

Italy. Progress report on cetacean research, January 2006 to December 2006, with statistical data for the calendar year 2005.

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¹ The English language was not revised nor edited by the first Author. For more information or clarifications on specific paragraphs, please refer to the contact persons listed in the table.

1. SPECIES AND STOCKS STUDIED

IWC common name	IWC recommended scientific name	Area/stock(s)	Items referred to
Fin Whale	<i>Balenoptera physalus</i>	Ligurian Sea; Tyrrhenian Sea	2.1.1, 2.1.2, 2.2, 3.1.1, 4.1, 4.3, 4.4, 5, 8, 9, 11
Sperm whale	<i>Physeter macrocephalus</i>	Ligurian Sea, Tyrrhenian Sea, Strait of Messina, Ioniaian Sea	2.1.1, 2.2, 3.1.1, 4.1
Long-finned pilot whale	<i>Globicephala melas</i>	Ligurian Sea, Straits of Gibraltar	3.1.1, 4.1, 4.4, 5, 9
Cuvier's beaked whale	<i>Ziphius cavirostris</i>	Ligurian Sea, Tyrrhenian Sea, Ionian Sea, Strait of Messina	2.1.1, 2.2, 3.1.1, 4.3, 4.4, 5, 8, 9
Risso's dolphin	<i>Grampus griseus</i>	Ligurian Sea, Tyrrhenian Sea, Corsican Sea, Sardinian Channel	2.1.1; 2.1.2; 2.2; 3.1.1, 4.1, 4.3, 4.4, 5, 9
Short-beaked common dolphin	<i>Delphinus delphis</i>	Sicily Strait (Lampedusa Island), Eastern Ionian Sea, Greece	2.1.1, 2.2, 3.1.1, 4.1, 4.4, 5, 9, 10, 11
Striped dolphin	<i>Stenella coeruleoalba</i>	Ligurian Sea, Tyrrhenian Sea, Ionian Sea, Strait of Messina, Straits of Gibraltar	2.1.1, 2.1.2, 2.2, 3.1.1, 4.1, 4.3, 4.4, 5, 9, 11
Common bottlenose dolphin	<i>Tursiops truncatus</i>	Ligurian Sea, Tyrrhenian Sea, Adriatic Sea, Kornati National Park Murterski more (Croatia), Strait of Messina, Eastern Ionian Sea, Amvrakikos Gulf (Greece), Straits of Gibraltar	2.1.1, 2.1.2, 2.2, 3.1.1, 4.1, 4.3, 4.4, 5, 7.3.2, 8, 9, 10, 11, 13.2.2; 14.1.2; 14.1.3; 14.3.2
Indo-Pacific Humpback dolphin	<i>Sousa spp.</i>	Tanzanian waters	2.1, 3.1.1, 6.3

2. SIGHTINGS DATA

2.1 Field work

2.1.1 Systematic

Target species	Date	Area	No. of sightings	Contact person/institute and references
Fin whale	May - Oct 2006	Ligurian Sea	16	TRI
Fin whale	20/01/06-12/12/2006	Ligurian Sea	6	A. Moulins, DIBIOGE
Fin whale	5-5/18-10	Ligurian Sea, Tyrrhenian Sea, Corsican Sea, Sardinian Channel	4	Alberto Marco Gattoni. BB
Fin whale	3/2-27/7-1/9/2006	Tuscan Archipelagos	3	Silvio Nuti, Ce.Tu.S.
Fin whale	3-15/09/06	Ligurian Sea	2	Cecilia Volpi, MSNFI
Sperm whale	May - Oct 2006	Ligurian Sea	8	TRI
Sperm whale	Jan – May 2006	Strait of Messina	3	Same as above
Cuvier's beaked whale	20/01/06-12/12/06	Ligurian Sea	15	A. Moulins, DIBIOGE
Cuvier's beaked whale	May – Oct 2006	Ligurian Sea	1	TRI
Cuvier's beaked whale	Jan – May 2006	Tyrrhenian Sea / Ionian Sea (Strait of Messina)	1	TRI

Target species	Date	Area	No. of sightings	Contact person/institute and references
Risso's dolphin	5-5/18-10	Ligurian Sea Tyrrhenian Sea, Corsican Sea Sardinian Channel	7	Alberto Marco Gattoni, BB
Risso's dolphin	2-10/7/2006	Tuscan Archipelagos	2	Silvio Nuti, Ce.Tu.S.
Risso's dolphin	20/01/06- 12/12/06	Ligurian Sea	5	A. Moulins, DIBIOGE
Risso's dolphin	May – Oct 2006	Ligurian Sea	5	TRI
Common bottlenose dolphin	01/01 – 21/12/06	North-eastern coast of Sardinia	110 days/ 129 sightings	B. Díaz López, BDRI
Common bottlenose dolphin	25/01/06- 11/02/2006	Ligurian Sea - Toscan Archipelagos	19	A. Moulins, DIBIOGE
Common bottlenose dolphin	Jun - Sept 2006	Eastern Ionian Sea, Greece	18	TRI
Common bottlenose dolphin	Apr - Dec 2006	north-western Greece, Amvrakikos Gulf	73	<i>Same as above</i>
Common bottlenose dolphin	5-16/07/05 3-15/09/06	Ligurian Sea, north Tyrrhenian Sea	7 14	Cecilia Volpi, MSNFI
Common bottlenose dolphin	Jan – May 2006	Strait of Messina	3	TRI
Common bottlenose dolphin	May – Oct 2006	Ligurian Sea	2	<i>Same as above</i>
Common bottlenose dolphin	03.06/12.06	Lampedusa (Strait of Sicily- Mediterranean Sea)	67 groups	G. La Manna, CTS
Common bottlenose dolphin	01/07-31/12/06	Arcipelago di La Maddalena	29	Andrea Rotta, CTS
Common bottlenose dolphin	26/07/06- 23/08/07	Kornati National Park Murterski more (Croatia)	10	Antonella Impetuoso, Marine Life Conservation
Short-beaked common dolphin	Jun – Sept 2006	Eastern Ionian Sea, Greece	5	TRI
Striped dolphin	20/01/06- 12/12/2006	Ligurian Sea	111	A. Moulins, DIBIOGE
Striped dolphin	5-5/18-10	Ligurian Sea, Tyrrhenian Sea, Corsican Sea Sardinian Channel	15	Alberto Marco Gattoni, BB
Striped dolphin	From Jun to August 2006	Tuscan Archipelagos	6	Silvio Nuti, Ce.Tu.S.
Striped dolphin	5-16/07/05 3-15/09/06	Ligurian Sea, north Tyrrhenian Sea	2 6	Cecilia Volpi, MSNFI
Striped dolphin	May – Oct 2006	Ligurian Sea	141	TRI
Striped dolphin	Jan – May 2006	Strait of Messina	18	<i>Same as above</i>

BB: The association Battibaleno has effected n° 27 sea expedition for the observation of the present cetacean in the protected area of the Sanctuary, in the period between 5 May / 16 October 2006. The boat used by Battibaleno is Physalie, a sail sloop of 42 feet, especially equipped for the realization of photos, video and

acoustic recordings. To our recognitions have participated doctors in scientist and researchers, but also students and impassioned.

BDRI: A total of 110 boat-based observations were undertaken regularly between January 2005 and December 2005 on the north-eastern coast of Sardinia. The boundaries of the study area were Salina (40° 55N) in the south, and Punta Volpe (41°02N) in the north, and the offshore extent was the 75 m isobaths. Randomization of the surveys was attempted in order to cover the total study area every week, although the geographic distribution of effort varied depending on weather conditions. Observations were conducted from a 5.30m boat. Data was collected by scientists and volunteers.

