

France. Progress report on cetacean research, January 2006 to December 2006, with statistical data for the calendar year 2006.

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1. SPECIES AND STOCKS STUDIED

IWC common name	IWC recommended scientific name	Area/stock(s)	Items referred to
Cetaceans	<i>Cetacea</i>	Northeast Atlantic, Mediterranean, Caribbean, South West Indian, New Caledonia, French Polynesia, Southern Ocean	2.1.; 2.2.; 4.3.; 8.; 9.
Humpback whale	<i>Megaptera novaeangliae</i>	Caribbean, Mayotte/stock C, New Caledonia/stock E2, French Polynesia/stock F	2.1.; 2.2.; 3.1.; 3.2.; 4.1.; 4.4.; 9.
Blue whale	<i>Balaenoptera musculus</i>	Southern ocean	9.
Fin whale	<i>Balaenoptera physalus</i>	Northeast Atlantic, Mediterranean	2.2.; 4.3.; 6.3.; 8.
Bryde's whale	<i>Balaenoptera brydei/edeni</i>	Caribbean	2.1.
Common minke whale	<i>Balaenoptera acutorostrata</i>	Northeast Atlantic, New Caledonia, Caribbean	2.1.; 4.1.; 4.3.; 8.
Sperm whale	<i>Physeter macrocephalus</i>	Northeast Atlantic, Mediterranean, Caribbean,	2.1.; 2.2.; 3.1.; 3.2.; 4.3.; 6.3.; 8.
Pygmy sperm whale	<i>Kogia breviceps</i>	Northeast Atlantic, Caribbean, Mayotte, New Caledonia	2.1.; 4.3.; 8.
Dwarf sperm whale	<i>Kogia sima</i>	Caribbean, Mayotte	2.1.; 4.3.; 8.
Beaked whale	<i>Mesoplodon spp.</i>	Caribbean, Mayotte	2.1.; 3.1.; 4.3.; 8.
Cuvier's beaked whale	<i>Ziphius cavirostris</i>	Northeast Atlantic, Mediterranean, Caribbean	2.1.; 8.
Delphinids	<i>Delphinidae</i>	Caribbean, Mayotte	2.1.; 2.2.; 3.2.; 4.1.; 4.4.; 5.; 8.
Killer whale	<i>Orcinus orca</i>	Caribbean, Southern Ocean	2.1.; 3.1.; 4.3.
False killer whale	<i>Pseudorca crassidens</i>	Caribbean	2.1.
Pygmy killer whale	<i>Feresa attenuata</i>	Caribbean, New Caledonia	2.1.; 3.1.; 4.3.; 8.
Long-finned pilot whale	<i>Globicephala melas</i>	Northeast Atlantic, Mediterranean	2.1.; 2.2.; 3.1.; 4.3.; 8.
Short-finned pilot whale	<i>Globicephala macrorhynchus</i>	Caribbean, New Caledonia	2.1.; 3.1.; 4.3.; 8.; 9.
Melon-headed whale	<i>Peponocephala electra</i>	Caribbean, Mayotte	2.1.; 3.1.; 3.2.; 4.3.; 8.
Risso's dolphin	<i>Grampus griseus</i>	Northeast Atlantic, Mediterranean, Caribbean, Mayotte	2.1.; 2.2.; 3.1.; 7.3.; 8.
Common bottlenose dolphin	<i>Tursiops truncatus</i>	Northeast Atlantic, Mediterranean, Caribbean	2.1.; 2.2.; 3.1.; 4.1.; 4.3.; 8.
Indian Ocean bottlenose dolphin	<i>Tursiops aduncus</i>	Mayotte, New Caledonia	2.1.; 2.2.; 3.1.; 3.2.; 4.4.
Rough-toothed dolphin	<i>Steno bredanensis</i>	Caribbean, New Caledonia	2.1.; 3.1.; 4.3.; 8.; 9.
Indo-Pacific humpback dolphin	<i>Sousa chinensis</i>	Mayotte	4.4.
White-sided dolphin	<i>Lagenorhynchus acutus</i>	Northeast Atlantic	4.3.; 8.
White-beaked dolphin	<i>Lagenorhynchus albirostris</i>	Northeast Atlantic	8.
Fraser's dolphin	<i>Lagenodelphis hosei</i>	Caribbean	2.1.; 2.2.; 8.
Short-beaked common dolphin	<i>Delphinus delphis</i>	Northeast Atlantic, Mediterranean	2.1.; 4.2.; 4.3.; 7.3.; 8.; 9.
Striped dolphin	<i>Stenella coeruleoalba</i>	Northeast Atlantic, Mediterranean, Caribbean	2.1.; 4.3.; 7.3.; 8.; 9.
Pan-tropical spotted dolphin	<i>Stenella attenuata</i>	Caribbean, Mayotte	2.1.; 2.2.; 3.1.; 4.4.; 8.
Atlantic spotted dolphin	<i>Stenella frontalis</i>	Caribbean	2.1.
Spinner dolphin	<i>Stenella longirostris</i>	Caribbean, Mayotte, New Caledonia	2.1.; 2.2.; 4.1.; 4.4.; 8.
Clymene dolphin	<i>Stenella clymene</i>	Caribbean	2.1.
Harbour porpoise	<i>Phocoena phocoena</i>	Northeast Atlantic	4.2.; 4.3.; 4.4.; 5.; 7.3.; 8.

