED, continuously maintained and updated                  c) UNEP/MAP Data Management Policy applied to marine and coastal biodiversity.                  d) Different Marine Biodiversity databases and web platforms promoted among Mediterranean countries through training sessions and capacity building actions.                  e) Marine biodiversity data exchange improved through establishing partnerships with other relevant data providers.</p>	<p>SPA/RAC                  SPA/RAC                  SPA/RAC, INFO/RAC                  SPA/RAC, INFO/RAC                  SPA/RAC</p>	<p>CU, INFO/RAC</p>	<p>Action Plans Partners, MedPAN network, MEDACES, ACCOBAMS, GFCM</p>	<p><b>COP 19 Decision IG.22/7</b> - Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria  <b>COP 21 Decision IG. 24/4</b> - Assessment Studies  <b>COP 22 Decision IG. 25/10</b> - MAP Data Policy</p>	<p>14.1; 14.2; 14.4; 14.5: 14.a</p>	<p>MTF</p>
<p><b>6.3.15. Migrate, integrate, harmonize, manage and update MAP Component databases and platforms into InfoMap System towards a fully integration into the Knowledge Management Platform</b></p>	<p>a) ICZM platform maintained and updated (evolution process to be discussed with PAP/RAC).                  b) Adriadapt portal hosted, maintained and updated in active cooperation with PAP/RAC.                  c) Adriatic.eco portal hosted, maintained and updated in active cooperation with PAP/RAC.                  d) MSP platform hosted, maintained and updated in active cooperation with PAP/RAC.                  e) MEDGISMAR database hosted, maintained and valorisation in active</p>	<p>INFO/RAC</p>	<p>MAP Components</p>		<p><b>COP 20 Decision IG.23/1</b> - Revised reporting format for the implementation of the Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean and its Protocols</p>	<p>Crosscutting to all SDG 14 targets, especially 14.a but also 5, 6,8,9,12,13, 15</p>	<p>MTF</p>

	cooperation with REMPEC. f) PoSOW and MENELAS databases hosting, maintenance and valorisation in active cooperation with REMPEC etc.						
<b>Programme 7. For Informed and Consistent Advocacy, Awareness, Education and Communication</b>							
<b>Outcome 7.1. Stakeholders and policymakers properly informed about the state of the Mediterranean Sea and coast and aware of the environmental priority issues</b>							
<b>7.1.7. Celebrate UNEP/MAP B.C System Anniversaries</b>	a) 50 years of MAP (MAP @50) celebrated through a high-level event (Co-organized with Egypt and Spain). b) MAP@50 Report on MAP achievements since its inception (this will require formal endorsement by the RACs who will contribute to putting this report together). c) MAP@50 Communication campaign and outreach events.	CU and INFO/RAC (communication aspects) and MAP Components (for the compilation of the report)	MAP Communication TF			cross cutting especially SDG 14 Targets	Both
	d) SPA/RAC 40th anniversary (1985-2025).	SPA/RAC	MAP Communication TF		<b>COP 22 Decision IG 25/11</b> - Post-2020 Strategic Action Programme for the Conservation of Biodiversity and Sustainable Management of Natural Resources in the Mediterranean Region (Post-2020 SAPBIO)	All SDG 14 Targets	MTF
<b>Outcome 7.2. Citizen and general public awareness and outreach raised through citizen science and digital campaigns</b>							
<b>7.2.1. Enhance public awareness and outreach on UN and MAP Days observance and their topics</b>	c) SPAMI Day celebrated in collaboration with SPAMI managers and CSOs, through awareness raising activities and digital campaigns, and SPAMI Certificates delivered to SPAMI management authorities.	SPA/RAC	MAP Communication TF		<b>COP 22 Decision IG. 25/12</b> - Protecting and conserving the Mediterranean through well connected and effective systems of marine and coastal protected areas and other effective area-based conservation measures, including Specially Protected Areas and Specially Protected Areas of Mediterranean Importance	All SDG 14 Targets	Both
<b>7.2.2. Enhance public awareness and outreach on key MAP topics for general and specific targets (MAP Partners,</b>	b) Communication material and events developed to improve knowledge on SPA/RAC action in biodiversity conservation, and to raise the participation of key stakeholders and decision-makers in the conservation and sustainable use of biodiversity (agenda, web articles/items,	SPA/RAC	MAP Communication TF		<b>COP 22 Decision IG 25/11</b> - Post-2020 Strategic Action Programme for the Conservation of Biodiversity and Sustainable Management of Natural Resources in the Mediterranean Region (Post-2020 SAPBIO)	All SDG 14 Targets	MTF + External funds

<b>Civil Society, Private sector, Youth etc.)</b>	webinars/activities, reports and other communication material on MPAs, species & habitats conservation, sustainable use of marine resources).						
<b>Outcome 7.3. Towards a digital transformation: use of digital technologies to improve networking and MAP visibility</b>							
<b>7.3.1. Towards a digital transformation</b>	c) Digital communication strategy of SPA/RAC elaborated and implemented to improve UNEP/MAP - SPA/RAC visibility	SPA/RAC	MAP Communicati on TF		<b>COP 21 Decision IG.24/2 - Governance</b>	All SDG 14 Targets	Both