



National Monitoring Programme for Biodiversity in Lebanon « EO1 – Marine mammals »

Gaby Khalaf and Milad Fakhri

**Presented by
Myriam Lteif**



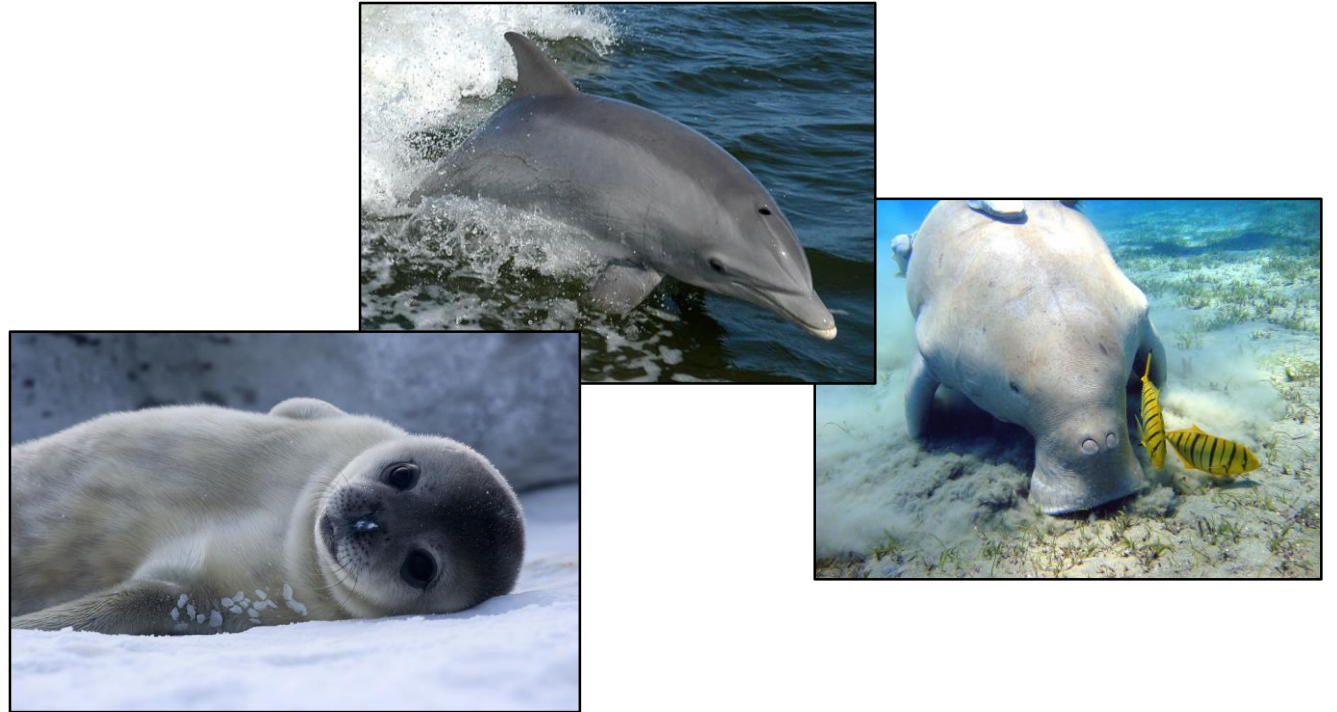
Table of contents

- I. General context
- II. Lebanese context
- III. Programme « EO1 - Marine mammals »
- IV. Recommendations

I. General context

1. Marine mammals

Marine mammals and cetaceans in particular, represent an important element of marine biodiversity