2. SIGHTINGS DATA

2.1 Field work

2.1.1 Systematic

Cetacean distributions were surveyed in May over the shelf of the Bay of Biscay by CRMM/ULR and CRELA/ULR in order to determine preferential habitats and relationships with distribution of small pelagic fish as determined by

simultaneous acoustic survey carried out by *Ifremer* research vessel *Thalassa*. This survey followed a standardized protocol in use since 2003.

Systematic summer and winter surveys of coastal bottlenose dolphins were carried out along the coast of western Brittany (LEMM), along the Normandy coast (GECC) and the coast of Corsica (GECM). At the latter location, common bottlenose dolphins were studied by GECM in three Natura 2000 protected areas by an all-year round survey (68 trips, 21 sightings, 3745 km), and in the Hyeres archipelago, Provence (4 trips, and opportunistic datas collected from the ferries and the wardens of Port-Cros National Park).

Striped dolphins of the coastal area close to Antibes were studied during 11 surveys (895 km, 19 sightings) conducted for focal samplings (CRC).

Sperm whales, humpback whales and other cetaceans were surveyed along the leeward coast of Guadeloupe (French Caribbean) year-round from a research sailing boat (AET). Data from a whale watch motor boat were also collected. Surveys were extended to the waters off St Barthélemy in April 2006.

Humpback whales, delphinids, beaked whales and sperm whales were surveyed around Martinique (French Caribbean) in March-April 2006 (SEPANMAR and GREC). Surveys in both leeward and windward territorial waters and contiguous zone were performed by using a sailing boat and focused on nocturnal habitat use by delphinids and sperm whales. Photo-identification was performed for sperm whales above leeward continental slope.

Both boat-based and aerial based surveys have been conducted in the water surrounding the island of Mayotte (lagonal water and adjacent oceanic waters from early January to October 2006 (OMM). Targeted species were mostly delphinids as well as larger toothed whales (Kogiidae, Ziphiidae). Boat-based surveys were conducted from January 1st–June 30th and were dedicated to studying the distribution of cetaceans in relation to environmental variables. Focal-follows looking at habitat use and social organisation were conducted on melon-headed whales and Indian Ocean bottlenose, spinner and pan-tropical spotted dolphins. Aerial surveys were conducted from September 16th to October 27th to investigate humpback whales and small cetaceans distributions in the lagoon of Mayotte and adjacent banks.

Humpback whales and other cetaceans were surveyed from small motor and sailing boats from July 18th - September 17th 2006, on the breeding area of New Caledonia (OCNC; sub-stock E2).

All cetaceans were surveyed in the summer along the routes of the supply vessel *Marion-Dufresnes* between Réunion Island and the French research stations of the Southern Indian Ocean: Crozet, Kerguelen and Amsterdam (CEBC).

Target species	Date	Area	Methods / Effort	No. of sightings	Contact person/institute and references
Common bottlenose dolphin	summer	Normandy	Boat based surveys	In progress	G. Mauger/GECC
Common bottlenose dolphin	summer	Normandy	Boat based surveys	In progress	GMN
Cetaceans	May	Bay of Biscay	Standardized surveys	56 [§]	O.Van Canneyt CRMM/ULR
Cuvier's beaked w., short-beaked common d.	July	Western Mediterranean	Sailing boat	4	A.Gannier/GREC
Common bottlenose dolphin	Year round	Corsica	Boat based surveys / 3745 km	21	F.Dhermain/GECM
Common bottlenose dolphin	Year round	Hyères archipelago	Boat based surveys	4	F.Dhermain/GECM
Cetaceans	Year round	Guadeloupe (including St Barthelemy)	Boat based surveys	309 [§]	C. & R. Rinaldi/AET
Cetaceans	March-April	Martinique	Sailing boat survey / 1023 km	52 [®]	S. Jérémie/SEPANMAR
Delphinids	01/01/06-30/06/06	Mayotte	Boat-based surveys / 265hours	53 [#]	J.Kiszka/OMM
Humpback whale	16/09/06-27/10/06	Mayotte	Aerial surveys	25 [*]	C.Pusineri/OMM
Humpback whale	18/07/06 to 17/09/06	New Caledonia	Boat based surveys	In progress	C.Garrigue/OCNC
Cetaceans	Austral summer	Southern Indian Ocean	Boat based	In progress	C.Guinet/CEBC
Cetaceans	Year round	Crozet and Kerguelen Islands	Land and fishing boat based	54 [€]	C.Guinet/CEBC

§ constituted of 2 common minke w., 12 long-finned pilot w., 2 Risso's d., 14 short-beaked common d., 24 common bottlenose d. and 2 striped d.

§ constituted of 14 humpback w., 207 sperm w., 2 dwarf sperm w., 1 unidentified beaked w., 6 *Mesoplodon sp.*, 2 unidentified delphinids, 1 killer w., 7 pygmy killer w., 5 short-finned pilot w., 2 melon-headed w., 5 Fraser's d., 12 common bottlenose d., 40 pan-tropical spotted d., 2 Atlantic spotted d. and 3 rough-toothed d.

