

Italy. Progress report on cetacean research, January 2007 to December 2007, with statistical data for the calendar year 2006

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1. SPECIES AND STOCKS STUDIED

A tabular format is most appropriate. Please indicate where in the report the species is mentioned and use IWC recommended names (see IWC, 2006, Annex L). For subsequent items, common names are preferred. e.g.:

IWC common name	IWC recommended scientific	Area/stock(s)	Items referred to
Fin whale	<i>Balaenoptera physalus</i>	Ligurian Sea; Tyrrhenian sea; Versilian waters (northern Tyrrhenian Sea); Tuscan Archipelago (Tyrrhenian Sea); Corsican Sea Sardinian Channel	2.1; 2.1.1; 2.1.2; 2.2; 3.1.1; 4.3; 4.4; 5; 7; 8; 9; 11
Sperm whale	<i>Physeter macrocephalus</i>	Ligurian Sea; Central Tyrrhenian sea; South-western Sicily	2.1; 2.1.1; 2.2; 3.1.1; 4.1; 4.3; 8
Long finned pilot whale	<i>Globicephala melas</i>	Ligurian Sea	3.1; 4.1; 4.3; 4.4; 5; 8; 9
Cuvier's beaked whale	<i>Ziphius cavirostris</i>	Ligurian Sea; Central Tyrrhenian sea; South-western Sicily	2.1; 2.1.1; 3.1.1; 4.1; 4.3; 8
Risso's dolphin	<i>Grampus griseus</i>	Ligurian Sea; Tuscan Archipelago (Tyrrhenian Sea); Ionian Sea; Corsican Sea Sardinian Channel	2.1; 2.1.1; 2.1.2; 2.2; 3.1.1; 4.1; 4.3; 4.4; 5; 7; 8; 9; 11
Common bottlenose dolphin	<i>Tursiops truncatus</i>	Adriatic Sea; Ligurian Sea; Tyrrhenian sea; Tuscan Archipelago (Tyrrhenian Sea); Follonica Gulf (Tyrrhenian Sea); North-eastern coast of Sardinia (Tyrrhenian Sea); Aeolian Archipelago (Tyrrhenian Sea); South-western Sicily; Sicilian Channel; Favignana Island, Egadi Arcipelago, Sicily; New Zealand; Mediterranean Sea; Kornati National Park & Murterski more (Croatia); Amvrakikos Gulf (NW Greece); Eastern Ionian Sea (Greece)	2.1; 2.1.1; 2.1.2; 2.2; 3.1; 3.1.1; 3.2; 4.1; 4.2; 4.3; 4.4; 5; 7; 7.3; 7.3.2; 8; 9; 11
Short-beaked common dolphin	<i>Delphinus delphis</i>	Central Mediterranean Sea; Eastern Ionian Sea, Greece	2.1.1; 2.2; 3.1.1; 4.1; 8; 11
Striped dolphin	<i>Stenella coeruleoalba</i>	Adriatic Sea; Ligurian Sea; Tyrrhenian sea; Tuscan Archipelago (Tyrrhenian Sea); Aeolian Archipelago (Tyrrhenian Sea); Corsican Sea Sardinian Channel; Sicilian Channel	2.1; 2.1.1; 2.1.2; 2.2; 4.1; 4.2; 4.3; 4.4; 5; 7; 7.3.2; 8; 9; 11

2. SIGHTINGS DATA

2.1 Field work

2.1.1 Systematic

ADG: Delfini Metropolitani research project. Boat-based random surveys. The study area is located along the Eastern Ligurian coast, between Genoa and La Spezia. The research platforms are two 5,10m long inflatable. Research activity is conducted during the all year, according to weather conditions. In 2007, 57 daily surveys were conducted for a total of 1880 km.

BB: The association Battibaleno has effected n° 42 sea expedition for the observation of the present cetacean in the marine protected area of the Pelagos Sanctuary for Mediterranean Marine Mammals , in the period between 15 March / 22 November 2007. The boat used by Battibaleno is Physalie, a sail boat 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: Randomization of the surveys was attempted in order to cover the total study area although the geographic distribution of effort varied depending on weather conditions. Data were collected by scientists and volunteers onboard a 5.3m motor-craft equipped with GPS, fish-finder, thermometer, pH and conductivity meter, digital photo-cameras, camcorders, underwater camcorder and omni-directional hydrophone. 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 isobath. The main objective of these surveys was to continue to study the behaviour, presence and distribution of bottlenose dolphins and correlate their presence, behavioural changes and social organization to the different levels of human activities (gillnet fisheries, trawlers, aquaculture and tourism).

