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PROGRESS REPORT OF THE MEDITERRANEAN DATABASE OF CETACEAN STRANDINGS (MEDACES)

For reasons of economy, this document will be available in a limited number at the meeting.
You are kindly requested to bring your copy to the meeting.

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1. THE MEDACES PROJECT

The tasks accomplished within the project can be grouped in the 3 following sections:

1.1. The Database
1.2. The Web Page
1.3. Obtaining the data

1.1. The Database

Database design

MEDACES is a relational database, i.e., the information of every stranding record will be stored in different related tables. For instance, the data about the Institution sending the stranding information, cetacean measurements, and samples taken for life history studies will be stored in three different tables. The advantage of using a relational database is to facilitate the query of complex information within the database that otherwise would be difficult. The structure and characteristics of the database are shown in the Annex 1. “Cetacean” has been established as the main entity of the database, containing the basic information along with the geometry for the geographical location of the stranding. The tables related to this entity contain the basic information regarding the Institution sending the data, cetacean species, body measurements, etc. The advance data contain information on the organs kept for different types of life-history studies (toxicology, histology, reproductive state, digestive contents, etc.). The stranding records are unambiguously identified by the primary key “num_report” (report number), and other keys allow the relation among the different tables containing the stranding information.

See the following examples:

TABLE (1): advanced data

DESCRIPTION:	The information stored is the advanced data of a cetacean stranding
PRIMARY KEY:	num_report
FOREIGN KEY:	num_report, adv_code
RELATIONSHIP:	Cetacean-advanceddata (1:1), “contains data of” Rehabilitation-advanceddata (1:M), “cetacean rescued”

No	FIELD NAME	I. SIGNIFICANT NAME	TYPE OF DATA
1	num_report	Record number	Numeric
2	adv_stat	State	Text
3	adv_disp	Disposition	Text
4	adv_code	Code of the rehabilitation centre	Text
5	adv_huma	Human interaction	Text
6	adv_comm	Comments on the interaction	Memo

TABLE (2): cetacean

DESCRIPTION:	The general information of the cetacean is stored
PRIMARY KEY:	num_report
FOREIGN KEY:	sci_code, spe_code
RELATIONSHIP:	cetacean-measurements (1:1), refers to the animal body measurements cetacean-advanceddata (1:1), cetacean -organs (1:1), Samples of different organs for several kind of studies scientific-cetacean (1:M), Information of the person sending the information specie-cetacean (1:M), Species name of the animals stranding-cetacean (1:M), Location of the stranding

No	FIELD NAME	II. SIGNIFICANT NAME	TYPE OF DATA
1	shape	Geometry	Object OLE
2	num_report	Record number	Number
3	sci_code	Scientific number	Text
4	cet_sex	Sex of the cetacean	Text
5	cet_fema	Reproductive state (females)	Text
6	cet_weig	Weight of the cetacean	Number
7	spe_code	Species code	Text
8	cet_mark	Presence of marks	Memo
9	cep_pic	Pictures	Yes/Not
10	cet_picc	Comments on the pictures	Memo
11	cet_cond	Animal condition	Memo
12	add_comm	Additional comments of the stranding	Memo

The Manager System of the database (MSDB) and the geodatabase

The task of the manager system of the database (MSDB) is to provide the efficient methods to define, store and retrieve the information in the database. MEDACES is managed as a geodatabase (Geographic database), of the ArcGIS family from ESRI. The MSDB of MEDACES is Microsoft Access.

The geodatabase is able to represent geographical data in 4 different ways: discrete objects by means of vectors, continuous phenomena by means of raster, surfaces and references to locations by means of localizers and addresses. The geodatabase stores the entities'

geometry and ArcGIS provides the tools to calculate spatial operations such as to locate objects that are touching or intersecting. An example of the structure of the geodatabase is as follows (Fig. 1):

Geodatabase: medaces.mdb
Features Dataset: medaces (Features class: Cetacean)
Tables: 17 tables
Domains:

- Countries: Type text and Coded Value. In code the official abbreviations of the countries and in description the entire names.
- Species: Type text and Coded Value. In code the initials of the species names and in description the entire scientific names.