@ constituted of 1 balainopterid, 1 minke w., 6 humpback w., 10 sperm w., 3 dwarf sperm w., 1 Cuvier's beaked w., 1 *Mesoplodon sp.*, 2 delphinids, 1 false killer w., 2 pygmy killer w., 2 melon-headed w., 6 common bottlenose d., 1 rough-toothed d., 4 Fraser's d., 9 pantropical d., 1 Atlantic spotted d. and 1 clymene d.,

constituted of 3 melon-headed w., 2 Risso's d., 2 humpback d., 11 pan-tropical spotted d., 23 spinner d. and 12 Indian Ocean bottlenose d.

* constituted of 25 humpback w., 6 *Stenella sp.* and 2 Indian Ocean bottlenose d.

£ constituted of 27 killer w. and 27 sperm w.

2.1.2 Opportunistic, platforms of opportunity

Cetaceans opportunistic sightings have been collected from a variety of observers (lay public, scientists, customs, ...) in several regions of the northeast Atlantic and the Mediterranean (CRC, CRMM/ULR, GECC, GECM, GEFMA, LEMM).

A ferry from Brest (France) to Cork (Ireland) was used as a platform of opportunity to survey cetaceans across Celtic Sea (LEMM). Similarly, a ferry from Marseille (France) to Bejaia (Algeria) was used as a platform of opportunity to survey fin whales and other cetaceans across western Mediterranean (CEBC).

Cetaceans sightings were collected from a whale watch motor boat off leeward coast of Guadeloupe (AET).

Primary species	Area	Data type/method	Collected by	Platform	Contact person/institute and refs
Cetaceans	various areas of the Channel	opportunistic sightings	public, customs, scientists	Boat based	F. Kerleau /GECC
Cetaceans	Normandy	Photo-id; sightings	GMN	Land, whalewatching vessel, ferry	GMN
Cetaceans	Celtic Sea	Sightings	LEMM	Ferry	S.Hassani/LEMM
Cetaceans	Mediterranean	Opportunistic sightings	French Customs	Aircraft and boat	S.Laran/CRC
Fin whale [§]	Mediterranean Sea	Sept 06- sept 07	CEBC-COM	Ferries	C.Cotté/CEBC
Cetaceans [§]	Guadeloupe	Sightings	AET	Whale-watch boat	C. & R. Rinaldi/AET
Cetaceans	New Caledonia	Opportunistic sightings	Public, scientist	-	C.Garrigue/OCNC
Humpback whale	French Polynesia	Acoustic data	Rodolphe Holler	Inflatable/small boat	A.Gannier/GREC

§ also include sightings of striped and short-beaked common dolphins.

§ constituted of 6 humpback w., 3 Bryde's w., 196 sperm w., 1 unidentified beaked w., 3 dwarf sperm w., 10 *Mesoplodon sp.*, 1 Cuvier's beaked w., 1 Killer w., 3 false killer w., 3 pygmy killer w., 3 short-finned pilot w., 3 common bottlenose d., 9 Fraser's d., 85 pan-tropical spotted d., 1 striped d., 1 spinner d. and 2 rough-toothed d.

2.2 Analyses/development of techniques

Distribution patterns and relative abundance of small cetaceans were analysed in the Bay of Biscay from past aerial and boat-based surveys (CRELA/ULR; Kiszka *et al.*, *in press*; Grégoire Certain PhD thesis due in 2007).

Summer surveys from 1998 to 2005 were used to model habitat suitability of sperm whale, long-finned pilot whale and Risso's dolphin in the NW Mediterranean sea (CRC). Similarly, the distribution of fin whale is investigated along with environmental parameters in order to model its distribution in the Northwest Mediterranean Sea.

Distribution and relative abundance of cetaceans are currently analysed around Mayotte (OMM) and habitat preferences and partitioning among delphinids have been investigated (Gross, 2006; Gross *et al.*, 2006).

Acoustic analyses are underway on dwarf sperm whale, melon-headed whale, sperm and humpback whales (SEPANMAR). Those on sperm whales were notably aimed at determining prey capture in feeding ecology studies conducted day and night.

Target species	Date	Area	Methods/effort	Parameters/ factors measured	Contact person/institute; refs
Delphinids [§]	winter	Bay of Biscay	Aerial and boat based surveys	Relative abundance and spatial analysis	O.Van Canneyt/ CRMM/ULR
Sperm whale	June, July, October	Western Mediterranean	Creak counting in acoustic recording	Feeding/IPI	A.Gannier/GREC

Sperm whale*	Year round	Guadeloupe	Surveys and photo-ID	Local abundance, site fidelity and group composition	C.&R.Rinaldi/AET
Fin whale [£]	Year round	Mediterranean	Line transect survey	Distribution, relative abundance	C. Cotté/CEBC
Humpback whale [§]	16/09/06-27/10/06	Mayotte	Aerial survey / 29 hours of observation effort	Distribution / group composition	C.Pusineri/OMM
Delphinids [#]	01/01/06-30/06/06	Mayotte	Boat-based survey / 265 hours of observation effort	Distribution / group structure / behaviour	J.Kiszka/OMM
Humpback whales	1999-2004	Oceania and East Australia	Photo-ID comparison	Rates of exchange	C.Garrigue/OCNC

£ includes short-beaked common d. and common bottlenose d.; § includes humpback w., Indian Ocean bottlenose d., spinner d. and pan-tropical d.; # includes Indian ocean bottlenose d., spinner d. and pan-tropical d.; * includes sperm w., humpback w. and delphinids.