From left to right : Weddell seal, bottlenose dolphin and dugong

I. General context

1. Marine mammals

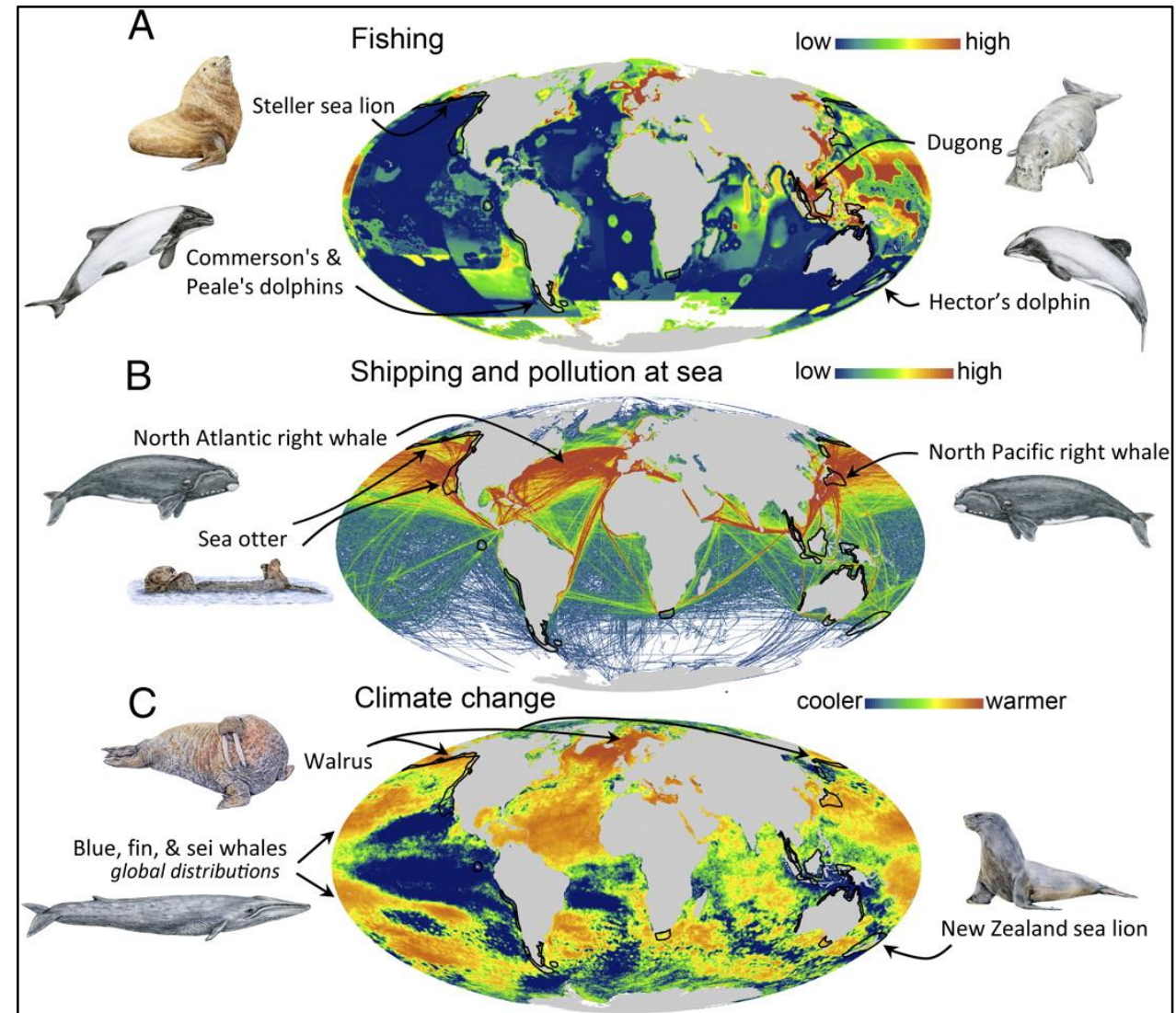
Marine mammals face many anthropogenic threats



Protection and conservation



Conventions, international agreements, legislations ...