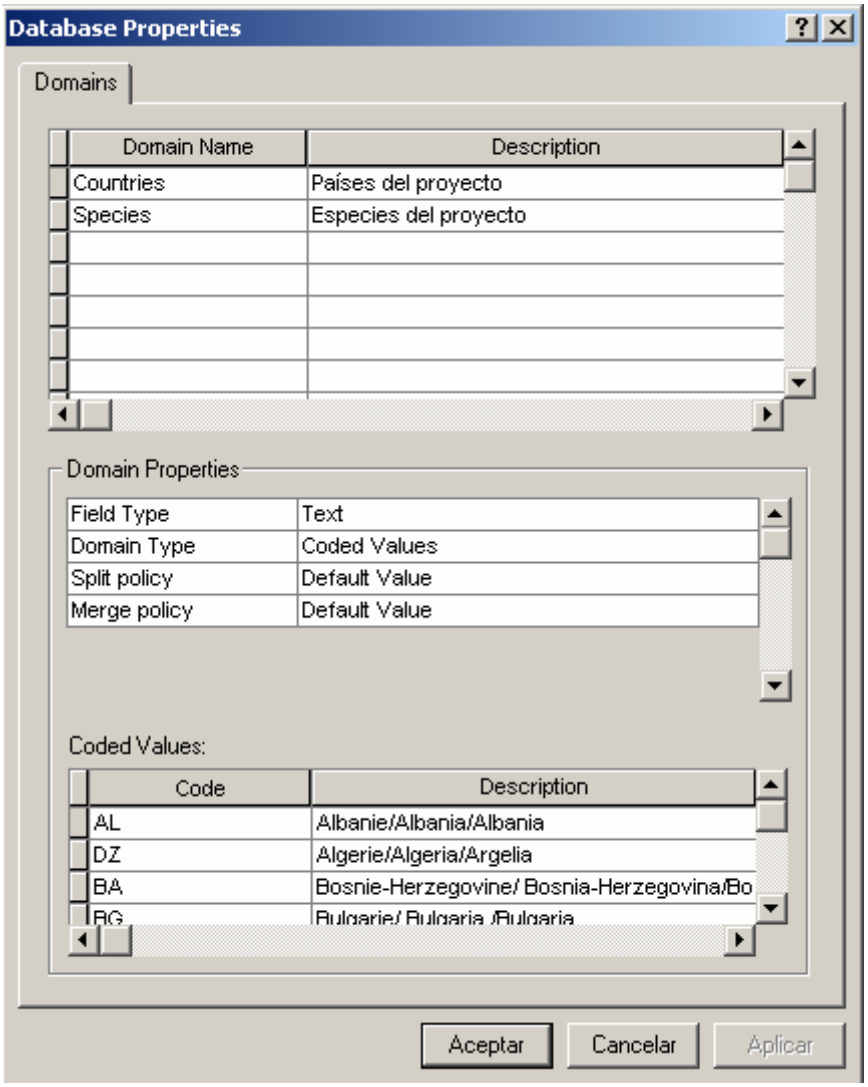

Figure 1. Example of the geodatabase.

Personal Geodatabase Feature Dataset:
Spatial Reference: Geographic Coordinate System: GCS_WGS_1984

Personal Geodatabase Feature Class:
Cetacean: Domain “Species” a spe_code

Personal Geodatabase Relationship Class:
Cet-adv: Relation cetacean - advanceddata
Cet-org: Relation cetacean – organ

Personal geodatabase table:
Advanceddata
Organ
Country
Finder
Institution: Domain “Countries” a cou_code
Lifehistory
Measurement
Othersamples
Parasitology
Rehabilitation
Scientific
Species
Stranding: Domain “Countries” a cou_code

Personal Geodatabase Relationship Class:
cou-ins: Relation country – institution
cou-str: Relation country – stranding
ins-sci: Relation institution – scientific
reh-adv: Relation rehabilitation – advanceddata
sci-cet: Relation scientific – cetacean
sci-fin: Relation scientific – finder
spe-cet: Relation species - cetacean
str-cet: Relation: stranding – cetacean

The Geographical Information System (GIS)

The Geographical Information System used to manage the spatial location of the cetacean is ArcGis™, from ESRI®. The ArcGIS comprises three parts. The first part contains the tools for the creation, manipulation and maintenance of the geographical information (ArcView, ArcEditor and ArcInfo). The second one is composed of ArcSDE, which manages the database in relation to the GIS. The last part is formed by ArcIMS, which generates and analyses a large volume of geographical information.

1.2. The web page

The web site of MEDACES (http://medaces.uv.es) is already finished and optimally functioning. The web provides information about the MEDACES project and collaborative institutions. Moreover, the forms and programs to include the stranding data are available for users. Two tools are accessible for users: the visualization of the strandings on a basic cartography, and the searching of information related to those strandings.
The index of the web site has the following items with their respective contents:

About MEDACES
History: Origin and history of MEDACES
Aims: Objectives of the project

Collaborators: Collaborative and funding institutions
Participants: Institutions contributing to MEDACES
Deontological Code
References: List of references related to strandings

Documents

Papers on strandings: Papers related with cetacean strandings
Guide on strandings: Protocols to assist a stranding

Data

Search: alphanumeric searches in the database
Dataset: Maps previously prepared by MEDACES
Mapping: Visualizer of strandings
Species profiles: Links to biological information of the cetacean species

Submit data

Registration of Institution: Instructions to obtain the institution code
Internet Form: To fill and send the strandind data to MEDACES through Internet
Database Extract: To send a database extract of an institution to MEDACES
MEDACES Form 2.0: Executable program to fill the stranding form for those countries with restricted access to Internet
Paper Format: PDF file to print the stranding form for those countries with restricted access to computers

News

Alert Call: In special events, MEDACES will provide the information to those that will wish to collaborate
Events: Announcements of congresses, courses, conferences, etc., about cetaceans
Media: News and press reports

Help and Contacts

Frequently asked questions
Contact MEDACES: Telephone numbers, e-mail and postal addresses to contact MEDACES

Links

Webs related with the project

Alphanumeric searcher

A searching tool on the MEDACES database, through the web page, has been implemented (Fig. 2). This tool contains searching criteria by species, sex, date, country, province and locality. The searching criteria have been designed to minimise the error margin when choosing the values. This is possible by the exception control of drop downs. For instance, the provinces drop down contains those belonging to the country selected. The output is a printable list of records fulfilling the searching criteria (Fig. 3).