ICRAM: Recent findings made during a campaign conducted by ICRAM in 2004, the waters surrounding Lampedusa have been identified as an important winter feeding area for fin whales (*Balaenoptera physalus*) that here feed on small Euphausiids of the species *Nyctiphanes couchi*. Based on this preliminary results, in 2006 and 2007, two additional winter campaigns have been conducted in the Sicily Channel. These campaigns were conducted by ICRAM personnel, coordinated by Dr. Silvio Greco, from the RV "Urania" in collaboration with CNR Messina, the Pelagie Islands MPA and the Ministry of the Environment. The main objective of these campaigns was to continue to study the presence and distribution of cetaceans and correlate their presence to the chemical-physical and biological characteristics of the area. Line transect surveys were conducted and satellite tags were applied on the whales in order to obtain data on their presence and distribution. The need to continue the studies in order to obtain a comprehensive view of the relationships between oceanographic conditions and cetaceans is evident, not only from a scientific exploration prospective, but also for the need to manage intelligently the natural resources of the area.

Ce.Tu.S.: Annual activity from January to December. The boat used is the sail catamaran KRILL, 40 feet, equipped with digital camera, video-camera, underwater video-camera, hydrophones. Effort and sightings positions were recorded, and mapped with ArcGis. Two study areas are covered: the main study area is located along the Versilian coast (800 km²), the secondary is within the Tuscan Archipelagos. Two research were conducted in 2006: DEMUS test and SYRENA 2006.

CTS-Lampedusa: Systematic surveys are included in the LIFE 2003/NAT/IT/000163 concerning the study of human impact on bottlenose dolphin and sea turtle in the Pelagie Islands. We have been collected data about ecology, behaviour, conservation and interaction with fisheries. The research wants to investigate the population size and the annual trend, the habitat use and the impact of fisheries, dolphin watching and boat traffic on the population. The final aim is to create a proper Action Plan for *Tursiops truncatus* in the Pelagie Islands. We carried out visual surveys from March to December 2006, both from the sea and the land, and acoustic survey from April to December 2006, using passive acoustic instruments, fixed on the bottom.

DIBIOGE: From January, the 25th to February, the 11th, 9 one-day surveys were conducted in the coastal waters of the Tuscan Archipelagos, aboard a 11m semi-rigid vessel, with an eye height of 4 m above sea level, covering 1325 km. Transect lines were not determined randomly but according to depths, searching mainly around the 200m isobaths (where Bottlenose dolphins are more likely to be found). Ships' GPS positions were continuously recorded. At least four trained observers participated in the surveys. From January, the 20th to December, the 12th, 47 one-day surveys were conducted in Ligurian Sea, aboard a 11m semi-rigid vessel, with an eye height of 4 m above sea level, covering 6386 km. Transect lines were not determined randomly but according to depths, searching mainly beyond the 1000m isobaths (where Cuvier's beaked whales and fin whale are more likely to be found). Ships' GPS positions were continuously recorded. At least four trained observers participated in the surveys.

ZNM: Surveys carried out two months a year, since 1999 to 2006, within a project run by ZMN and named Zanzibar Cetacean Conservation Project (ZCCP). Data are being analysed in 2007 for the submission to a journal in cooperation with local scientists belonging to the University of Dar Es Salaam (Tanzania). A 15-days photographic survey was carried out on October 2006.

2.1.2 Opportunistic, platforms of opportunity

Primary species	Area	Data type/method	Collected by	Platform	Contact person/institute and refs
Fin whale	Ligurian e Tyrrhenian Sea, Corsican Sea Sardinian Channel	Sail boat Visual survey 27 transect line campaigns photo identification	Associazione Battibaleno	Sail boat Visual survey 27 transect line campaigns photo identification	Alberto Marco Gattoni, BB
Fin whale	Ligurian Sea	2 Motor vessels Visual survey 114 transect line campaigns	Crew/scientist	2 Motor vessels Visual survey 114 transect line campaigns	Barbara Nani, BW
Risso's dolphin	Ligurian e Tyrrhenian Sea, Corsican Sea Sardinian Channel	Sail boat Visual survey 27 transect line campaigns photo identification	Associazione Battibaleno	Sail boat Visual survey 27 transect line campaigns photo identification	Alberto Marco Gattoni, BB
Striped dolphin	Ligurian e Tyrrhenian Sea, Corsican Sea Sardinian Channel	Sail boat Visual survey 27 transect line campaigns photo identification	Associazione Battibaleno	Sail boat Visual survey 27 transect line campaigns photo identification	<i>Same as above</i>
Common bottlenose dolphin	North-eastern coast of Sardinia	Presence/Absence of dolphins	Fish farm workers	Fish farm boat	B. Díaz López, BDRI
Common bottlenose dolphin	North-eastern coast of Sardinia	Behavioural sampling, Photo-ID, Interaction with aquaculture	Scientist	Fish farm boat	B. Díaz López, BDRI; Díaz López, B. & Shirai, J. A. B. 2007
Common bottlenose dolphin	North-eastern coast of Sardinia	Interaction with trawlers	Scientist and fishermen	Trawlers	B. Díaz López, BDRI
Common bottlenose dolphin	Northern Adriatic Sea	March - July 2006; 14 daily surveys/year	TRI researchers	Ship surveys	TRI
Common bottlenose dolphin	Toscan Archipelagos (Tyrrhenian Sea)	Photo-id; sightings	crew	whalewatching sail boat	A. Moulins, Partecipe Future
Common bottlenose dolphin	Tuscan waters	Behaviour, Photo-ID, interaction with fishing boat	Crew, students	Sail catamaran, visual survey	Silvio Nuti, Ce.Tu.S.
Common bottlenose dolphin	Arcipelago di La Maddalena	Photo-id; sightings	Scientists	Dolphin-watching vessel	Andrea Rotta, CTS
Common bottlenose dolphin	Kornati National Park - Murterski more (Croatia)	Photo-id; navigation; environmental	Crew/scientist	Sailing boat	A. Impetuoso, Marine Life Conservation

BDRI: In order to understand the relationship between bottlenose dolphins and aquaculture, fish farm based observations were regularly undertaken from January 2005 to December 2005. Scientists and volunteers collected data. Observations from trawlers were carried out in order to know the relationships between bottlenose dolphins and this activity on the north-eastern coast of Sardinia from March 2005 to September 2005. Scientists and volunteers collected data.

BW: From January, the 12th to September, the 23rd, 129 one-day surveys were conducted aboard the ‘Corsara’ and the ‘Stenella’, 2 whale-watching motor vessels with an respective eye height of 6 and 5 m above sea level, covering a total of 9850 km. Transect lines were not determined randomly but according to depths, searching mainly around the 1500 m isobaths (where fin whales are more likely to be found). In both cases, ships’ GPS positions were continuously recorded. At least three trained observers participated in the surveys. This work was conducted in cooperation with the Biology Department of the University of Genoa and the analysis is realized by the Biology Department of the University of Genoa. Were collected: 179 sightings of striped dolphin, 26 of Cuvier's beaked whale, 42 of fin whale, 7 of sperm whale, 9 of Risso's dolphin.

Ce.Tu.S.: The main target species is the bottlenose dolphin. Data are collected by scientists and students; behavioural sampling, Photo-ID and acoustic recordings (in collaboration with Dep. Of Information Pisa) are carried out.

DIBIOGE: From June, the 6th to August, the 25th, 60 one-day surveys were conducted aboard the ‘Alcyon’, a 12 m long sail boat, with an eye height of 5 m above sea level, covering 2915 km. Transect lines were not determined randomly but according to depths, searching mainly around the 200m isobaths (where Bottlenose dolphins are more likely to be found). In both cases, ships’ GPS positions were continuously recorded. At least four trained observers participated in the surveys. This work was conducted in cooperation with Participe Futur (France; contact person: Aurelie Moulins, aurelie@cima.unige.it). 31 sightings of common bottlenose dolphin occurred.