Geographic distributions of the leading human impacts on marine mammals

I. General context

2. ACCOBAMS

**Agreement on the Conservation of
Cetaceans of the Black Sea, Mediterranean
Sea and Contiguous Atlantic Area**

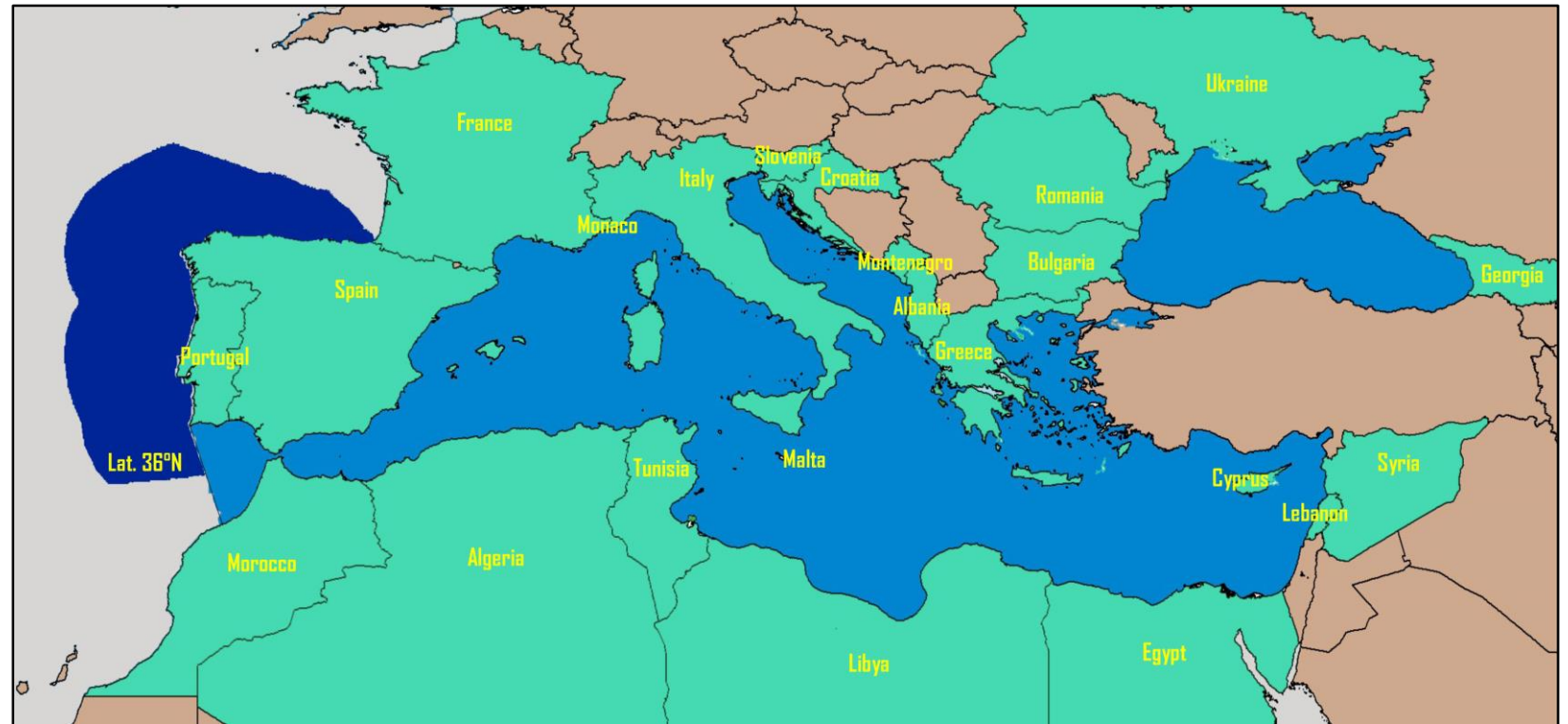
Agreement signed in 1996 and entered
into force in 2001