3. MARKING DATA

3.1 Field work

3.1.1 Natural marking data

Species	Feature	Area/stock	No. photo-id'd	Catalogue (Y/N)	Catalogue total	Contact person/institute; refs
Common bottlenose dolphin	Dorsal Fin	Normandy/Northeast Atlantic	In progress	Y	150	G. Mauger / GECC
Common bottlenose dolphin	Dorsal fin	Channel/Northeast Atlantic	In progress	Y	In progress	GMN
Long-finned pilot whale	Dorsal fin	Bay of Biscay/Northeast Atlantic	20	Y	86	CRMM/ULR
Sperm whale	Fluke	Western Mediterranean	20	Y	120	A.Gannier/GREC
Common Bottlenose dolphin	Dorsal fin	Corsica/Mediterranean	157	Y	In progress	F.Dhermain/ GECM
Common Bottlenose Dolphin	Dorsal fin	Provence/ Mediterranean	27	Y	In progress	F.Dhermain/ GECM
Humpback whale	Ventral fluke	Guadeloupe, St Barthélemy and Montserrat/Caribbean	12	Y	25	C.&R.Rinaldi/ AET and collaborators
Sperm whale	Ventral fluke	Guadeloupe/Caribbean	220 pict. / 72 ind.	Y	190 individuals	C.&R.Rinaldi/ AET
Sperm whale	Dorsal fluke	Guadeloupe/Caribbean	8	Y	In progress	C.&R.Rinaldi/ AET
Sperm whale	Dorsal fin	Guadeloupe/Caribbean	5	Y	In progress	C.&R.Rinaldi/ AET
Beaked whales and delphinids [§]	Dorsal fins / sides	Guadeloupe/Caribbean	In progress	Y	In progress	C.&R.Rinaldi/ AET
Sperm whale	Fluke	Martinique/Caribbean	In progress	Y	>10	SEPANMAR / GREC
Delphinids [#]	Dorsal fin	Mayotte/Soutwest Indian	In progress	Y	In progress	J.Kiszka/OMM
Humpback whale	Fluke	New Caledonia/sub-stock E2	68*	Y	429	C.Garrigue/ OCNC
Indian ocean bottlenose dolphin	Dorsal fin	New Caledonia	In progress	Y	80	C.Garrigue/ OCNC
Sperm whale	Fluke and dorsal fin	Croet & Kerguelen/ Southern Ocean	In progress	Y	80	C.Guinet/CEBC
Killer whale	Dorsal fin	Croet & Kerguelen/ Southern Ocean	146	Y	195	C.Guinet/CEBC

§ include beaked whales, killer w., pygmy killer w., short-finned pilot w., melon-headed w., common bottlenose d., pan-tropical spotted d. and rough-toothed d.

include melon-headed w., Risso's d., spinner d., pan-tropical spotted d. and Indian Ocean bottlenose d.

* new individual fluke ID collected in 2006.

3.1.2. Artificial marking data

None deployed.

3.1.3 Telemetry data

None deployed.

Species	Tag type	No. successfully deployed	Maximum time transmitting	Contact person/institute; refs
N/A	0	0	N/A	N/A

3.2 Analyses/development of techniques

Sperm whale abundance estimates are being carried out around Guadeloupe archipelago (AET), by using capture-mark-recapture methodologies (CMR) from photo-identification data. Additionally, studies of fidelity and inter-individual associations are also conducted. A similar work is underway on delphinids and humpback whales in the same area and off St Barthélemy.

AET carries out specific studies on sperm whales off Guadeloupe: analysis of surface behaviours, blow sequences, inter-individual associations and fidelity, maternal calves, impacts of human activities. AET also participates to the NAMSC catalogue to match flukes of sperm whales and, similarly, to the North Atlantic Humpback Whales catalogue.

Inter-individual associations are currently studied for Indian Ocean bottlenose dolphins and melon-headed whales in Mayotte (OMM). For these species, abundance estimates using CMR analyses are underway as well.

Demographic investigations based on humpback whale photo-identification have been conducted by OCNC. They included population size estimate based on CMR, home range in New Caledonia and migration events in the South Pacific. The comparison of 692 humpback whale flukes representing the Oceania catalogue is underway with a selection of east Australia catalogue containing a total of 1372 flukes, including Hervey Bay on the northern and Byron Bay on the southern migration routes. It is necessary to assess exchange rates between the islands of Oceania and the east coast of Australia in order to estimate total abundance of the southern Pacific humpback whales populations.