ZNM: Data collected by scientist belonging to ZMN as well as students participating to the surveys using local boats. Tape recorders, sighting forms (including environmental data), digital video, Photo-ID, acoustic recordings with DAT and CRT Hydrophones (in cooperation with Italian CIBRA. G. Pavan). All surveys carried out in cooperation with the local Institutions (with a research permit issued by the Zanzibar Government) and the University of Dar es Salaam, Institute of Marine Sciences (IMS), P.O. box 668, Zanzibar, Tanzania. Local researchers frequently invited aboard during our surveys.

2.2 Analyses/development of techniques

Target species	Date	Area	Methods/effort	Parameters/ factors measured	Contact person/institute; refs
Fin whale	20/01/06-12/12/2006	Ligurian Seas	Line transect survey	Spatio-temporal distribution; Habitat	A. Moulins, DIBIOGE
Fin whale	3/2-27/7-1/9/2006	Tuscan Archipelagos	Line transect survey, photo-id	Distribution	Silvio Nuti, Ce.Tu.S.
Fin whale	3-15/09/06	Ligurian Sea	Line transect survey	Distribution; sighting frequency	Cecilia Volpi, MSN-FI
Fin whale	May – October 2006	Ligurian Sea	Boat surveys, photo-identification, behavioural sampling (7,637 km)	Encounter rate, distribution, abundance, habitat use, behaviour, ecology	TRI
Sperm whale	May – October 2006	Ligurian Sea	Boat surveys, photo-identification, behavioural sampling (7,637 km)	Encounter rate, distribution, habitat use, behaviour, ecology	<i>Same as above</i>
Sperm whale	January – June 2006	Tyrrhenian Sea / Ionian Sea (Strait of Messina)	Boat surveys, photo-identification, spatial modelling	Encounter rate, distribution, habitat use, abundance	<i>Same as above</i>
Cuvier's beaked whale	May – October 2006	Ligurian Sea	Boat surveys, photo-identification, (7,637 km)	Encounter rate, distribution, habitat use, ecology	<i>Same as above</i>
Cuvier's beaked whale	20/01/06-12/12/2006	Ligurian Sea	PhotoID, Line transect survey	Population estimates, Spatio-temporal distribution; Habitat	M. Rosso, DIBIOGE
Cuvier's beaked whale	January – June 2006	Tyrrhenian Sea / Ionian Sea (Strait of Messina)	Boat surveys, photo-identification, spatial modelling	Encounter rate, distribution	TRI

Target species	Date	Area	Methods/effort	Parameters/ factors measured	Contact person/institute; refs
Fin whale Risso's dolphin Striped dolphin	5-5/18-10	Ligurian e Tyrrhenian Sea, Corsican Sea Sardinian Channel	Sail boat Line transect survey photo identification	Distribution; sighting frequency (580 miles crossed) Distribution-Sighting frequency - behaviour- Presence absence (580 miles crossed)	Alberto Marco Gattoni, BB
Risso's dolphin	2-10/7/2006	Tuscan Archipelagos	Boat surveys, photoidentification, behavioural sampling, underwater observations, bioacoustics	<ul style="list-style-type: none"> • Encounter rates • Distribution • Habitat use and preferences • Population estimate (Photo-ID) • Site – fidelity (GIS) • Behaviour, ecology, feeding habits • Respiratory patterns • Underwater observations 	Silvio Nuti, Ce.Tu.S.
Risso's dolphin	20/01/06-12/12/2006	Ligurian Sea	PhotoID	Population estimates,	M. Rosso, DIBIOGE
Risso's dolphin	May – October 2006	Ligurian Sea	Boat surveys, photo-identification, behavioural sampling (7,637 km)	Encounter rate, distribution, habitat use, abundance, behaviour, ecology	TRI
Common bottlenose dolphin	01 January to 21 December 2006	North-eastern coast of Sardinia	Boat surveys, photoidentification, behavioural sampling, underwater observations, bioacoustics, interaction with fisheries & aquaculture	<ul style="list-style-type: none"> • Encounter rates • Distribution • Habitat use and preferences • Population estimate (Photo-ID) • Site – fidelity (GIS) • Behaviour, ecology, feeding habits • Respiratory patterns • Underwater observations • Bycatch and incidental captures 	B. Díaz López, BDRI; Díaz López 2006a; Díaz López 2006b; Díaz López & Shirai 2006a; Díaz López & Shirai 2006b; Díaz López & Shirai 2007
Common bottlenose dolphin	From Jan to Dec	Ligurian Sea, Tuscan Archipelagos	Boat surveys, photo-identification, behavioural sampling, underwater observations, bioacoustics, interaction with fisheries	<ul style="list-style-type: none"> • Distribution • Habitat use • Population estimate (Photo-ID) • Site – fidelity (GIS) • Behaviour, ecology, feeding habits • Respiratory patterns • Underwater observations 	Silvio Nuti, Ce.Tu.S.
Common bottlenose dolphin	20/01/06-12/12/2006	Ligurian Sea, Tyrrhenian Sea (Tuscany)	PhotoID, Line transect survey	Population estimates, Habitat	M. Rosso, DIBIOGE
Common bottlenose dolphin	5-16/07/05 3-15/09/06	Ligurian Sea, north Tyrrhenian Sea	Line transect survey	Distribution; sighting frequency	Cecilia Volpi, MSNFI
Common bottlenose dolphin	April - December 2006	NW Greece, Amvrakikos Gulf	Boat surveys, photo-identification (1,788 km)	Encounter rate, distribution, abundance	TRI
Common bottlenose dolphin	June - September 2006	Eastern Ionian Sea, Greece	Boat surveys, photo-identification, behavioural sampling (3,335 km)	Encounter rate, distribution	<i>Same as above</i>
Common bottlenose dolphin	March - July 2006	Northern Adriatic Sea	Ship surveys (1,210 km)	Encounter rate, distribution, habitat use	<i>Same as above</i>
Common bottlenose dolphin	January – June 2006	Tyrrhenian Sea / Ionian Sea (Strait of Messina)	Boat surveys, photo-identification, spatial modelling	Encounter rate, distribution, habitat use, abundance	<i>Same as above</i>

Target species	Date	Area	Methods/effort	Parameters/ factors measured	Contact person/institute; refs
Common bottlenose dolphin	01/07-31/12/06	Arcipelago di La Maddalena	Random survey	Distribution; sighting frequency	Andrea Rotta, CTS
Common bottlenose dolphin	1.06/12.06	Lampedusa	Mark-recapture Photo-identification	Population size	G.La Manna/CTS
Common bottlenose dolphin	1.06/12.06	Lampedusa	Behavioural sampling	Reaction to dolphin watching and boat traffic	<i>Same as above</i>
Common bottlenose dolphin	1.06/12.06	Lampedusa	Behavioural sampling	Interaction with fisheries	F.Celoni/CTS
Common bottlenose dolphin	1.06/12.06	Lampedusa	Acoustic sampling	Presence of dolphins Level of noise	M.Manghi/NAUTA
Common bottlenose dolphin	26/07/06-23/08/07	Kornati National Park - Murterski more (Croatia)	Line transect survey	Distribution; sighting frequency; habitat use; feeding near fish farm	A. Impetuoso Marine Life Conservation
Short-beaked common dolphin	June - September 2006	Eastern Ionian Sea, Greece	Boat surveys, photo-identification, behavioural sampling (3,335 km)	Encounter rate, distribution	TRI
Striped dolphin	May – October 2006	Ligurian Sea	Boat surveys, behavioural sampling (7,637 km)	Encounter rate, distribution, habitat use, behaviour, ecology	<i>Same as above</i>
Striped dolphin	January – June 2006	Tyrrhenian Sea / Ionian Sea (Strait of Messina)	Boat surveys, spatial modelling	Encounter rate, distribution, habitat use, abundance	<i>Same as above</i>
Striped dolphin	5-16/07/05 3-15/09/06	Ligurian Sea, north Tyrrhenian Sea	Line transect survey	Distribution; sighting frequency	Cecilia Volpi, MSN-FI
Striped dolphin	20/01/06-12/12/2006	Ligurian Seas	Line transect survey	Spatio-temporal distribution; Habitat	A. Moulins, DIBIOGE

Ce.Tu.S.: A total of 125 bottlenose dolphins were identified in the main study area (along Versilian coasts) and 65 bottlenose dolphins in the Tuscan archipelago. The search activity was conducted from January to December covering over 1000 nautical miles. Photo were analysed with the Dolphin Manager a program created by Ce.Tu.S.