I. General context

2. ACCOBAMS

Agreement
between 23 parties



ACCOBAMS agreement area

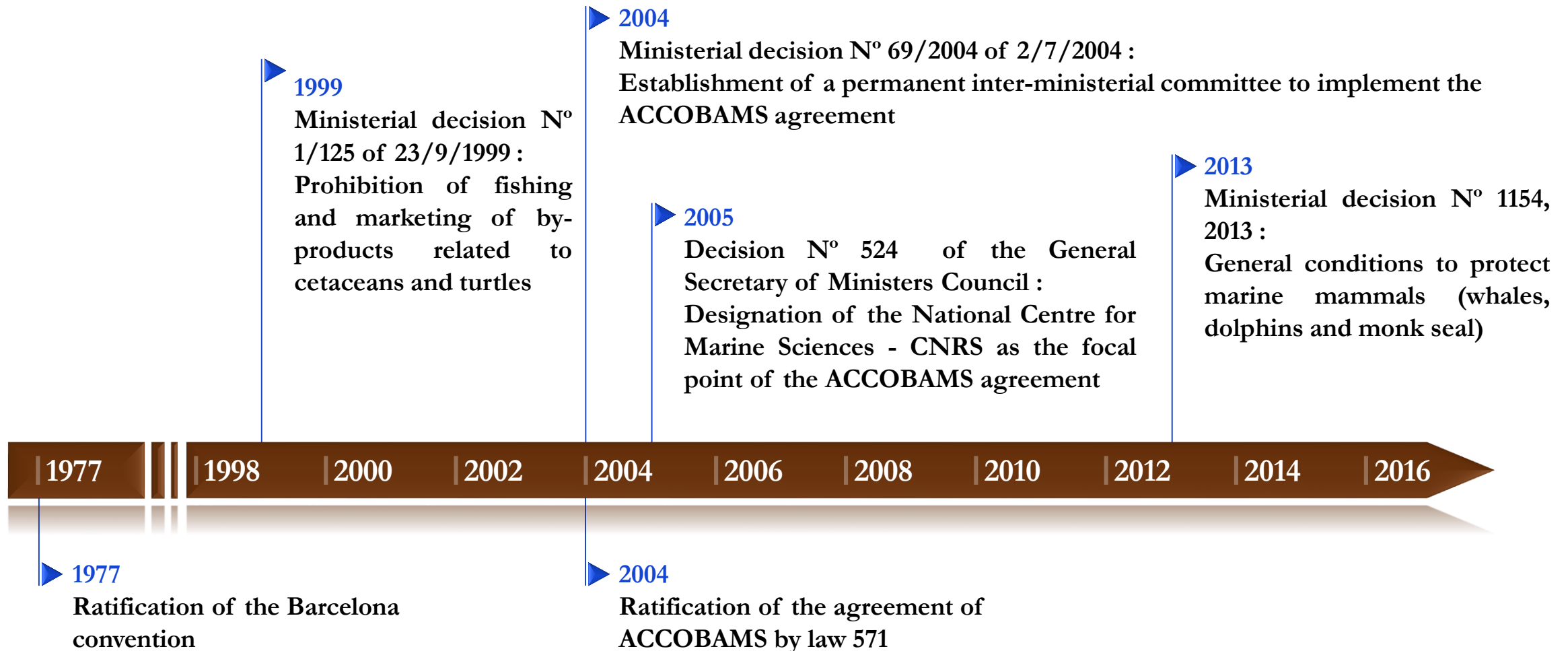
I. General context

2. ACCOBAMS

- **Implementation of a conservation plan**
 - ✓ Adoption and enforcement of national legislation
 - ✓ Assessment and management of human-cetacean interactions
 - ✓ Habitat protection
 - ✓ Research and monitoring
 - ✓ Capacity building, collection and dissemination of information, training and education
 - ✓ Responses to emergency situations