4. TISSUE/BIOLOGICAL SAMPLES COLLECTED

4.1 Biopsy samples (summary only)

Species	Area/stock	Calendar year/season - no. collected	Archive d (Y/N)	No. analysed	Total holdings	Contact person/institute
Delphinids	Mayotte/South west Indian	2006 / 62	Y	62	163	J.Kiszka/OMM
Humpback whale*	New Caledonia	July-Sept 2006/148	Y	612	700	C.Garrigue/OCNC
(Dwarf) minke whale*	New Caledonia	Sep 2006/1	Y	3	3	C.Garrigue/OCNC
Common bottlenose dolphin*	New Caledonia	Sep 2006/	Y	6	11	C.Garrigue/OCNC
Spinner dolphin*	New Caledonia	Sep 2006/1	Y	1	2	C.Garrigue/OCNC

* Most biopsy samples listed above were collected for genetic analyses as well as fatty acid or isotope analyses.

4.2 Samples from directed catches (commercial, aboriginal and scientific permits) or bycatches

Samples from by-caught small cetaceans collected onboard fishing boats were collected in the course of by-catch monitoring programmes in pelagic trawl and gill- or trammel net fisheries (CRMM/ULR).

Species	Area/stock	Tissue type(s)	No. collected	Archived (Y/N)	No. analysed	Contact person/institute
Short-beaked common dolphin	Bay of Biscay and Channel/Northeast Atlantic	Various*	42	Y	In progress	O.Van Canneyt/CRMM/ULR
Harbour porpoise	Bay of Biscay and Channel/Northeast Atlantic	Various*	8	Y	In progress	O.Van Canneyt/CRMM/ULR

* Skin, blubber, teeth, stomach, muscle, kidney, liver, gonads

4.3 Samples from stranded animals

Species	Area/stock	Tissue type	No. collected	Archived (Y/N)	No. analysed	Contact person/institute
Cetaceans [§]	Bay of Biscay and Channel/ Northeast Atlantic	Various*	52 [§]	Y	In progress	O.Van Canneyt/CRMM/ULR
Cetaceans [£]	Channel/ Northeast Atlantic	Various*	7 [£]	Y	In	F.Kerleau/GECC
Harbour porpoise	Channel/ Northeast Atlantic	Various*	2	Y	In	GMN
Cetaceans	Mediterranean	Various*	30	Y	In	F.Dhermain/GECEM
Cetaceans [§]	Guadeloupe/Caribbean	Skeleton	8 [§]	Y	-	C.&R.Rinaldi/AET & AET-
Melon-headed whale	Guadeloupe/Caribbean	Various *	1	Y	-	C.&R.Rinaldi/AET
Cetaceans [#]	New Caledonia	Various**	11 [#]	Y	11	C. Garrigue/OCNC
Killer whale	Crozet	Skin	2	Y	0	C.Guinet/CEBC
Long-finned pilot whale	Kerguelen	Skin and teeth	70	Y	In progress	C.Guinet/CEBC

* typically: teeth or baleen plates, skin, blubber, muscle, reproductive organs, stomach contents, kidney, liver.

** typically: muscle, teeth, stomach content, skin, liver

§ includes 1 fin w., 1 minke w., 1 long-finned pilot w., 29 short-beaked common d., 4 common bottlenose d., 3 striped d., 1 white-sided d. and 12 harbour p.

£ includes 2 striped d. and 5 harbour p.

§ includes 1 sperm w., 1 dwarf sperm w., 2 Gervais beaked w., 3 short-finned pilot w. and 1 common bottlenose d.

includes 1 pygmy sperm w., 6 pygmy killer w., 3 short-finned pilot w. and 1 rough-toothed d.

4.4 Analyses/development of techniques

Biological parameters (age, reproductive status, diet, ...) and ecological markers (heavy metals, stable isotopes of N and C) analyses based on samples collected from stranded or by-caught animals are carried out to examine small cetacean population structure and ecology in the Bay of Biscay (CRELA/ULR) (Caurant *et al.*, 2006; Lahaye V. PhD thesis 2006; Lahaye *et al.*, 2006 and *in press*; Pusineri *et al.*, 2007; Ringelstein *et al.*, 2006; Spitz *et al.*, 2006a,b; J. Spitz PhD thesis on going). Tissue samples of Cuvier's beaked whales were provided for a global phylogeographic study of the species (M. Dalebout).

In Mayotte (OMM), trophic interactions between delphinids were investigated in collaboration with (CRELA/ULR) by analysing stable isotopes (N and C) in biopsy samples (Gross, 2006; Gross *et al.*, 2006; J. Kiszka PhD thesis on going). Tissue samples for regional and global assessments were also provided for Indian Ocean bottlenose dolphins (collaboration with Stockholm University) and Indo-Pacific humpback dolphins (collaboration with American Museum of Natural History). Tissue samples of Indian Ocean bottlenose dolphins, humpback whales, spinner dolphins and pan-tropical spotted dolphins were provided to the University of Liège for immuno-histological investigations.

5. POLLUTION STUDIES

Analyses of heavy metals are used to characterise sub-population structures and pattern in habitat and resource use by small cetacean in the Bay of Biscay rather than investigate their possible effect as pollutants (Caurant *et al.*, 2006; Lahaye *et al.*, 2006 and *in press*).