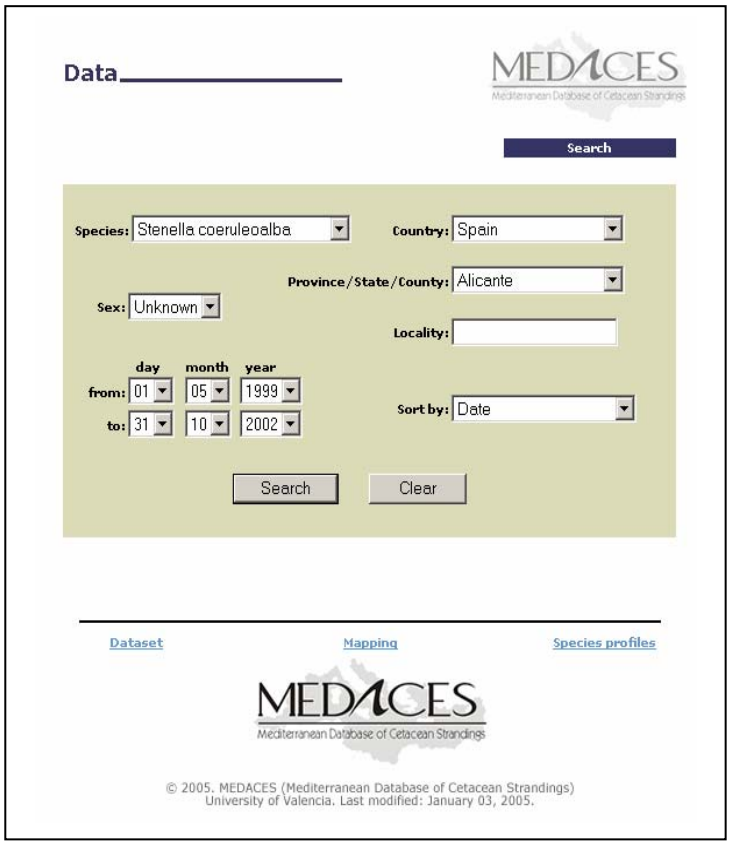

Figure 2. MEDACES Alphanumeric searcher

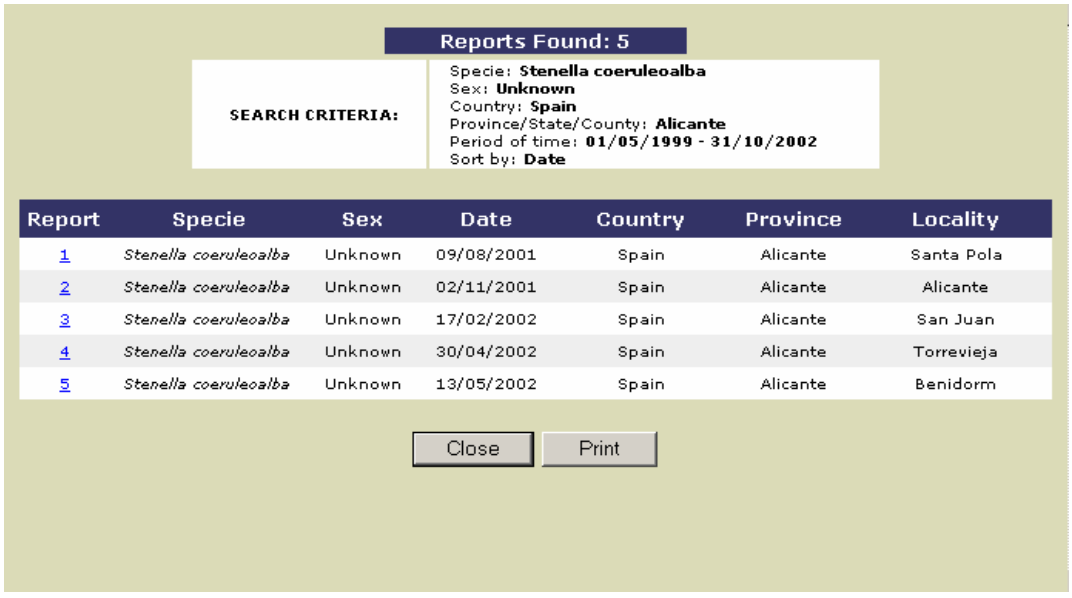

Figure 3. List of records fulfilling the searching criteria

Moreover, by clicking the number of report all the information of a stranding on the list is available (Fig. 4).