CRiMM: Boat surveys have been taken on calm sea days following standard routes (Beaufort scale 3 or less). Survey routes are recorded with a GPS and each outing lasted between 3 and 6 hours. Composition of groups is determined by standard photo identification technique. In order to minimize the disturbances, dolphins has never been approached closer than 20-50 metres and females with calves have never been followed longer than 30 minutes.

DELPH: since 2001, DELPH developed research and study activities in the Tyrrhenian Sea. These activities (study, education and training) are carried out using a 7.80 m long dinghy and developed with the associated members and in collaboration with the University of Siena.

DIBIOGE: From January, the February, the 16th to November the 15th, 30 one-day surveys were conducted in Ligurian Sea, aboard a 11 m semi-rigid vessel, with an eye height of 4 m above sea level. Transect lines were not determined randomly but according to depths, searching mainly beyond the 1000 m 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. From September the 1st to October the 6th, 7 one-day survey 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. Transect lines were not determined randomly but according to depths, searching mainly around the 200 m 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.

IAMC-CNR-TR: Long term studies were carried out in the coastal waters of south-western Sicily from 2003 to 2007 on resident populations of bottlenose dolphins. During sightings, information about position, group size, presence of calves and presence of fishing boats were always registered. The study was carried out also in pelagic waters of the Sicilian Channel from 1999 to date to assess the distribution and the occurrence of the most common cetacean species in this part of Mediterranean Sea. These surveys were carried out on board of the R/V "Urania", "Dalla Porta", "Tethis" oceanographic vessels of IAMC-CNR.

ISS-MRN: A total of 44 surveys were conducted during the summer period (1-30 June, 1-14 September) in 2007 by a 5.6m long 25 HD powered outboard research vessel. The area covered by the study included the waters around Filicudi island (98 km²) located at 38°35' N, 14°34' E in the southern Tyrrhenian Sea. Although routes vary depending on weather conditions and other factors, to provide complete coverage of the study area two distinctive transect were monitored. The study used random transect methods for sampling cetacean distribution due to relatively slow speed of the vessel, high dependence on whether conditions and the need to return to port every night. Surveys were conducted every day from at least two experienced observers. A behavioural catalogue was applied to this study (Shane *et al.* 1986; Shane 1990).

Target species	Date	Area	No. of sightings	Contact person/institute and references
Fin whale	May - Oct 2007	Ligurian Sea, Italy	20	TRI
<i>As above</i>	16/02/07-15/11/07	Ligurian Sea	10	Aurelie Moulins / DIBIOGE
<i>As above</i>	15-3/22-11	Ligurian e Tyrrhenian Sea, Corsican Sea Sardinian Channel	2	Alberto Marco Gattoni / BB
<i>As above</i>	1-1/12-31	Versilia water	3	S. Nuti, D. Bedocchi/ CETUS
<i>As above</i>	7-1/8-31	Tuscan Archipelago	3	<i>As above</i>
<i>As above</i>	05/07 – 09/07	Central Tyrrhenian sea	24	Antonella Arcangeli /AL
Sperm whale	May - Oct 2007	Ligurian Sea, Italy	30	TRI
<i>As above</i>	16/02/07-	Ligurian Sea	1	Aurelie Moulins / DIBIOGE

	15/11/07			
<i>As above</i>	05/07 – 09/07	Central Tyrrhenian sea	1	Antonella Arcangeli /AL

