3. Photo-id data collection and processing

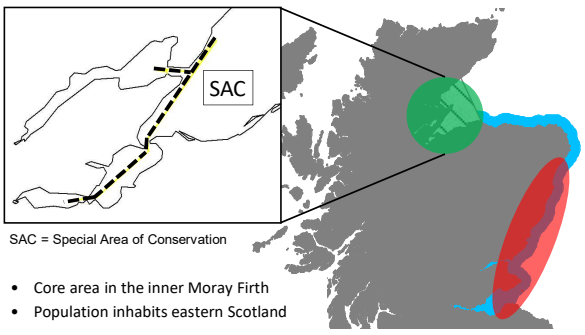





Sampling design

- Define your study objectives
- Define your study area
  - Often much smaller than the area inhabited by the population
- Define your sampling occasions
  - Conventional mark-recapture – tend to be pre-defined
  - Cetacean studies …
    - Encounters, days, weeks, months, years
  - Considerations
    - Population mixing between occasions
    - Number of occasions
    - Need some recaptures between occasions
- Maximise study area coverage in each sampling occasion
  - Give each animal an equal probability of being encountered

Bottlenose dolphins in the Moray Firth



SAC = Special Area of Conservation

- Core area in the inner Moray Firth
- Population inhabits eastern Scotland

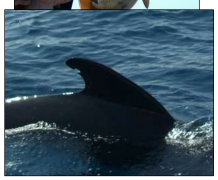
Survey protocols

- Searching (vessel speed, etc)
- Encounter with a group of animals
  - Slow down
  - Observe location, behaviour of group
  - Maintain distance from group
  - Watch out for navigational hazards

- Take photographs of all animals in group if possible
  - Regardless of markings
  - Allows estimation of the proportion of marked animals in population, if needed
- Record data on data sheets
- Return to searching

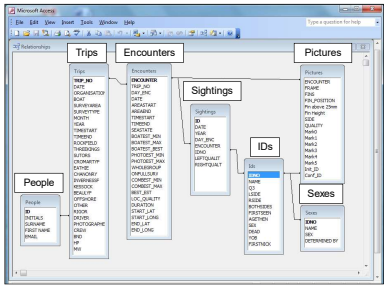
Photographs

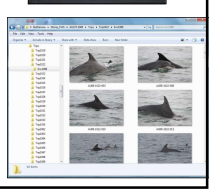
- Photographs become data
  - Photo quality is critical
- Equipment
  - Good quality digital camera
  - Zoom lens (at least 80-200mm)
- Taking photographs
  - Perpendicular to animal
  - Good lighting (position of sun, contrast)
  - Maximise image size in frame
  - In focus
- Record image numbers
- Back up image files!



Storing images and associated data

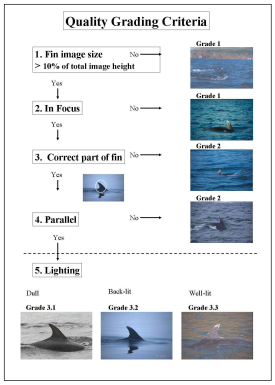
- Storage, archiving
  - Slide films, digital images
- Databases / catalogues
  - Organising and storing data and images





Assessing photo quality

- Image size
- Focus
- Correct part of animal
- Parallel
- Lighting



Assessing animal distinctiveness

- Very important to specify what is meant by “marked”
  - To define what is being estimated
  - And to allow appropriate correction for animals without markings

Appropriateness of natural markings

- How much information is there in the mark?
- How long will the mark endure?

Matching

- Critical part of the process
- Time-consuming
- Quality control essential
- Software for catalogues to facilitate matching
- Computer- assisted matching software

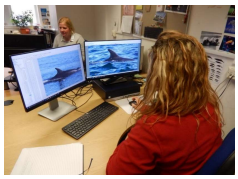
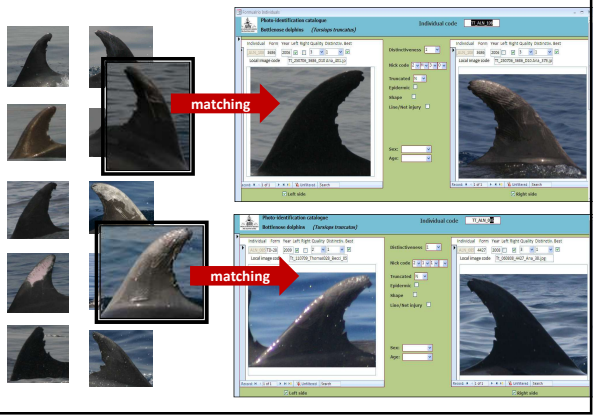


Photo-ID data (images) Photo-ID Catalogue - Access Database



Data for mark-recapture analysis

- For animals of required distinctiveness …
- For each sampling occasion …
- For photos of sufficient quality …

… Whether or not each animal was captured

→ Capture histories

Capture histories

Animal	S_1	S_2	S_3	S_4	S_5	…
Alpha	1	0	0	0	0	…
Bravo	1	0	1	0	1	…
Charlie	1	0	0	0	0	…
Delta	1	1	0	1	0	…
Echo	1	0	0	1	0	…
Foxtrot	0	1	0	0	0	…
Golf	0	1	0	0	1	…
Hotel	0	1	1	0	0	…
India	0	0	1	0	1	…
Juliet	0	0	1	1	0	…
Kilo	0	0	1	0	0	…
Lima	0	0	0	1	0	…
Mike	0	0	0	1	0	…
November	0	0	0	0	1	…
Oscar	0	0	0	0	1	…
…	…	…	…	…	…	…

Summary

- Sampling and survey design
- Good photographs of appropriate markings
- Assessing photo quality and animal distinctiveness
- Matching
- Capture histories