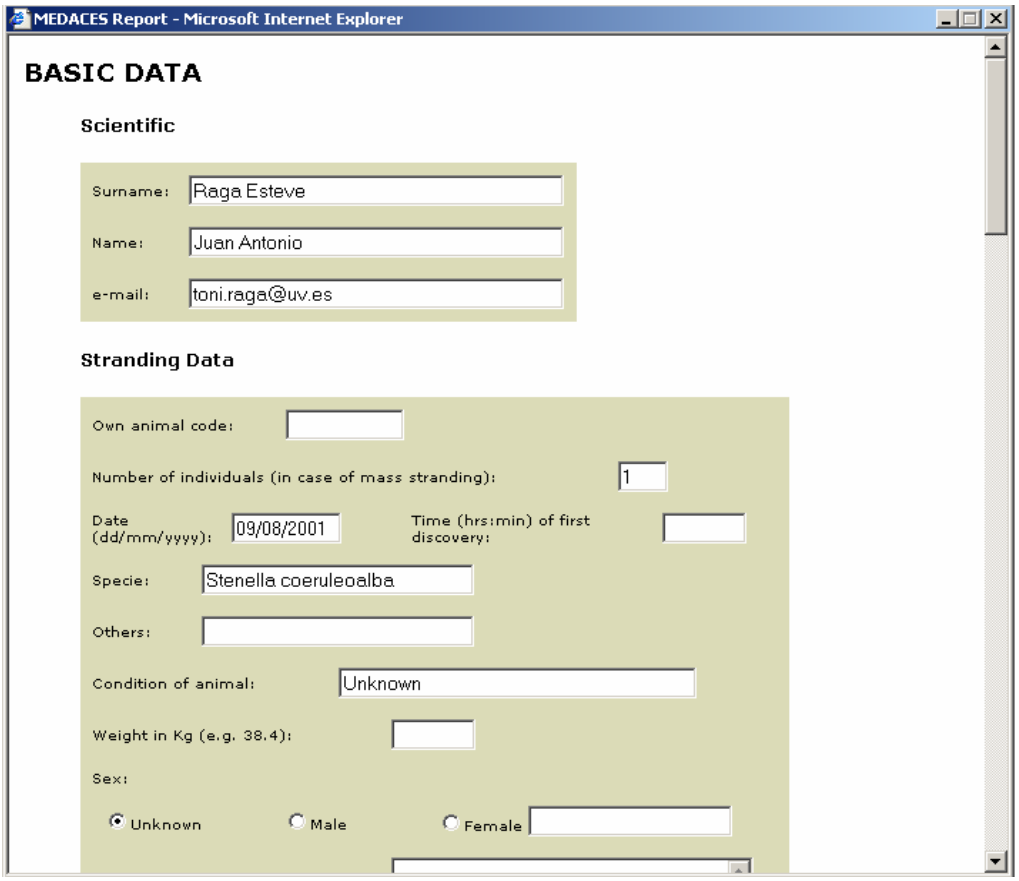

Figure 4. Detailed report of the selected stranding

Stranding visualizer

The GIS visualizer of MEDACES has been developed to geographically locate the strandings on a map, as well as to interact with the information concerning the stranding. The software used was ArcIMS, from ESRI.

The visualizer interface contains three parts: the map, the legend and the buttons with different functions (Fig. 5).