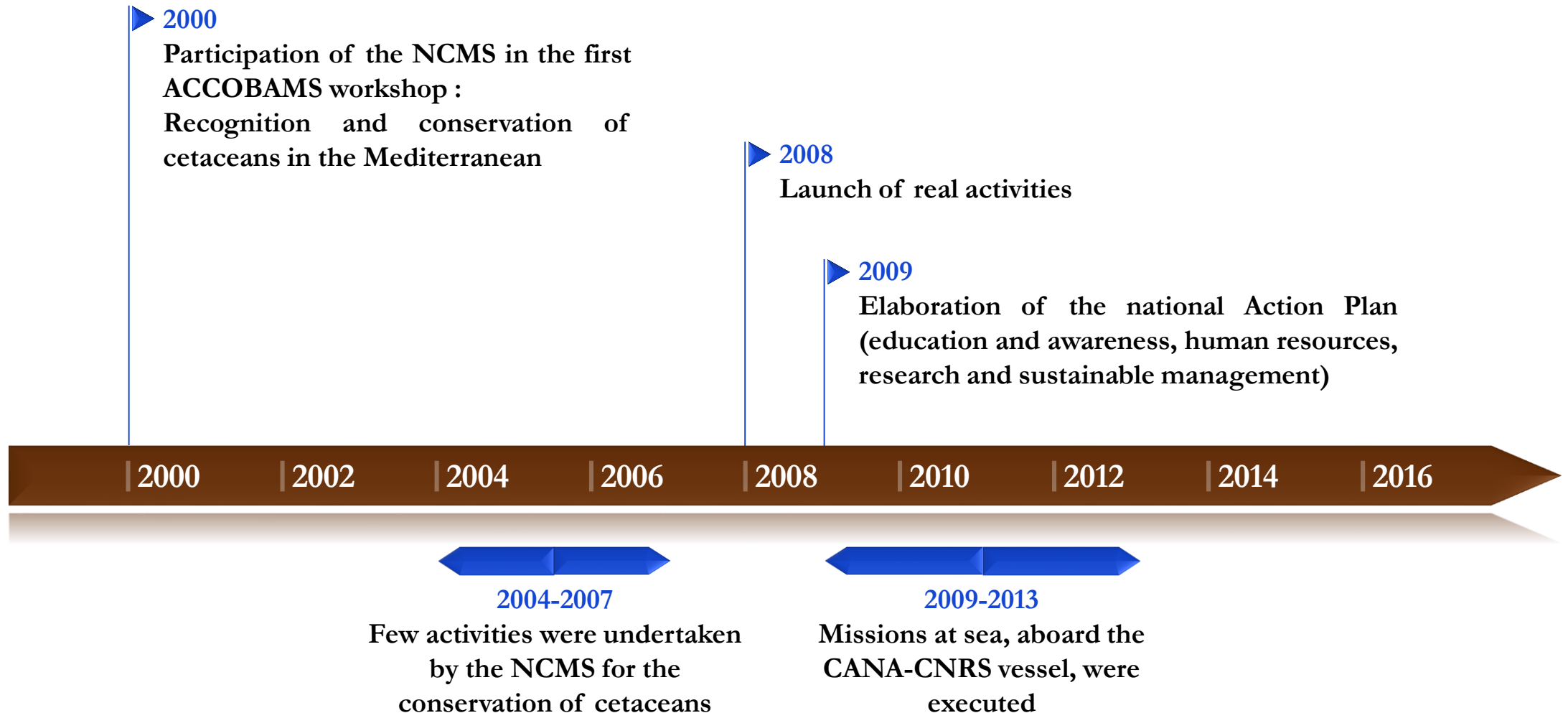
II. Lebanese context

1. Legislation context



II. Lebanese context

2. Scientific context

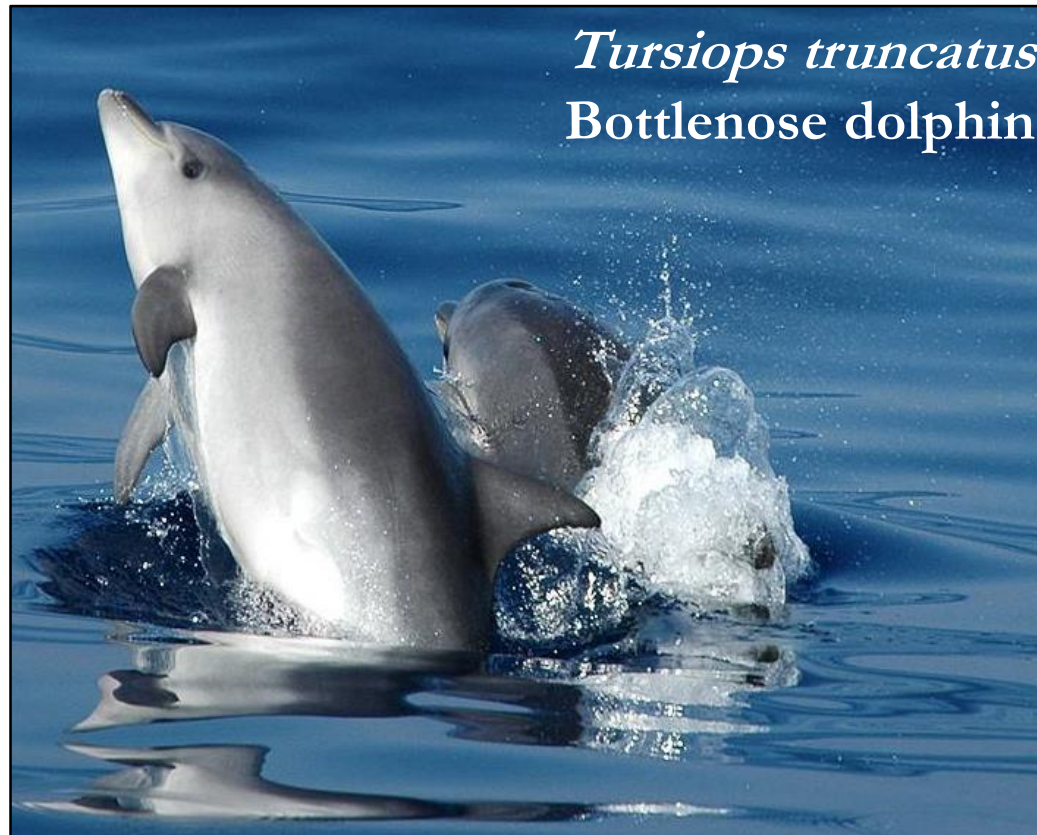


II. Lebanese context

3. Marine mammals observed in Lebanon

Cetaceans

- *Grampus griseus*
- *Steno bredanensis*
- *Stenella coeruleoalba*
- *Ziphius cavirostris*
- *Physester catodon*
- *Tursiops truncatus*