6. STATISTICS FOR LARGE CETACEANS

6.1 Corrections to earlier years' statistics for large whales

None.

6.2 Direct catches of large whales (commercial, aboriginal and scientific permits) for the calendar year 2006

None.

6.3 Anthropogenic mortality of large whales for the calendar year 2006

6.3.1 Observed or reported ship strikes of large whales (including non-fatal events)

Whale species	Sex	No.	Date	Location	Vessel type	Speed	Fate	How observed	Contact person/institute and refs
Fin whale	F	1	24/08/06	Bay of Biscay, between Bilbao and la Rochelle	PC	U	D*	Pilot of La Rochelle shipping harbour	O.Van Canneyt/CRMM/ULR
Fin whale	U	1	10/10/06	Channel, off Cherbourg	LC	U	D	Crew	O.Van Canneyt/CRMM/ULR
Sperm whale	M	1	April 2006	Martinique	U	U	D**	Stranded	S.Jérémie/SEPANMAR

* deep wound to the side, vertebral axis broken approximately at anal region; animal hit at sea, stuck on stabilizers close to propellers and discovered at harbour; ** the 14m long male sperm whale had lost fluke as a result of propeller cuts;

The detectability of large whales from High Speed Ferries et from other ferries has been investigated in the aim of reducing strike risk (EPHE). This work was conducted within the limits of the *Pelagos* sanctuary, the international sanctuary for marine mammals in the northeastern Mediterranean, under a collaboration agreement with one of the main ferry companies operating from Nice and Marseille to Corsica.

6.3.2 Fishery bycatch of large whales

None reported.

Whale species	Sex	No.	Date	Location	Fate	Targeted fish species	Gear	How observed?	Source or contact
None	N/A	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Comments:

7. STATISTICS FOR SMALL CETACEANS

7.1 Corrections to earlier years' statistics for small cetaceans

None.

7.2 Direct catches of small cetaceans for the calendar year 2006

None.

Species	Type of catch	Area/stock	Males	Females	Total landed	Struck and lost
N/A	N/A	N/A	N/A	N/A	N/A	N/A

7.3 Anthropogenic mortality of small cetaceans for the calendar year 2006

7.3.1 Observed or reported ship strikes of small cetaceans (including non fatal events)

None reported.

Species	Sex	No.	Date	Location	Vessel type	Speed	Fate	How observed	Contact person/institute and refs
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

7.3.2 Fishery bycatch of small cetaceans

Species	Sex	No.	Date	Location	Fate	Targeted fish species	Gear	How observed?	Source or contact
Common dolphin	-	48	Feb/06	Bay of Biscay	D	<i>Dicentrarchus labrax</i>	PTM	M	O.Van Canneyt/CRMM/ULR
Common dolphin	-	4	Jan-Feb-Mar/06	Bay of Biscay	D	Flat fish	GTR	V	O.Van Canneyt/CRMM/ULR

Harbour porpoise	-	21	Jan-Feb-Mar/06	Bay of Biscay	D	Flat fish	GTR	V	O.Van Canneyt/ CRMM/ULR
Comments: only data from observer programme coordinated by Ifremer are given; stranded animals with unequivocal by-catch marks are not included									

The projects PETRACET and PROCET were aimed at estimating the removal of small cetaceans by EU pelagic trawl fisheries and testing the effect of several commercial pingers (Ifremer, CRMM/ULR).

In the PETRACET project pelagic trawl fisheries of the UK, Denmark, Ireland, the Netherland and France were observed. A total of 89 common dolphins, 3 striped dolphins and 1 Risso's dophin were caught in 21 among the 952 observed hauls. Extrapolated to all the fisheries, this suggests that the total removal should be 1760-1930 dolphins per year according to the type of stratification that was tested (Northridge *et al.*, 2006). The impact of such a catch on the population will be analysed in the project NECESSITY due in 2007.

In the PROCET project, available pingers tested in commercial operation failed to show any effect on the frequency of by-catch events or the number of dolphins caught (Fossecave *et al.*, 2006).

Other by-catch events were opportunistically reported and included 21 harbour porpoises and 4 short-beaked common dolphins caught in bottom-set trammel net fisheries operating off Arcachon, Bay of Biscay in 2006.

8. STRANDINGS

The French stranding network is nationally coordinated by CRMM/ULR under an agreement with the Ministry in charge of the Environment. Local voluntary observers, often under local supervision by various institutions or NGOs (AET, SEPANMAR, LEMM, GECEM, GECC, OCNC), have been trained to process stranded cetaceans (and pinnipeds) under a common standardized protocol. An annual synthesis of all strandings reported in France is produced by CRMM/ULR (Peltier and Van Canneyt, 2006).

In remote sectors of the coastline, notably in overseas territories where geographical constraints can be pregnant, the standard stranding reporting scheme may not be totally applicable and therefore reports are made more opportunistically; nonetheless periodic compilations are made and tissue samples collected (OCNC, AET, SEPANMAR, OMM, CEBC).