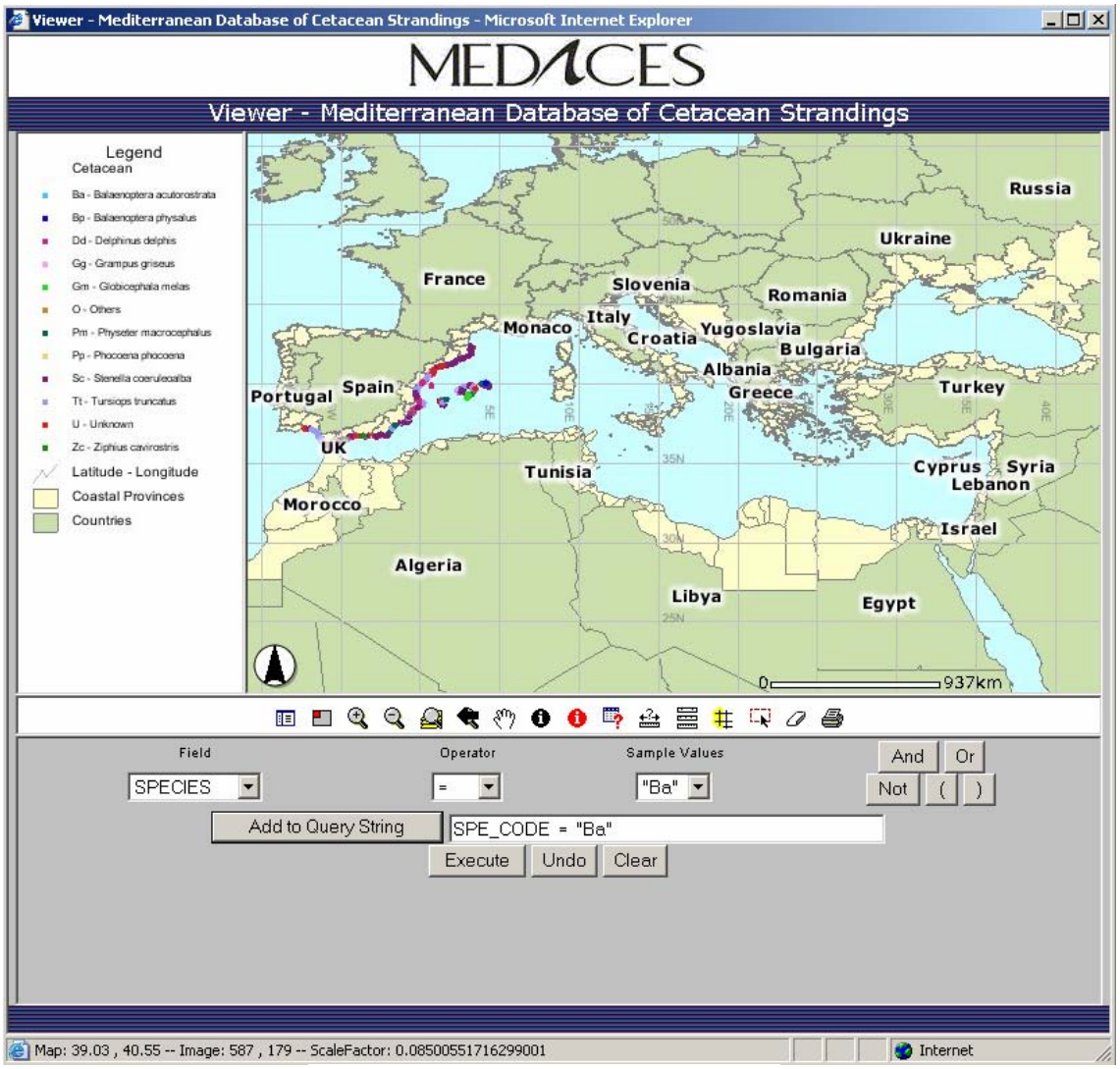

Figure 5. MEDACES Visualizer

The Map forms the main part of the visualizer. It shows graphically the stranding records of the database using a cartography formed by a theme of countries, theme of coastal provinces and latitude and longitude of the study area. With a total zoom of the MEDACES area the country names appear as a reference (Fig. 5), but with a higher resolution of the zoom, the names of the provinces and the identifier of every stranding point are visible (Fig. 6).