Most abundant species, especially off the coast of Beirut (0.11 ind/km)



II. Lebanese context

3. Marine mammals observed in Lebanon

Pinnipeds



Hooded seal



Monachus monachus

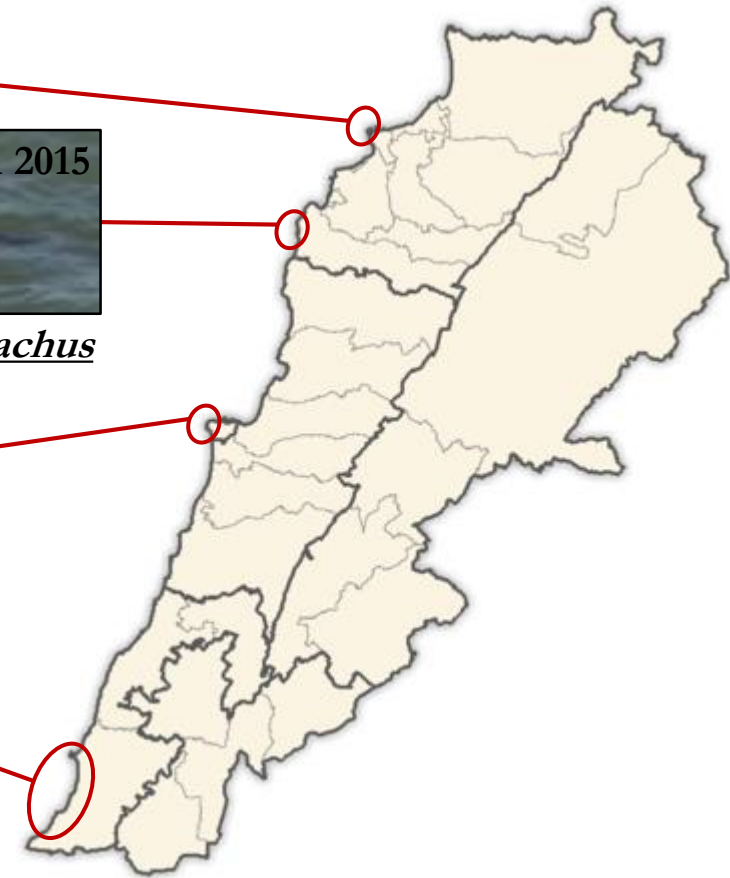


Monachus monachus

Mediterranean monk seal



Sea lion



III. Programme « EO1 - Marine mammals »

Marine mammals face many
anthropogenic threats



Protection and conservation



Permanent monitoring
program

III. Programme « EO1 - Marine mammals »

1. Cetaceans sighting campaigns from ships

Protect the species *Tursiops truncatus*

Record other species that may be frequent in
Lebanese marine waters

III. Programme « EO1 - Marine mammals »

1. Cetaceans sighting campaigns from ships

Logistic conditions

- Observation should be repeated every six months
- Observation should be done ten consecutive days aboard the CANA-CNRS vessel to cover the 220 km of coastline for a width of 12 nautical miles (possibility of aerial surveillance)