Statistics of stranding for the coast of France in 2006 indicate a total number of 823 cetaceans reported from the Channel (68), the Atlantic (648) and the Mediterranean (107) coasts (CRMM/ULR and all National Stranding Scheme field correspondents). At the date of preparing last year's report, stranding data for the year 2005 were not fully compiled; the update gives a total of total number of 627 cetaceans reported from the Channel (50), the Atlantic (484) and the Mediterranean (93) coasts.

Stranded cetaceans found in overseas territories are not exhaustively recorded: however partial data are available for French Polynesia (CRIOBE), New Caledonia (OCNC), Martinique (SEPANMAR), Guadeloupe (AET), Mayotte (OMM) and Réunion Island (GLOBICE). A recent review covering the years from late 1990s to present was done for Martinique, Guadeloupe, French Guyana, Saint Pierre et Miquelon, and Réunion Island, complete data set available from CRIOBE, OCNC, SEPANMAR, AET, OMM and GLOBICE.

Species	No. strandings	No. post mortems	Contact person(s)/ Institute(s)	Contact email address(es)
Cetaceans 2005/ French European coasts	627 [¶]	46	O.Van Canneyt/CRMM/ULR	olivier.van-canneyt@univ-lr.fr
Cetaceans 2006/ French European coasts	823 [§]	52	O.Van Canneyt/CRMM/ULR	olivier.van-canneyt@univ-lr.fr
Cetaceans/Normandy	32 ^o	28	F.Kerleau/GECC	f.kerleau@wanadoo.fr
Cetaceans / Guadeloupe	9 [#]	-	C.&R.Rinaldi/AET	evastropic@wanadoo.fr
Cetaceans / Martinique	6 [*]	-	S.Jeremie/SEPANMAR and collaborators	reseau_cetaces972@hotmail.com
Cetaceans / New Caledonia	20 [§]	10	C.Garrigue / OCNC	op.cetaces@offratel.nc
Cetaceans / Crozet and Kerguelen	>102	2	C.Guinet/CEBC	guinet@cebc.cnrs.fr

¥ include 3(2) fin w., 4(2) common minke w., 2(1) pygmy sperm w., 2 Cuvier's beaked w., 78 delphinids, 21(1) long-finned pilot w., 9 Risso's d., 45(1) common bottlenose d., 245(22) short-beaked common d., 1 pan-tropical spotted d., 74(9) striped d., 2 white-beaked d. and 105(8) harbour p. (in brackets number dissected)

§ include 8 unidentified balaenopterid, 1 humpback w., 8(1) fin w., 2(1) common minke w., 2 sperm w., 1 pygmy sperm w., 2 Cuvier's beaked w., 45 delphinids, 15(1) long-finned pilot w., 4 Risso's d., 55(4) common bottlenose d., 245(28) short-beaked common d., 1 pan-tropical spotted d., 96(3) striped d., 2(1) white-sided d., 3 white-beaked d. and 166(12) harbour p. (in brackets number dissected)

Ø include 1 long-finned pilot w., 7 common bottlenose d., 7 short-beaked common d., 4 striped d. and 16 harbour p. (figures included in §)

include 1 sperm w., 1 dwarf sperm w., 1 beaked w., 2 Gervais's beaked w., 3 short-finned pilot w., 1 melon-headed w. and 1 bottlenose d.

* include 2 sperm w., 1 Cuvier's beaked w., 1 melon-headed w., 1 Fraser's d. and 1 pan-tropical spotted d.

§ include 1(1) pygmy sperm w., 6(5) pygmy killer w., 12(3) long-finned pilot w. and 1(1) rough-toothed d. (in brackets number dissected)

9. OTHER STUDIES AND ANALYSES

Acoustics

CEBC investigates distribution, relative abundance and movements of large mysticetes, notably blue whales, in the Indian sector of the southern ocean by analysing low frequency acoustic recordings.

SEPANMAR investigates cetacean distribution in relation to man-induced disturbances to the marine and coastal habitats by using acoustic monitoring approaches. Possible long term changes in humpback whale songs in response to ship traffic and reproductive events will be monitored.

Acoustic analyses of humpback whale songs are carried out at University of Queensland in collaboration with OCNC (E. Garland PhD project supervised by M. Noad).

Genetics

Social and spatial structures of the short-beaked common dolphin were investigated by using mtDNA and microsatellite markers (Viricel, 2006; MSc thesis).

OCNC carries out genetic studies on humpback whales in collaboration with the University of Auckland (NZ) which include genetic diversity (mtDNA and nuclear markers), relatedness within sub-stock and between substocks (genotyping of 11 loci) (SC/A06/HW19).

Preliminary analyses on the population structure of rough-toothed dolphins from the Society Archipelago, French Polynesia, were carried out based on genetic markers and photo-identification data (University of Auckland in collaboration with CRIOBE; M. Oremus PhD thesis due in 2007).

Genetic samples of short-finned pilot whales collected opportunistically in French Polynesia and New Caledonia (stranding and biopsy samples) were included in an analysis of the world-wide mtDNA phylogeography and diversity of this species (CRIOBE, OCNC, University of Auckland; M. Oremus PhD thesis due in 2007).