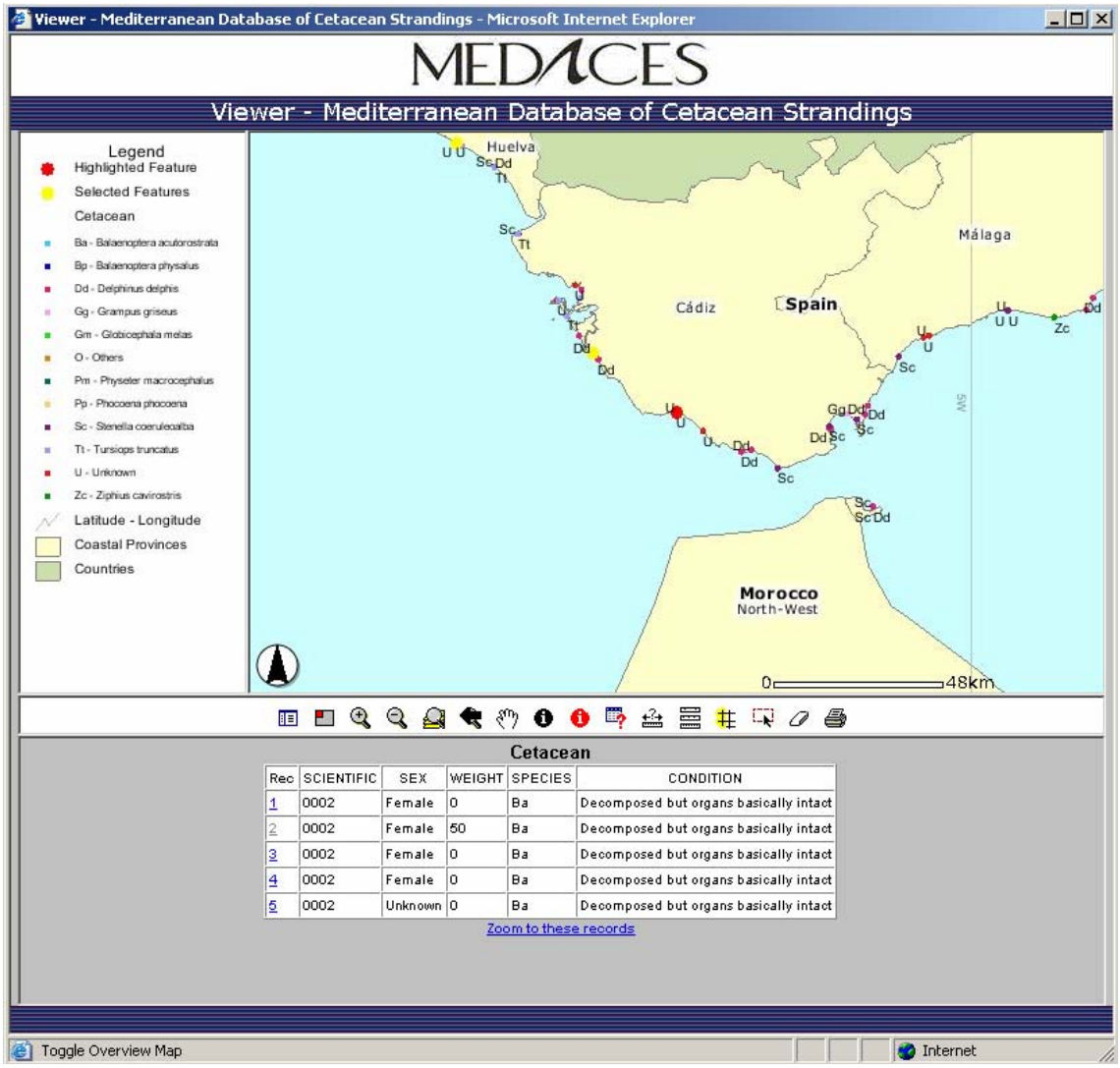

Figure 6. Stranding location with the visualizer

The Legend shows the symbols and icons of the map to facilitate its interpretation.

The buttons allow the functioning of the following actions:

To see the legend or themes visualized

Location map of the area where the visualizer is working (very useful when we are working at a high scale in order not to loose the perception of the location in relation to the full map)

Higher resolution zoom

Lower resolution zoom

Total zoom

Anterior zoom

Drag the image

Basic information of a stranding

Detailed information of a stranding

Requests on the database to locate a stranding on a map

Distance measurement between 2 points of the map

Selection of map measurement units

Selection of influence areas (strandings within a certain distance next to the stranding point selected)

Graphic selection of several strandings on a map

Erase selection

Print map

1.3. Obtaining the data

We have considered the differences among the riparian countries collaborating with MEDACES to obtain the stranding data. For instance, it is likely that some countries have a high degree of technification, with free access to Internet, while others may lack of computers. Therefore, in order to facilitate the gathering of stranding data from the different institutions, we have provided four options:

1. The web form

The stranding form is available at MEDACES web site, and the data can be included directly on it and send it through Internet to the database.

2. MEDACES Form_2.0 (Fig. 7)

This is an executable program to fill the stranding data for those institutions or organisations with not Internet easily available. The information saved with this program is in text format and can be sent by ordinary post or by floppy disk or CD to MEDACES. The program can be downloaded from the web site of MEDACES or by requesting to the MEDACES managers.