CTS-Caprera: Collected images allowed the photo-identification of 33 individuals, with a mean re-sighting index of 1.838. Observed groups were formed by a mean of 5.4 individuals. Over 48 surveys, the sighting index (total sightings over search effort) was 0.2. The behaviours recorded were classified in: feeding (53% of which 48% feeding on trammel nets), travelling (34%), socializing (8%) and unknown (5%). Considering only the data collected from July to September, coincident with bottlenose dolphin reproductive season, the highest fishing effort and intense nautical traffic (8.643 boat passed through park coastal water during this 3 months period), sighting index was 0.33 and mean group size was higher (6.25).

DIBIOGE: All data collected by the Bluwest, the Partecipe Futur Association and DIBIOGE were used for the analysis. Environmental parameters are correlated to define the physical oceanographic indicators that may indicate the cetacean habitats. Results are used to construct an multivariate predictive model of distribution.

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
Fin whale	Dorsal fin, blaze/chevron, scars	Ligurian Sea	15	Y	Analysis in progress	TRI
Fin whale	Permanent mark dorsal fin	Ligurian Sea, Tyrrhenian Sea	5	Y	12	Alberto Marco Gattoni, BB
Sperm whale	Flukes, pigmentation	Ligurian Sea	Analysis in progress	Y	Analysis in progress	TRI
Sperm whale	Flukes, pigmentation	Tyrrhenian Sea / Ionian Sea (Strait of Messina)	Analysis in progress	Y	Analysis in progress	<i>Same as above</i>
Cuvier's beaked whale	Dorsal fin	Ligurian Sea	4	Y	40	<i>Same as above</i>
Cuvier's beaked whale	All body (L)	Ligurian Sea	19	Y	112	M. Rosso, DIBIOGE
Cuvier's beaked whale	All body (R)	Ligurian Sea	17	Y	94	<i>Same as above</i>
Long-finned pilot whale	Dorsal fin	Ligurian Sea	0	Y	68	TRI
Risso's dolphin	Permanent mark Dorsal fin	Ligurian Sea, Tyrrhenian Sea	12	Y	50	Alberto Marco Gattoni, BB
Risso's dolphin	Dorsal fin (L)	Ligurian Sea	32	Y	81	M. Rosso, DIBIOGE
Risso's dolphin	Dorsal fin (R)	Ligurian Sea	30	Y	72	<i>Same as above</i>
Risso's dolphin	Dorsal fin, body scars	Ligurian Sea	Analysis in progress	Y	Analysis in progress	TRI
Common bottlenose dolphin	Dorsal fin	NW Greece, Amvrakikos Gulf	97	Y	106	<i>Same as above</i>
Common bottlenose dolphin	Dorsal fin	Eastern Ionian Sea, Greece	19	Y	88	<i>Same as above</i>
Common bottlenose dolphin	Dorsal fin and body marks	North-eastern coast of Sardinia	34	Y	52	Díaz Lopez, BDRI; Díaz López & Shirai 2007
Common bottlenose dolphin	Dorsal fin and body marks	Ligurian Sea, Tuscan archipelagos	98	Y	190	Silvio Nuti, Ce.Tu.S.
Common bottlenose dolphin	Dorsal fin (L)	Ligurian Sea – Toscan Archipelagos	91	Y	142	M. Rosso, DIBIOGE
Common bottlenose dolphin	Dorsal fin (R)	Ligurian Sea – Toscan Archipelagos	76	Y	131	<i>Same as above</i>
Common bottlenose dolphin	Dorsal fin	Ligurian Sea, north Tyrrhenian Sea	15	Y	15	Cecilia Volpi MSN-FI
Common bottlenose dolphin	Dorsal fin	Northern Adriatic Sea	7	Y	42	TRI
Common bottlenose dolphin	Dorsal fin	Ligurian Sea	Analysis in progress	Y	68	<i>Same as above</i>
Common bottlenose dolphin	Dorsal fin	Tyrrhenian Sea / Ionian Sea (Strait of Messina)	5	Y	35	<i>Same as above</i>
Common bottlenose dolphin	Dorsal fin	Arcipelago di La Maddalena	33	Y	40	Andrea Rotta, CRD – CTS Caprera
Common bottlenose dolphin	Dorsal fin	Lampedusa	159	Y	202	G.La Manna/CTS
Common bottlenose dolphin	Dorsal fin	Kornati National Park - Murterski more (Croatia)	13	Y	57	A. Impetuoso, Marine Life Conservation

Species	Feature	Area/stock	No. photo-id'd	Catalogue (Y/N)	Catalogue total	Contact person/institute; refs
Short-beaked common dolphin	Dorsal fin	Eastern Ionian Sea, Greece	12	Y	145	TRI
Striped dolphin	Dorsal fin	Ligurian Sea, north Tyrrhenian Sea	3	Y	3	Cecilia Volpi MSN-FI

DIOBIOGE: All data collected by the Bluwest, the Participe Futur Association and DIBIOGE were used for the photoID analysis.

ZNM: All sighted animals have been analyzed photographically using the matrix-photo identification as suggested by Karczmarski and Cockcroft (1998). All identified animals were examined with Finscan.

3.1.2. Artificial marking data

3.1.3 Telemetry data

No telemetry studies were carried out in Italy in 2006.

3.2 Analyses/development of techniques

Target species	Date	Area	Methods/effort	Parameters/ factors measured	Contact person/institute; refs
Cuvier's beaked whale	20/01/06-12/12/2006	Ligurian Sea	PhotoID, regular sampling, photobiometry	Population estimates, survival ratio, sex ratio, size estimation, association pattern	M. Rosso, DIBIOGE
Risso's dolphin	20/01/06-12/12/2006	Ligurian Sea	PhotoID, opportunistic	Population estimates, pigmentation evolution	<i>Same as above</i>
Common bottlenose dolphin	25/01/06-11/02/2006	Ligurian Sea – Tuscan Archipelagos	PhotoID	Population estimates	<i>Same as above</i>
Common bottlenose dolphin	From Jan to Dec	Ligurian Sea – Tuscan Archipelagos	PhotoID, GIS	Population estimates, distribution	<i>Silvio Nuti, Ce.Tu.S.</i>

CTS-Caprera: Monitored area was 408 km² wide, thus it was divided into 5 sub-areas. During 7 months of observations (July-January 2006), 48 boat surveys were made, for a total of 144 hours at sea and 1142 miles covered at a constant speed of 8 miles/hour. Each survey was focused on a specific sub-area and collected data were reported on a GIS platform. During direct observations fins were photographed with a digital camera and images were processed with a specific software for photo-identification.

Ce.Tu.S.: Data collected especially on bottlenose dolphin distribution and abundance, in two different areas in Tuscan waters, were used to produce maps of cetaceans sightings and abundance estimates.

DIBIOGE: All sighted animals have been analyzed photographically using the matrix-photo identification and population size was estimated using the program CAPTURE. Bottlenose dolphin dorsal fin were processed using the EUROPHLUKES extension for Matlab.

MSNFI: Monitoring Marine Mammal Populations in the Tuscan Archipelago. The research is carried out by organizing research cruises aimed at surveying visually and acoustically the study areas. The results will be inserted in a GIS to produce maps of density of animals versus oceanographic and ecological features.