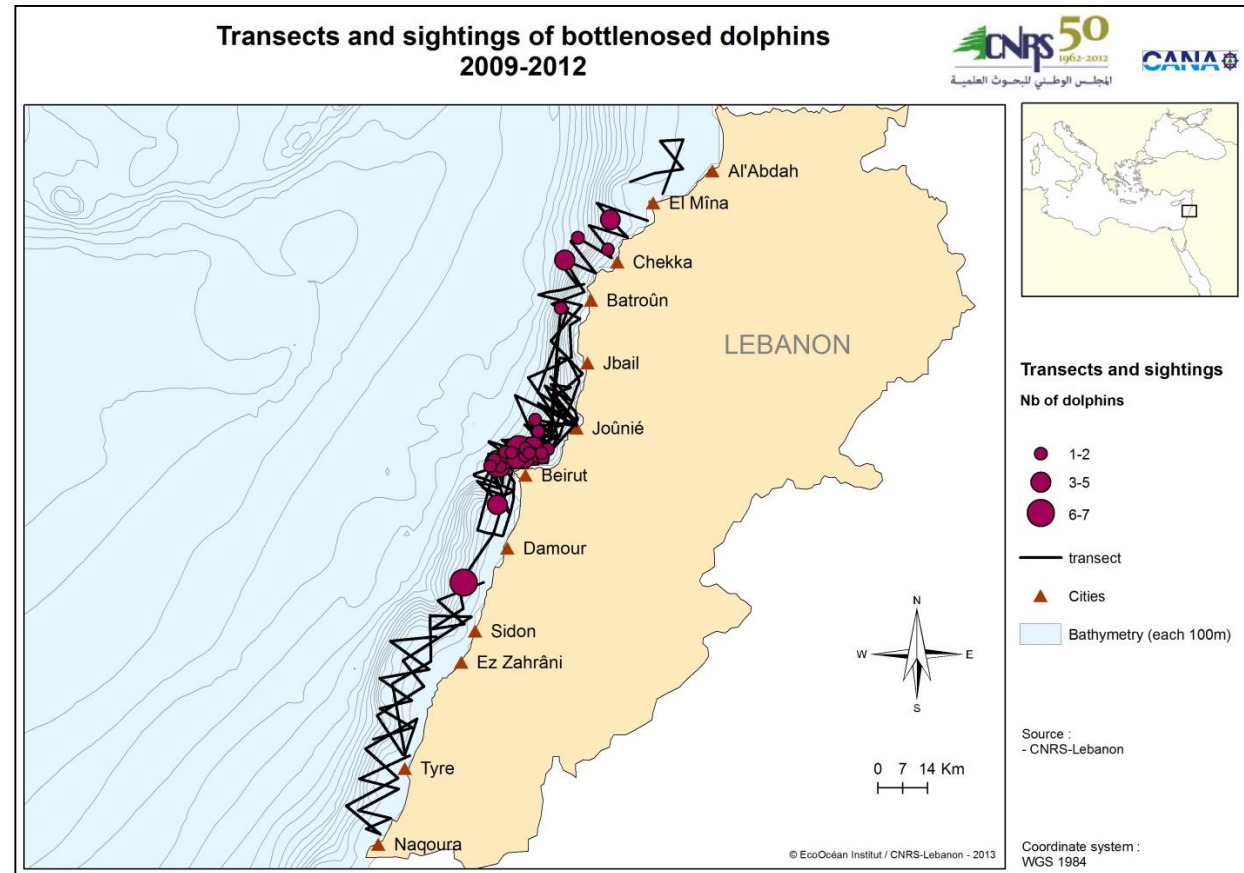
CANA-CNRS vessel

III. Programme « EO1 - Marine mammals »

1. Cetaceans sighting campaigns from ships

Logistic conditions

- Line transect sampling should be used to estimate abundance and to assess density



III. Programme « EO1 - Marine mammals »

1. Cetaceans sighting campaigns from ships

Logistic conditions

- Ship speed: 8 knots
- Wind force : less than 3 Beaufort sea scale
- The position of the vessel should be regularly and automatically recorded through a computer connected to a GPS
- At each sighting, data concerning time, number of individuals and behavior of the species must be recorded with other complementary environmental information

III. Programme « EO1 - Marine mammals »

1. Cetaceans sighting campaigns from ships

Biodiversity descriptors of cetaceans

- Apply « ACCOBAMS Survey Initiative » project
- Monitor the distribution of cetaceans in Lebanese marine waters
- Record and identify the species encountered
- Estimate the population size : density, abundance and number of individuals per group
- Describe the population : demographic characteristics, structure of size or age class, sex ratio, fertility rate and survival rate / mortality
- Take identification photos
- Visual surveys from aircraft or land observation platforms and passive acoustic monitoring carried out during ship surveys with towed hydrophones can be supported by ACCOBAMS Survey Initiative

III. Programme « EO1 - Marine mammals »

2. Monitoring of cetaceans stranding

Assess the ecological status of cetaceans and the functioning of the food web from tissue and organ samples