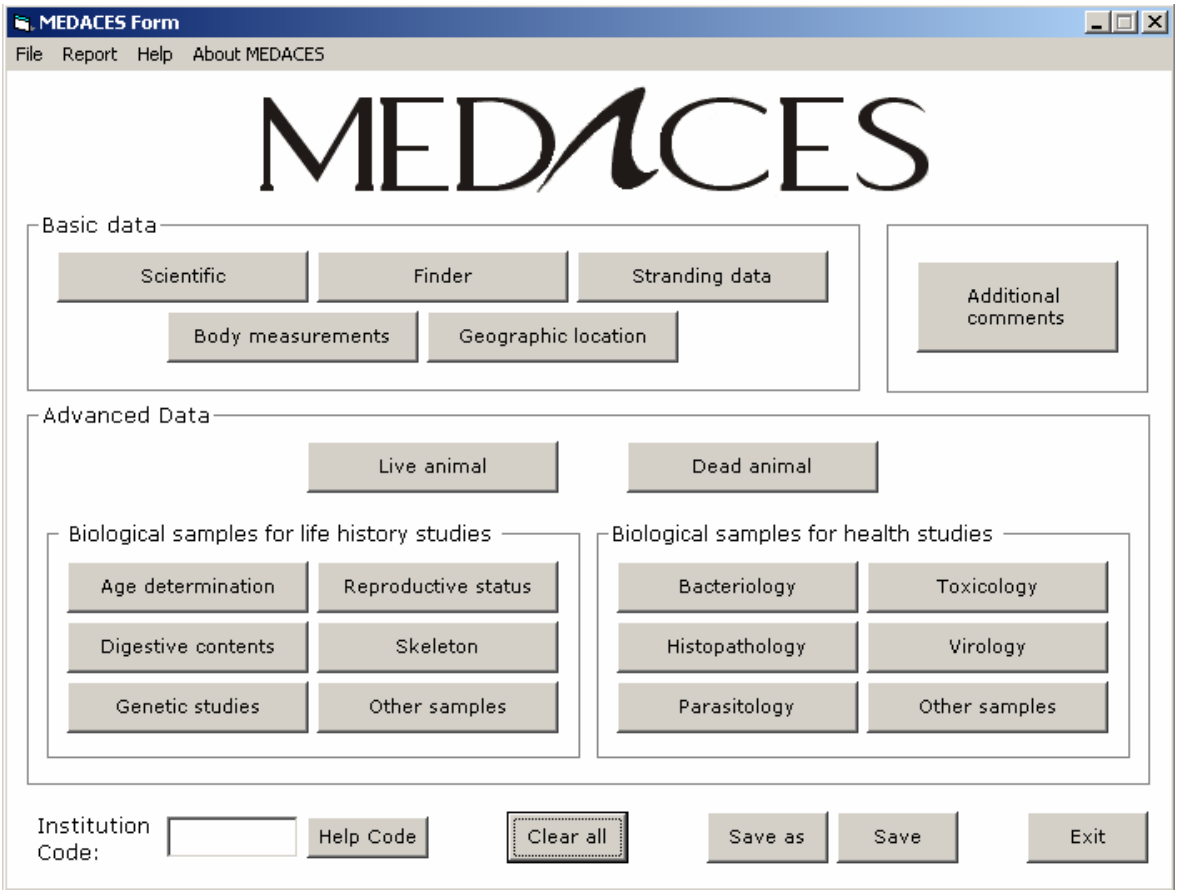

Figure 7. Main interface of the program MEDACES Form 2.0.

3. MEDACES form.pdf

Considering the possibility of an institution lacking of computer facilities, we have developed a PDF document where the stranding data can be included (Fig. 8).

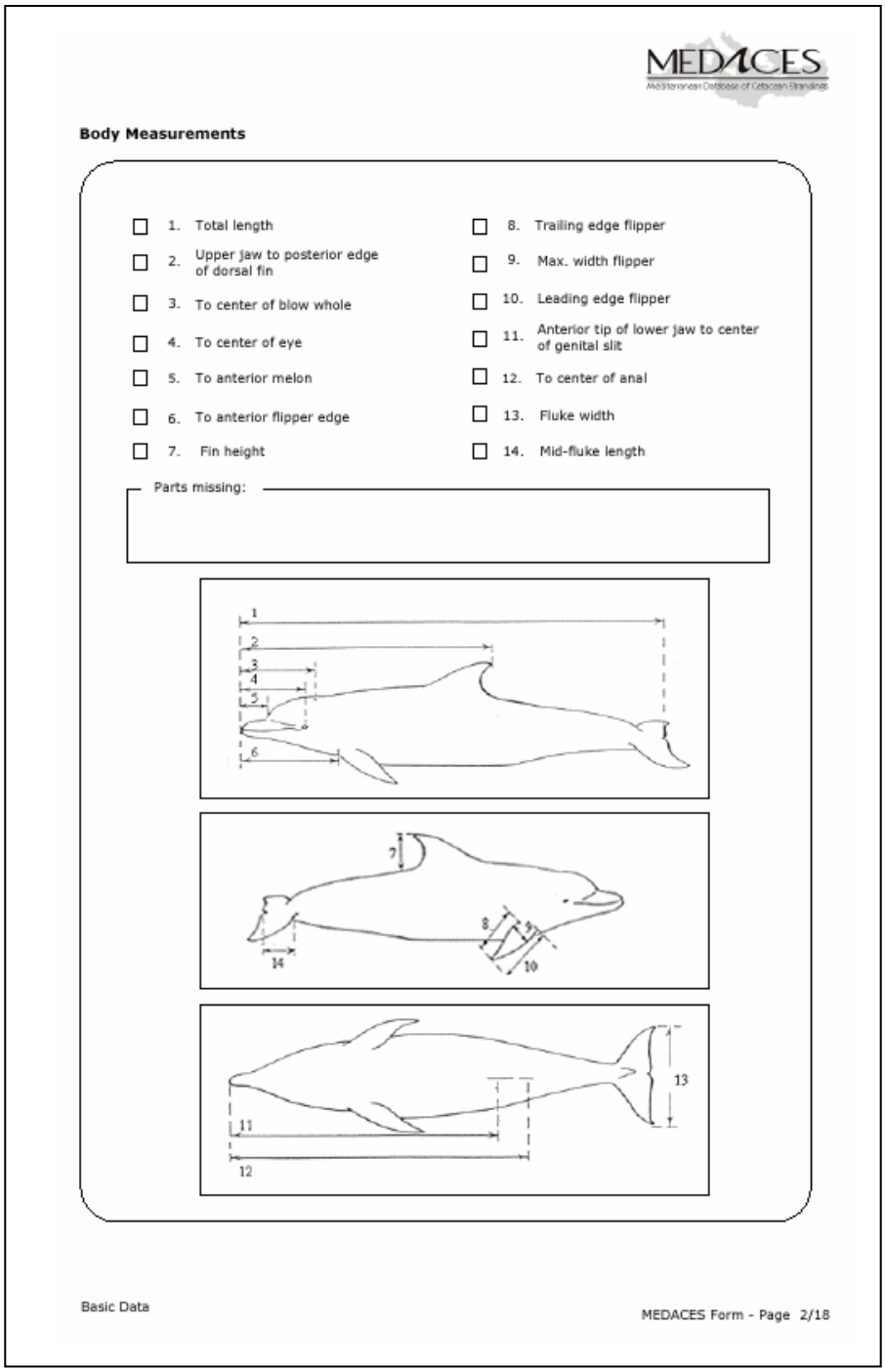

Figure 8. MEDACES PDF form

4. Database extracts

Especially for those institutions with an extended experience and large amount of records on strandings, we have considered the possibility of accepting extracts of their own database. These data are later transferred to the MEDACES database.