Objectives:

- Assessing the stock of marine mammals permanently living in the area
- Assessing the stock of marine mammals passing in the area while moving to and from the Ligurian sea
- Development of models to correlate the presence and movements of marine mammals with selected environmental and oceanographic parameters

Methodology / work description:

- visual surveys to monitor the presence and transit of marine mammal species
- Correlation of the presence and the movement of marine mammals with the environmental and the oceanographic parameters (surface temperature, chlorophyll concentration, currents)
- Establishment of photo-identification study

Deliverables:

1. Models of population density, seasonal variations and movement patterns of marine mammals.
2. Cetacean photo-identification catalogue)
3. Input to databases and Geographical Information Systems to be used for the management of the area to preserve biodiversity and biological productivity.

4. TISSUE/BIOLOGICAL SAMPLES COLLECTED**4.1 Biopsy samples**

Species	Area/stock	Calendar year/ season - no. collected	Archived (Y/N)	No. analysed	Total holdings	Contact person/institute
Fin whale	Ligurian Sea, Italy	2006 - 0	Y	Analysis in progress	192	TRI / LB-DISA-UNISI / Martine Berubé, University of Stockholm
Fin whale	Ligurian Sea	13	Y	13	144	LB-DISA-UNISI / LEM-UNIFI
Sperm whale	Ligurian Sea, Italy	2006/summer - 0	Y	3	3	TRI / Daniel Engelhaupt, University of Durham
Long-finned pilot whale	Ligurian Sea, Italy	2006/summer - 0	Y	0	4	TRI
Long-finned pilot whale	Straits of Gibraltar	2	Y	2	3	LB-DISA-UNISI / LEM-UNIFI
Risso's dolphin	Ligurian Sea, Italy	2006/summer - 0	Y	Analysis in progress	28	TRI / LB-DISA-UNISI / LEM- UNIFI
Common bottlenose dolphin	Eastern Ionian Sea, Greece	2006 - 0	Y	-	10	TRI / LB-DISA-UNISI / Ada Natoli, University of Durham
Common bottlenose dolphin	NW Greece, Amvrakiko s Gulf	2006 - 6	Y	-	14	TRI
Common bottlenose dolphin	Ionian Sea (Lampedus a Island) Straits of Gibraltar	4 3	Y Y	4 3	18	LB-DISA-UNISI / LEM-UNIFI
Short-beaked common dolphin	Eastern Ionian Sea, Greece	2006 - 0	Y	-	15	TRI / LB-DISA-UNISI / Ada Natoli, University of Durham
Short-beaked common dolphin	Ionian Sea (Lampedus a Island) Straits of Gibraltar	2 9	Y Y	2 9	12	LB-DISA-UNISI / LEM-UNIFI
Short-beaked common dolphin	Ligurian Sea Straits of Gibraltar Ionian Sea (Catania area)	44 23 21	Y Y Y	44 23 21	273	<i>Same as above</i>
Short-beaked common dolphin	Ligurian Sea, Italy	2006/summer - 8	Y	Analysis in progress	203	TRI / LB-DISA-UNISI / LEM- UNIFI

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

None information was available on by-caught cetaceans for the year 2006.

4.3 Samples from stranded animals

Species	Area/stock	Tissue type(s)*	No. collected	Archived (Y/N)	No. analysed	Contact person/institute
Fin whale	Ligurian Sea,	All tissues	1	Y	1	Sandro Mazzariol/UNIPD
Fin whale	Ligurian Sea	Skin, blubber,	1	Y	1	LB-DSA-US – UNIPD
Cuvier's beaked whale	Mediterranean, Thyrrenian Sea	Bones, skin, blubber, lungs/bronchi	1	Y	0	Sandro Mazzariol/UNIPD
Cuvier's beaked whale	Ionian Sea (Strait of Messina)	Skin, blubber, liver, muscle, brain, kidney	1	Y	1	LB-DSA-US - CSC - UNIPD
Risso's dolphin	Tyrrhenian Sea	Skin, blubber, liver, muscle, brain, genital apparatus, kidney	1	Y	1	LB-DSA-US – CSC
Common bottlenose dolphin	Adriatic Sea	See field 8	37	2006	31	G. Di Guardo/UNITE
Common bottlenose dolphin	Arcipelago di La Maddalena	no	1	Y	0	Andrea Rotta, CRD - CTS Caprera
Common bottlenose dolphin	Adriatic Sea, Mediterranean Sea	All tissues	3	Y	3	Sandro Mazzariol/UNIPD
Common bottlenose dolphin	Thirrenian Sea Adriatic Sea	Skin, blubber, melon, liver, muscle, brain, genital apparatus, kidney	2 3	Y	4	LB-DSA-US – CSC – UNIPD
Striped dolphin	Ligurian Sea, Mediterranean	All tissues	1	Y	1	Sandro Mazzariol/UNIPD
Striped dolphin	Thirrenian Sea	Skin, blubber, melon, liver,	5	Y	4	LB-DSA-US – CSC – ARPAT
Striped dolphin	Arcipelago di La Maddalena	no	2	Y	0	Andrea Rotta, CRD - CTS Caprera

4.4 Analyses/development of techniques

LEM-UNIFI: The research group of the Molecular Ecology Laboratory at the University of Florence, Italy, applies molecular genetic techniques to the study of wildlife demography and evolution. Research programs include evolutionary history of populations, reconstruction of dispersal and colonization events, assessment of patterns of genetic divergence among populations and identification of significant units for conservation, fine-scale population structure and parentage analysis, individual assignment and definition of hybridization events. Genetic analysis is also conducted non-invasively, using faeces samples. Species studied include wolves, dolphins, sea turtles, giant Galápagos tortoises and varanid lizards (Komodo dragons).

LB-DSA-US: In the free-ranging cetacean biopsies were valuated the Benzo(a)pyrene monooxygenase (CYP1A1-BPMO) activity and the residue levels: chlorinated hydrocarbons (HCB, DDTs and PCBs) and polycyclic aromatic hydrocarbons (PAHs). In the biological material of stranded specimens were valuated only residue levels: chlorinated hydrocarbons (HCB, DDTs and PCBs) and polycyclic aromatic hydrocarbons (PAHs).

MFO activity (CYP1A1-BPMO) has been assayed in skin biopsy samples by Fossi *et al.* (1992). BPMO activity was detected in the whole tissue. BPMO activity was assessed using the incubation mixture proposed by Kurelek *et al.* (1977) incubating each sample (plus the blanks) in a shaking bath for 2 h at 37°C. The activity was expressed in arbitrary units of fluorescence (AUF/h/g tissue).

For analysis of HCB, DDTs and PCBs, the samples were freeze-dried and extracted with n-hexane in a Soxhlet apparatus followed by sulphuric acid clean-up and Florisil chromatography (Marsili & Focardi, 1996). The analytical method used was high resolution capillary gas chromatography with a ^{63}Ni electron capture detector and an SBP-5 bonded phase capillary column (30 m long, 0.2 mm i.d.). The carrier gas was N_2 or He with a head pressure of 15.5 psi (splitting ratio 50/1). The scavenger gas was argon/methane (95/5) at 40 ml/min. Oven temperature was 100°C for the first 10 min, after which it was increased to 280°C at 5°C/min. Injector and detector temperatures were 200°C and 280°C respectively. A mixture of specific isomers was used to calibrate the system, evaluate recovery and confirm the results, which were expressed in ng/g or $\mu\text{g/g}$ dry weight (d.w.). Recoveries were calculated by adding known quantities of standard to homogeneous replicates of the same sample. PAHs were analysed by HPLC/Fluorescence system. Extraction was according to Griest & Caton (1983) and Holoubek et al. (1990), with several modifications developed in our lab Marsili et al., 1997). The organic fraction, concentrated to 1 ml in acetonitrile, was analysed by HPLC with fluorescence detection. A reversed-phase column (Supelcosil LC-18, 25 cm x 4.6 mm i.d., 0.5 μm particle size) was used with an acetonitrile/water gradient. The initial concentration of the gradient was 60% acetonitrile, increasing over 20 min to 100% acetonitrile, and then remaining stable for 10 min. The flow rate was 1 ml/min. Quantification was carried out using an external standard consisting of 16 PAHs from Supelco (EPA 610 polycyclic aromatic hydrocarbon mixture).