Study the effects of anthropogenic pressures on cetaceans



Create a network of stranding

III. Programme « EO1 - Marine mammals »

2. Monitoring of cetaceans stranding

Method

- Accredited contact points at major ports
- Have contacts with the navy, merchants and fisheries
- Involve municipalities, public defense and NGOs
- Carry out allometric measurements



Stranded dolphin (Lebanon)

III. Programme « EO1 - Marine mammals »

2. Monitoring of cetaceans stranding

Method

- Carry out an autopsy if possible
- Collect tissue samples (local analysis or dispatch to specialized centers)
- Create a tissue bank
- Install a database



Stranded dolphin (Lebanon)

III. Programme « EO1 - Marine mammals »

3. Monitoring of the Mediterranean monk seal

**Protect the Mediterranean
monk seal**

III. Programme « EO1 - Marine mammals »

3. Monitoring of the Mediterranean monk seal

Method

- Regular observations should be done at the sites of its presence aboard the CANA-CNRS vessel, the catamaran CADMOS-CNRS or fishermen's vessels
- Identify group size and individual status
- Define the area of its presence



Monk seals

III. Programme « EO1 - Marine mammals »

3. Monitoring of the Mediterranean monk seal

Method

- Note anatomical and physical remarks
- Take identification photos
- Place instantaneous trigger cameras in the caves where they are found
- Have contact points in the main regions of its appearance



Monk seals

III. Programme « EO1 - Marine mammals »

4. Descriptors analyses of the Lebanese marine ecosystem

Oligotrophic waters
Pollution (discharge of domestic and industrial wastewater)



Water quality and productivity affected



Need to monitor the main
components of the ecosystem

III. Programme « EO1 - Marine mammals »

4. Descriptors analyses of the Lebanese marine ecosystem

- **Abiotic descriptors**
(salinity, temperature, ...)
- **Bacteriological descriptors**
(total coliforms, fecal coliforms and fecal streptococci)
- **Biotic descriptors**
(productivity, density and abundance of key species, benthic biodiversity)



Raoucheh - Lebanon

III. Programme « EO1 - Marine mammals »

5. Budget

Activity	Budget in \$
Cetaceans sighting campaigns from ships	60000
Monitoring of cetaceans stranding	35000
Monitoring of the Mediterranean monk seal	20000
Descriptors analyses of the Lebanese marine ecosystem	45000
Total	160000

IV. Recommendations

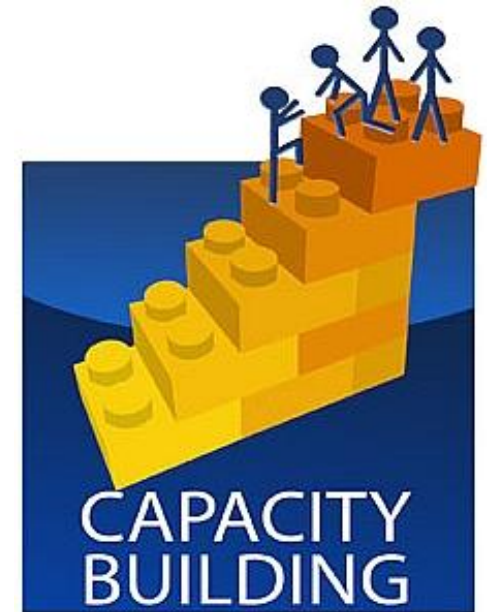
1. Education and awareness

- Design and conduct awareness actions for the public and the fisheries sector
- Product materials for public awareness and education purposes, and make it available
- Broadcast the documentary series « *Cetaceans of the Mediterranean Sea* » on DVD and online
- Facilitate the reporting of cetaceans stranding and make available flyers and stickers to let people know what to do in such a situation

IV. Recommendations

2. Capacity building

- Create capacity in the following fields :
 - ✓ The implementation and the management of an effective cetaceans stranding network
 - ✓ Laboratory techniques
 - ✓ Cetacean field research methods
- Create opportunities for long-term formation for Lebanese researchers and students
- Create a cetacean library on cetaceans' biology and conservation



IV. Recommendations

3. Management

- Grant protection to marine mammals, especially cetaceans, in Lebanese waters
- Ensure the sustainability of fisheries
Implement GFCM Recommendations
Elaborate a review on fishing techniques
- Ensure that environmental impact assessments give special consideration to cetaceans and their habitat
- Support NGOs and the development of new ones concerned with the conservation of the marine environment



Thank you for your
attention



Group of bottlenose dolphins