Ecology

The ecology of small cetaceans in the Bay of Biscay is being investigated by using multiple approaches, both direct and indirect (CRELA/ULR, CRMM/ULR, Ifremer). Distribution is studied yearly during a one month survey cruise during which cetaceans sightings are collected and fish biomass, phytoplankton concentration and oceanographic characteristics are studied in parallel. Stranding data provides information on diet (stomach content), trophic levels (stable isotopes) and subpopulation structure or movement pattern (stable isotopes, heavy metals and contaminants).

The plasticity of striped dolphin feeding strategies in the northwest Mediterranean was studied through multivariate analysis (CRC; Meissner, 2006). CRC also investigates seasonal changes in cetacean biomass over the year in order to better estimate their prey consumption.

Conservation, management and education

AET is involved in the French Caribbean whale sanctuary process, the Marine Mammal Action Plan (MMAP) UNEP CAR SPAW and the CARIBwhale association. It also carries out studies on impact of boats on whales to set up regulations in the purpose of the sanctuary (revising the code of conduct for whale watching) and performs educational programs for schools and public).

OCNC (Schaffar, A. and Garrigue, C.) completed the second field season of a 3-year research project investigating the potential effects of whale watching boats on the behaviour of humpback whales wintering in the Southern Lagoon of New Caledonia. In particular, this project aims to assess the temporal and spatial use of this area by humpback whales and boats (recreational and commercial), to compare the behaviour of humpback whales in the presence and in the absence of boats, and to work towards the implementation of whale watching regulations based on scientific data. Using a theodolite, land-based surveys were conducted from a lookout point located 189m above sea level between the 18th of July and the 17th of September 2006. These surveys resulted in 67 independent tracking sessions of humpback whales. On average, humpback whales were in the presence of 3 boats during 105 minutes each day. Boats spent an average of 63 minutes with each group of whales. Data collected on individually identified animals show that humpback whales are likely to be exposed to boats repeatedly within and between seasons, raising the issue of a potential cumulative impact (Schaffar and Garrigue, 2006).

OCNC participated to the Comprehensive Assessment of southern hemisphere humpback whale stock held in Hobart in April 2006.

OMM is in charge of assessing the conservation status of marine mammals in Mayotte in order to contribute to improving current regulation.

SEPANMAR of Martinique produces educational programmes toward professionals, schools and lay public to introduce to marine coastal biodiversity, water quality monitoring, ship strikes, acoustic disturbance, and more generally any management issue relevant to cetacean conservation.

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Include all references cited in the text here. Please follow the official IWC style guide for references (<http://www.iwcoffice.org/publications/styleguide.htm>).

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Appendix 1. FAO fishing descriptions and codes

FAO FISHING GEAR CATEGORIES:		FALLING GEAR	
SURROUNDING NETS		Cast nets	FCN
With purse lines	PS	Falling gear (not specified)	FG
One-boat operated purse seines	PS1	GILLNETS AND ENTANGLING GEAR	
Two-boat operated purse seines	PS2	Set gillnets (anchored)	GNS
Without purse lines (lampara)	LA	Driftnets	GND
SEINE NETS		Encircling gillnets	GNC
Beach seines	SB	Fixed gillnets (on stakes)	GNF
Boat seines	SV	Trammel nets	GTR
Danish seines	SDN	Combined gillnet-trammel nets	GTN
Scottish seines	SSC	Gillnets and entangling gillnets (not specified)	GEN
Pair seines	SPR	Gillnets (not specified)	GN
Seine nets (not specified)	SX	TRAPS	
TRAWLS		Stationary uncovered pounds nets	FPN
Bottom trawls	TBB	Pots	FPO
Beam trawl	OTB	Fyke nets	FYK
Otter trawls (side or stern)	PTB	Stow nets	FSN
Pair trawls	TBN	Barriers, fences, weirs, etc	FWR
Nephrops trawls	TBS	Aerial traps	FAR
Shrimp trawls (not specified)	TM	Traps (not specified)	FIX
Midwater trawls			
Otter trawls (side or stern)	OTM	HOOKS AND LINES	
Pair trawls	PTM	Handlines and pole-lines (hand operated)	LHP
Shrimp trawls	TMS	Handlines and pole-lines (mechanised)	LHM
Midwater trawls (not specified)	TM	Set longlines	LLS
Otter twin trawls	OTT	Drifting longlines	LLD
Otter trawls (not specified)	OT	Longlines (not specified)	LL
Pair trawls (not specified)	PT	Trolling lines	LTL
Other trawls (not specified)	TX	Hooks and lines (not specified)	LX
DREDGES		GRAPPLING AND WOUNDING	
Boat dredges	DRB	Harpoons	HAR
Hand dredges	DRH	HARVESTING MACHINES	
LIFT NETS		Pumps	HMP
Portable lift nets	LPN	Mechanised dredges	HMD
Boat-operated lift nets	LNB	Harvesting machines (not specified)	HMX
Shore operated stationary lift nets	LNS	MISCELLANEOUS GEAR	MIS
Lift nets (not specified)	LN	RECREATIONAL FISHING GEAR	RG
		GEAR NOT KNOWN OR NOT SPECIFIED	NK
		SHARK CONTROL NETS	NSC
		DERELICT FISHING GEAR	