Cell cultures - An epidermal/dermal layer including a portion of the underlying blubber tissue was used to prepare culture fibroblasts. It is hoped to obtain genetic, biochemical and toxicological information from cultures of fibroblast cells grown from skin biopsy specimens and skin of stranded specimens dead from less than 12h. This data will be valuable for long-term field study of free-ranging cetaceans and for “in vitro” toxicological experiments. In particular the tissue culture system will allow the study of relationships between contamination and biochemical responses. One of the planned applications of this developed in vitro system will be the assessment of interspecies differences in the mixed function oxidase activity (CYP1A1, CYP2B) induced by *in vitro* treatment of various contaminants (DDTs, PCBs, PAHs, etc.) added at different concentrations. The skin sample was stored in sterile medium MEM Eagle Earle’s salts w/L-glutamine and Sodium Bicarbonate (Gibco, Milan, Italy) + 10% gamma irradiated fetal calf serum (Gibco) + 1% MEM Not Essential Aminoacids (NEAA) solution 100X (Gibco) + 1% Penicillin/Streptomycin 100X (Gibco) + 0.1% Amphotericin B 100X (Gibco) at ambient temperature, and was processed within 24 h of collection. In the laboratory, each sample was washed with Earle’s balanced salt solution (EBSS) (Gibco) containing antibiotic (Penicillin/Streptomycin 100X (Gibco) and antimycotic (Amphotericin B 100X (Gibco)) solutions. All specimens were handled using sterile techniques. First, the collected tissue was cut into small pieces with curved surgical scissors, placed in 30 mm Petri dishes and incubated with Trypsin-EDTA solution 1X (Gibco) for 15 min at 37°C. The biopsy fragments were washed again and then placed in Falcon 25 flasks, moistened with medium. After 24 h at 37°C in an incubator with 5% CO_2 , the cultures were covered with 1 ml of medium. Half of the culture medium was replaced every 48 h with fresh medium. Successful cell cultures were obtained from: striped dolphin, bottlenose dolphin, common dolphin, risso’s dolphin and fin whale. The first fibroblasts were observed after 7-21 days. Cultures reached 90% confluence in 15-20 days, then were trypsinized, washed and placed in Falcon 50 and 125 flasks, after two and three trypsinizations respectively. The samples grew for over 4 months, however, there were signs of senescence and increased resistance to trypsin treatment. Contamination by microorganisms is one of the main causes of limited cell viability or slow cell growth. Rapid proliferation of bacteria, yeasts and fungal spores produces an unfavourable environment for the growth of the mammalian cells both by depletion of the available nutrients or for the changes in the pH. The contamination may be introduced into a culture from several routes but principally it is a dormant infection in the sampled specimens. In fact, the most persistent infection was an environmental *Candida* spp. The antimycotic (Amphotericin B 100X) in the medium was inactive against the fungus. Various unsuccessful attempts were made to stop the infection. The antimycotic Canesten 1% (Bayer) was also tried but the infection proliferated. Against bacterial infection, the cells were washed with Penicillin/Streptomycin 100X, and surprisingly, the fibroblasts continued to grow and the confluent layer did not seem to be damaged. We tested also Gentamicina but we notice that this antibiotic damaged the confluent layer.

Immunofluorescence Technique. The fibroblast cell cultures represent a “in vitro” surrogate of the whole animal that will be used for many purposes, including genetic and toxicological studies. In particular, fibroblasts can be used to test the vulnerability of cetaceans to different environmental contaminants such as organochlorine compounds, heavy metals and polycyclic aromatic hydrocarbons. The immunofluorescence technique uses antibodies, that conjugates at fluorescent tracings, able to bind cellular structures in highly specific way, allow the qualitative and quantitative evaluation of the target structures. Fibroblast cell cultures (third generation) of bottlenose dolphin (*Tursiops truncatus*), sampled in the marine park of Asinara (Sardinia, Italy), and of striped dolphin (*Stenella coeruleoalba*), sampled in the Whale Sanctuary (Ligurian Sea, Italy), were exposed for 48 h to mixture of Arochlor 1260, pp’DDT e pp’DDE solubylised in DMSO (0,05%) added at three different doses: 1 $\mu\text{g/ml}$, 5 $\mu\text{g/ml}$ and 25 $\mu\text{g/ml}$. After, a first reaction with the primary antibodies for cytochromes 1A1-1A2 and 2B4 and for human estrogen receptor (hER) were applied, then were treated with the respective secondary antibodies marked with a fluorochrome. The main results were the presence of the cytochromes 1A1-1A2 and 2B4 and of the estrogen receptor in the fibroblast cells revealed from the crossreaction of the antibody used and

from the presence of fluorescence in the fibroblasts, and from the suspected increase of fluorescence in function of the treatment doses of contaminants.

Western Blot. For western blot analysis, fibroblast extracts were separated by SDS-PAGE (10% polyacrylamide gels) and blotted onto nitrocellulose sheets for 1 hour at a constant voltage of 100 V. The membranes were saturated by incubating with blocking solution (2% BSA in TTBS) for 1 hour at room temperature. Primary polyclonal goat IgG anti rabbit P450 2B4 antibody was purchased from Oxford Biomedical Research (Michigan, USA). P450 2B4 diluted 1:1000 in TTBS-1% BSA, was allowed to incubate for 15 h at 4°C. Incubation with the BioRad anti-goat HRP labelled secondary antibody (1:3000 final dilution) was performed for 1 hour at room temperature and detection was carried out as outlined in the Amersham ECL kit booklet. Semi-quantitative analysis was performed with Quantity One software (Bio-Rad). Results were expressed as Relative Volume Intensity mm² (INT*mm²). Data were analyzed using non-parametric statistic of Kolmogorov-Smirnov.

UNIPD: On collected tissues, histochemical forensic techniques to assess ship strikes and gas and fat bubble disease are under study and improvement (Davison & Cohle 1987; Tracy & Walia 2002). This are forensic post mortem techniques used also in the recent mass strandings episodes in the Canary Island related to the use of military sonar (Fernandez *et al.* 2005). As recommended in the Annex J of the Scientific Commission at the 58th IWC Meeting. As reported in literature (Duis 1997), the presence of fat emboli in pulmonary capillaries is highly suggestive of an in-vitam trauma and an accurate histochemical investigation on animals with findings suggestive of a traumatic injure could assess the real nature of the lesion.

5. POLLUTION STUDIES

LB-DSA-UNISI: The department of Environmental Science of the University of Siena has carried out research on the presence of chlorinated hydrocarbons (PCBs, DDTs and HCB) and the PAHs in cetaceans from the Mediterranean Sea since many years. See Section 4.4.

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 2005

None.

6.3 Anthropogenic mortality of large whales for the calendar year 2005

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
A. Fin whale	M	1	24/03/05	Genova harbour	U	U	D		Michela Podestà, CSC – MSNMI / CSC 2006
B. Fin whale	F	1	14/09/05	Genova harbour	U	U	D		Same as above / CSC & MSNMI 2006
C. Fin whale	F	1	14/10/05	Livorno harbour	O	U	D		Same as above / CSC & MSNMI 2006
Comments: A and B. Propeller wounds. C. In port on bow of ferry "MobyAki" of the Moby Line									

6.3.2 Fishery bycatch of large whales

None.