Once the information on strandings arrives to MEDACES, in any of the four ways explained above, the data are checked and the data are introduced to the database.

2. The stranding data

2.1. Collaborative institutions

So far, the following countries are actively collaborating with their stranding data with MEDACES:

Spain

- Aula del Mar de Málaga (Andalucía)
- Centro de Recuperación de Fauna Silvestre “El Valle” (Murcia)
- Consejería de Medio Ambiente de la Ciudad Autónoma de Ceuta
- Consejería de Medio Ambiente de la Junta de Andalucía
- Consejería de Medio Ambiente de Murcia
- Conselleria d'Agricultura i Pesca del Govern de les Illes Balears
- Conselleria de Territori i Habitatge de la Generalitat Valenciana
- CRAM - Fundació per a la Conservació i Recuperació d'Animals Marins (Cataluña)
- Departament de Medi Ambient de la Generalitat de Catalunya
- Fundació Marineland (Illes Balears)
- Universitat de València (Comunitat Valenciana)
- Septem Nostra (Ciudad Autónoma de Ceuta)
- Sociedad Española de Cetáceos (SEC)
- Universidad de Las Palmas de Gran Canaria
- Ecologistas en Acción Almería-PROMAR
- GRAMPUS (Colectivo para el Estudio y Conservación del Medio Marino, Huelva)

France

- Groupe d'Etude des Cétacés de Méditerranée (Marseille)

Turkey

- Turkish Marine Research Foundation (Istanbul)

Greece

- ARION-Cetacean Rescue & Rehabilitation Research Centre (Petroupolis)
- Environmental Research Bureau (Milos)
- Fisheries Research Institute, National Agriculural Research Fundation (Kavala)
- Hellenic Centre for Marine Research

Albania

- Rainbow Environmental Association (Denik Ulqini)

Tunisia

- Faculté des Sciences de Sfax
- Institut National des Sciences et Technologie de la Mer -INSTM

Romania

- National Institute for Marine Research and Development "Grigore Antipa" (Constanta)

Syria

- Biodiversity and Protected Areas Directorate, General Commission for Environmental Affairs, Ministry of Local Administration and Environment (Damascus)

Slovenia and Israel have established a first contact to MEDACES and shown the intention of sending their stranding data.

2.2. The stranding data

The following table shows the countries contributing with their stranding data to MEDACES. The period and number of data are indicated. Part of the data is currently being included in the database.

COUNTRY	YEARS	NUMBER OF DATA (%)
Spain	1960-2006	2037 (38.229)
France	1968, 1971-2005	1558 (29.24)
Turkey	2000-20002	5 (0.094)
Greece	1905-2006	1185 (22.24)
Morocco*	2005	1 (0.019)
Romania	2002-2003, 2006	488 (9.16)
Albania	2005	1 (0.019)
Tunisia	1941-2005	52 (0.98)
Syria	2005	1 (0.019)
	TOTAL	5328

*Information sent by Niki Entrup (Whale and Dolphin Conservation Society) through the “Naturalist group Guelaya”

In Fig. 9, the country and the data provided by them are represented. Major contributions are due to the French, Greek and Spanish Institutions.

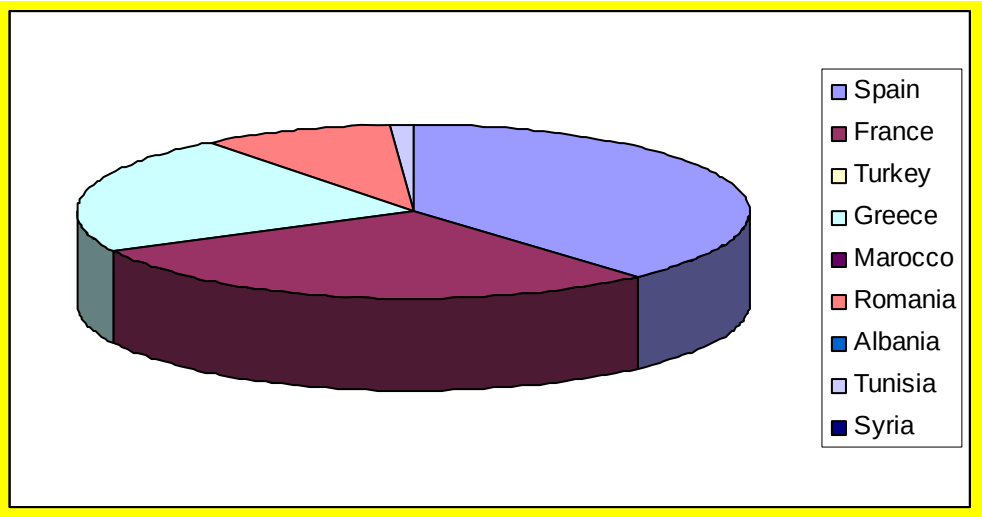

Figure 9. Contribution of each country regarding the stranding data to MEDACES.

3. Recommendations

The main recommendation is :

The stranding data from 2000 to 2005 should be provided to MEDACES by a National Focal Point in every riparian country wishing to collaborate with the project. This should be conducted through the RAC/SPA or/and ACCOBAMS.