7. STATISTICS FOR SMALL CETACEANS

CoNISMa: Council Regulation (EC) No 812/2004 came into force on the 1st July 2004. The regulation lays down measures aimed at mitigating incidental catches of cetaceans by fishing vessels operating in specific

fisheries described in Annexes I and III. Under Annex III of this Regulation, Italy is required to design and implement independent at-sea observer schemes to monitor cetacean by-catch on board pelagic trawls (single and pair) with an overall length of 15m or over. The Italian programme have been characterised by a pilot study of one year managed directly by the Ministry of Agriculture and Forestry in 2005, and an annual project led by CoNISMA (Consorzio Nazionale Interuniversitario per le Scienze del Mare) that started in spring 2006 and will end in spring 2007. The latter is carried out in the Adriatic Sea, as all Italian pelagic trawlers are now operating only in this area. The coordinator of this project is Prof. Antonio Mazzola, the scientific supervisor is Dr. Caterina Fortuna and Dr. Simon Northridge is acting as external advisor. Data on by-catch estimates will be available by the end of this spring.

7.1 Corrections to earlier years' statistics for small cetaceans

None.

7.2 Direct catches of small cetaceans for the calendar year 2005

None.

7.3 Anthropogenic mortality of small cetaceans for the calendar year 2005

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

None.

7.3.2 Fishery bycatch of small cetaceans

Species	Sex	No.	Date	Location	Fate	Targeted fish species	Gear	How observed?	Source or contact
Cuvier's Beaked whale	F	1	21/4/05	Manduria (Taranto)	D	NK	TBB	DA	Michela Podestà, CSC – MSNMI
Common bottlenose dolphin	M	1	17/12/05	(40°59N, 009°37E)	D		NSC*	M	B. Diaz Lopez, BDRI
Common bottlenose dolphin	M	1	21/12/05	(40°59N, 009°37E)	D		NSC*	Floating	Same as above
Common bottlenose dolphin	U	1	Jan 06	(40°59N, 009°37E)	D		NSC*	DA	Same as above
Common bottlenose dolphin	F	1	15/2/05	Punta Ala (Grosseto)	D	NK	TBB	DA	Michela Podestà, CSC – MSNMI
Common bottlenose dolphin	F	1	27/4/05	Chioggia (Venezia)	D	NK	NK	DA	Same as above
Common bottlenose dolphin	M	1	6/9/05	Pineto (Teramo)	D	NK	NK	DA	Same as above
Common bottlenose dolphin	M	1	26/9/05	Ortona (Chieti)	D	NK	GN	DA	Same as above
Common bottlenose dolphin	M	1	17/12/05	Golfo Aranci (Sassari)	D	NK	NK	DA	Same as above
Striped dolphin	?	1	29/5/07	Ischia (Napoli)	D	NK	NK	DA	Same as above
Striped dolphin	M	1	9/7/05	Castelvoturno (Caserta)	D	NK	NK	DA	Same as above
Striped dolphin	M	1	30/7/05	Castiadas (Cagliari)	D	NK	GND	DA	Same as above
Striped dolphin	M	1	30/8/05	Ischia (Napoli)	D	NK	NK	DA	Same as above

Comments: * Incidental capture in aquaculture antipredator nets (NSC).(Díaz López & Shirai 2007)

8. STRANDINGS

CSC: A network to monitor cetacean stranding along the Italian coasts has been operating since 1986 by CSC, resulting in annual stranding reports as well as scientific output. Activities are in cooperation with other

Institutions. In the period 1986-2005, 3391 cetaceans stranded along the Italian coastline. CSC 2005 report in preparation (contact persons: M. Podestà, Natural History Museum of Milan and Luigi Valerio, Parco Regionale Riviera di Ulisse of Gaeta). The contact person is Alessandro Bortolotto, president of the CSC (centrostudicetacei@libero.it).

MSNMI: Stranding data from Italian coasts is being regularly collected on a national basis since 1986 by the Centro Studi Cetacei. The network managed the monitoring of Italian coasts and the study of the stranded and bycaught animals. Records of strandings collected by CSC have been published yearly by the Museum of Natural History of Milan (MSNMI). In recent years other organizations began to be concerned with strandings and started to collect data on their own covering small areas. To collect, verify and make available the information produced by the local organizations, by CSC and by other Institutions and local Authorities, the Italian Ministry of the Environment has signed a contract with CIBRA (University of Pavia) and the Natural History Museum in Milan to create and maintain a national database and GIS of strandings and to make it available online. The project is in progress. As soon as all data will be georeferenced and validated, the database will be published online (with access restrictions).

UNIDP: The Department of Public Health, Comparative Pathology and Veterinary Hygiene continuously cooperate with the Mediterranean Marine Mammals Tissue Bank, sited in the same University, and the homologous Department of the Veterinary Medicine School of the University of Teramo, performing post mortem exams on stranded animals. Strandings are referred by the National stranding network (Centro Studi Cetacei, CSC) and by Italian coast guard and the Department staff is able to intervene mainly and rapidly on the Adriatic Sea coasts. Necropsies are done on well-preserved carcasses. Since April 2006, the Department set up a task force to performed post mortem examination on large whales stranded along Italian coastlines. This project has been funded by the Italian Environment Ministry to focus collisions between large cetaceans and vessels, in order to study the effect of ship strikes on cetacean population in the Mediterranean Sea, according to ACCOBAMS suggestions.

ZNM: All the strandings occurring in the Archipelago of Zanzibar, Tanzania, are reported to the IMS (contact person: Dr. N. Jiddawi).

Species	No. strandings	No. post mortems	Contact person(s)/ Institute(s)	Contact email address(es)
Fin whales	1	1	Sandro Mazzariol/ Unipd	sandro.mazzariol@unipd.it
Fin whales	3	0	Michela Podestà/ CSC-MSNMI	michela_podesta@hotmail.com
Sperm whales	5	0	<i>Same as above</i>	<i>Same as above</i>
Cuvier's beaked whales	4	0	<i>Same as above</i>	<i>Same as above</i>
Cuvier's beaked whale	1	1	Sandro Mazzariol/ Unipd	sandro.mazzariol@unipd.it
Cuvier's beaked whale	1	1	Simone Panigada / TRI	panigada@inwind.it
Risso's dolphins	2	1	Michela Podestà/ CSC-MSNMI	michela_podesta@hotmail.com
Common bottlenose dolphin	21	0	<i>Same as above</i>	<i>Same as above</i>
Common bottlenose dolphin	3	3	Sandro Mazzariol/ Unipd	sandro.mazzariol@unipd.it
Common bottlenose dolphin	1	1	Giovanni Di Guardo/UNITE	gdiguardo@unite.it
Common bottlenose dolphin	1	0	Diaz Lopez, B./BDRI	bruno@thebdri.com
Common bottlenose dolphin	1	1	Andrea Rotta, CRD - CTS Caprera	sclo@cts.it
Common bottlenose dolphin	2	2	<i>Same as above</i>	<i>Same as above</i>
Striped dolphins	25	3	Michela Podestà/ CSC-MSNMI	michela_podesta@hotmail.com
Striped dolphin	1	1	Sandro Mazzariol/ Unipd	sandro.mazzariol@unipd.it
Unidentified cetaceans	25	0	Michela Podestà/ CSC-MSNMI	michela_podesta@hotmail.com

9. OTHER STUDIES AND ANALYSES

BDRI:

- Underwater observations of bottlenose dolphin feeding behaviour in a marine fin fish farm (Díaz López 2006b). The underwater observations suggest that the use of different feeding strategies is consistent with the hypothesis that bottlenose dolphins apply common decision rules in function of prey availability, resulting in the use of different foraging techniques. The observed frequency of the feeding strategies employed by dolphins preying directly on farmed fish could be worrisome for aquaculture.
- Feeding behaviour (Díaz López & Shirai 2006b): 100 hours of direct observation on 129 dolphin groups during 110 days at sea. About 70 hours of feeding behaviour and 1120 3- min behavioural samples were collected in 2005. Diurnal and nocturnal observations were carried out.
- Interaction with aquaculture: the first attempt in the Mediterranean basin to obtain information on encounter rate, group size and incidental capture of bottlenose dolphins in a marine fin fish farm was assessed, combining direct observations from fish farm boats with photo-identification studies (Díaz López & Shirai 2007). The daily bottlenose Dolphin Encounter Ratio (DER) was 1.40 (computed as $DER = N_s / \text{search effort (h)}$, where N_s is the total number of sightings). Multivariate analysis was also employed to determine the influence of aquaculture on the presence of bottlenose dolphins (Díaz López & Shirai 2006a). In order to identify the dolphins entangled in predator nets, photographs of the dorsal fin were taken and sex recognition was carried out. A monthly entanglement ratio per cage (MEc) was calculated by: $MEc = (N_b/m)/c$ where N_b is the total number of entangled dolphins, m =predator net soaking time in months, and c =the number of cages where the predator net was employed (Díaz López & Shirai 2007).
- Bycatch: attempts at analysing interactions between bottlenose dolphins and gillnets along the north-eastern coast of Sardinia (Italy) were conducted (Díaz López 2006a). A new approach was used: combining interviews with fishers with boat-based direct observations and behavioural and group size analysis. Fishers on monitored boats noted in 68.7% of the total fishing days on which gillnet damage was caused by bottlenose dolphins, with no difference between seasons. An annual estimate of the number of bottlenose dolphins caught in the gillnets was 1.47 (0.98 immatures and 0.49 adults).
- Bioacoustics: Whistles and food-related signalling is being studied by BDRI's researchers. We investigate the functional significance of food-related signalling in the behaviour of bottlenose dolphins on the north-eastern coast of Sardinia.

CIBRA: In January 2005, an experimental deep station, named NEMO-ONDE, developed for measuring underwater acoustic noise (Riccobene *et al.*, 2004, 2005), has been placed on the sea bottom 21 km offshore Catania (Sicily, Italy) at 2000 m depth. Four calibrated broad-band hydrophones, sampled at 96 kHz, send digital data to the shore lab 24/24h through optical cables. The platform was used to monitor underwater noise and sounds made by marine mammals living or transiting in the area. The most interesting results for year 2005 were about transiting sperm whales (preliminary data in Pavan *et al.*, SC/58/E19). After a cable-break caused by a storm, in year 2006 acoustic recordings were made in the period July 12th to November 11th. Then the underwater acoustic platform has been disconnected to be replaced by another experimental platform. A new acoustic platform is being designed to be deployed in early 2008. Data analysis to map the daily presence of sperm whales and to assess the number of animals and groups transiting in the area is in progress. Within the framework of scientific support activities' to ACCOBAMS, CIBRA prepared a document about the development of a regulation system to control the underwater noise that has been presented to the 4th meeting ACCOBAMS Scientific Committee (Pavan 2006). The Committee, after approving it with no reserves, has produced a set of recommendations (ACCOBAMS Recommendation SC 4.3, available online at <http://www.accobams.org/2006.php/meetings/recommendations/4>).

CONS.MED: *Use of acoustic devices in order to reduce the interactions between fisheries and dolphins in Sanctuary "PELAGOS"*: This project aims test the effectiveness of pingers in reducing interactions between dolphins and fishing activity, both for by-catch and depredation, in the areas inside the Sanctuary "Pelagos" in which the presence of cetaceans, and therefore the interactions with fisheries, is more frequent. Since the safeguard of the species depends also on the collection of information and the awareness these activities are foreseen. It is previewed therefore to equip with "pingers" the various small drift nets, the so-called "ferrettare", used by operating fishermen in the zones inside the Sanctuary characterized as focal for the interactions. The collected data will be elaborated and used in order to supply management indications. This project was funded by Italian Ministry of Environment.

"Definition of a code of conduct for the whale-watching, ad hoc for the international Sanctuary "PELAGOS": The foreseen activities are the census of WW operators and the presentation of a questionnaire in order to estimate the various kinds and different purposes of this activity in the Sanctuary "Pelagos". A register of the operators of WW will be obtained and the Code of Conduct for the Sanctuary will be updated, also according to a future creation of a professional register. It will moreover supply a panoramic of the existing national and international specific legislations. This project was funded by Italian Ministry of Environment.

ICRAM: In 2006 ICRAM finalized the research project “Human impact in the Italian waters of the Pelagos Sanctuary: typology definition, areas of interest and analysis of data series regarding acoustic noise and artisanal fishery”, a preliminary study of the available data on the main human activities present in the area of the Mediterranean Pelagos Sanctuary (87,500 km²), analysing their typology and their spatial fields of interest. The project, coordinated by L. Tunesi and founded by the Italian Ministry of Environment, was devoted to defining the framework of a specific multidisciplinary analysis done on GIS basis, to identify the typologies of information essential to start-up the management and the main lack of information. This study allowed the identification of areas where human uses are more intensive (hot spots) and research activities specifically devoted to supporting the management of this Mediterranean Sanctuary. The project was composed by three main modules: 1- identification and classification of the main human activities in the Sanctuary area and their analysis on spatial scale (S. Agnesi, A. Annunziatellis, T. Di Nora, unpublished data), 2- acoustic noise (J.F. Borsani, unpublished data), 3- mitigation guidelines of artisanal fishing activities (G. Lauriano, unpublished data). The results of this project stress the need to plan a wide series of studies on environmental sensitivities and human activities necessary to support the concrete management of the Pelagos Sanctuary.

UNITE: Detailed post-mortem and histopathological investigations were carried out on this male bottlenose dolphin (*Tursiops truncatus*) aged less than 6 months, which was found stranded on July 24th 2006 on the Adriatic Sea coast of Italy (Portocanale di Pescara, Pescara, Italy). During post-mortem examination, the following tissues were promptly collected and fixed in 10% neutral buffered formalin: lung, heart, thoracic aorta, tracheo-bronchial and mediastinal lymph nodes, mesenteric lymph node, spleen (including accessory spleen tissue), non-glandular stomach, glandular stomach, intestine, liver, pancreas, kidney, urinary bladder, skin, skeletal muscle, tongue, brain.

Main lesions observed in this dolphin's pup included a poor body condition, associated with severe bilateral parasitic bronchopneumonia (the likely cause of death) due to *Halocercus (H.) lagenorhynchi* (syn. *H. delphini*) and with lymphadenomegaly involving the tracheo-bronchial, mediastinal and mesenteric lymph nodes, as well as 2-3 small-sized accessory spleens (“extra-lien”) embedded within the gastro-lienal ligament.

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Appendix 1. FOA 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		HOOKS AND LINES	
Otter trawls (side or stern)	OTM	Handlines and pole-lines (hand operated)	LHP
Pair trawls	PTM	Handlines and pole-lines (mechanised)	LHM
Shrimp trawls	TMS	Set longlines	LLS
Midwater trawls (not specified)	TM	Drifting longlines	LLD
Otter twin trawls	OTT	Longlines (not specified)	LL
Otter trawls (not specified)	OT	Trolling lines	LTL
Pair trawls (not specified)	PT	Hooks and lines (not specified)	LX
Other trawls (not specified)	TX	GRAPPLING AND WOUNDING	
DREDGES		Harpoons	HAR
Boat dredges	DRB	HARVESTING MACHINES	
Hand dredges	DRH	Pumps	HMP
LIFT NETS		Mechanised dredges	HMD
Portable lift nets	LPN	Harvesting machines (not specified)	HMX
Boat-operated lift nets	LNB	MISCELLANEOUS GEAR	MIS
Shore operated stationary lift nets	LNS	RECREATIONAL FISHING GEAR	RG
Lift nets (not specified)	LN	GEAR NOT KNOWN OR NOT SPECIFIED	NK
		SHARK CONTROL NETS	NSC
		DERELICT FISHING GEAR	