Target species	Date	Area	No. of sightings	Contact person/institute and references
Long-finned pilot whale	May - Oct 2007	Ligurian Sea, Italy	2	TRI
Cuvier's beaked whale	16/02/07-15/11/07	Ligurian Sea	7	Aurelie Moulins / DIBIOGE
<i>As above</i>	05/07 – 09/07	Central Tyrrhenian sea	2	Antonella Arcangeli /AL
Risso's dolphin	May - Oct 2007	Ligurian Sea, Italy	8	TRI
<i>As above</i>	16/02/07-15/11/07	Ligurian Sea	4	Aurelie Moulins / DIBIOGE
<i>As above</i>	15-3/22-11	Ligurian e Tyrrhenian Sea, Corsican Sea Sardinian Channel	3	Alberto Marco Gattoni / BB
<i>As above</i>	7-1/8-31	Tuscan Archipelago	3	S. Nuti, D. Bedocchi/ CETUS
Common bottlenose dolphin	16/02/07-15/11/07	Ligurian Sea adn Tyrennian Sea	17	Aurelie Moulins / DIBIOGE
<i>As above</i>	May - Oct 2007	Ligurian Sea, Italy	2	TRI
<i>As above</i>	Jan-Dec 2007	Ligurian Sea	18	Guido Gnone / ADG
<i>As above</i>	7-1/8-31	Tuscan Archipelago	12	S. Nuti, D. Bedocchi/ CETUS
<i>As above</i>	1-1/12-31	Versilia water	66	<i>As above</i>
<i>As above</i>	01/07/07 - 31/09/07	Follonica Gulf (Tyrrhenian Sea)	3	Luigina Fattorosi /DELPH
<i>As above</i>	1-30/06/07 & 1-14/09/07	Aeolian Archipelago	35	Monica Francesca Blasi/ISS-MRN; Blasi <i>et al.</i> 2008, Blasi <i>et al.</i> 2007; Blasi <i>et al.</i> 2006.
<i>As above</i>	01/01/07-31/12/07	Northeastern Saridinia	55	Alberto Fozzi & Francesca Magnone / CRiMM
<i>As above</i>	Jan – Nov 2007	North-eastern coast of Sardinia	163 (140 days at sea)	Bruno Díaz López / BDRI Díaz López & Shirai, 2008
<i>As above</i>	3-12-29/08/07	Capo Carbonara MPA (SE Sardinia)	19	Federica Maggiani / MPA-CC
<i>As above</i>	05/07 – 09/07	Central Tyrrhenian sea	8	Antonella Arcangeli /AL
Common bottlenose dolphin	Jan- Sept 2007	South-western Sicily	5	Giusi Buscaino, Gaspare Buffa, A. Bellante / IAMC-CNR-TR
<i>As above</i>	Jul-Aug 2007	Sicilian Channel	10	Giusi Buscaino, Gaspare Buffa, A. Bellante / IAMC-CNR-TR
<i>As above</i>	19/08/07-23/08/07	Kornati National Park Murterski more (Croatia)	6	Antonella Impetuoso / MLC
<i>As above</i>	Jun - Sept 2007	Eastern Ionian Sea, Greece	32	TRI
<i>As above</i>	Jan - Dec 2007	north-western Greece, Amvrakikos Gulf	101	<i>As above</i>
Short-beaked common dolphin	16/02/07-15/11/07	Ligurian Sea	2	Aurelie Moulins / DIBIOGE
<i>As above</i>	May - Oct 2007	Ligurian Sea, Italy	1	TRI
<i>As above</i>	Jun - Sept 2007	Eastern Ionian Sea, Greece	4	<i>As above</i>

Target species	Date	Area	No. of sightings	Contact person/institute and references
Striped dolphin	May - Oct 2007	Ligurian Sea, Italy	149	<i>As above</i>
<i>As above</i>	16/02/07-15/11/07	Ligurian Sea	67	Aurelie Moulins / DIBIOGE
<i>As above</i>	Jan - Dec 2007	Ligurian Sea	4	Guido Gnone / ADG
<i>As above</i>	15-3/22-11	Ligurian e Tyrrhenian Sea, Corsican Sea Sardinian Channel	9	Alberto Marco Gattoni / BB
<i>As above</i>	7-1/8-31	Tuscan Archipelago	6	S. Nuti, D. Bedocchi (CETUS)
<i>As above</i>	05/07 – 09/07	Central Tyrrhenian sea	73	Antonella Arcangeli /AL
<i>As above</i>	1-30/06/07 & 1-14/09/07	Aeolian Archipelago	3	Monica Francesca Blasi/ISS-MRN
<i>As above</i>	Jan-Sept 2007	South-western Sicily	2	Giusi Buscaino, Gaspare Buffa, A. Bellante / IAMC
<i>As above</i>	Jul-Aug 2007	Sicilian Channel	5	<i>As above</i>

2.1.2 Opportunistic, platforms of opportunity

ADG: Opportunistic observations were collected from the motor boat Stenella (BlueWest) in the Western Ligurian Sea (Finale Ligure) from 18/05/2007 to 9/09/2007. 42 daily surveys were conducted for a total of about 2800 km.

BDRI: In order to understand the relationship between bottlenose dolphins and aquaculture, fish farm based observations were regularly undertaken from January 2007 to November 2007. Scientists and students collected ecological and behavioural 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. Additionally a trial of acoustics deterrents and a study of the interactions between common bottlenose dolphins and fishing activities were carried out during the Summer 2007 along the north-eastern coast of Sardinia.

IAMC-CNR-TR: IAMC-CNR of Mazara del Vallo operated in collaboration with the harbour office of Mazara del Vallo. A total of 8 sighting were made with the harbour office patrol boats.

Primary species	Area	Data type/method	Collected by	Platform	Location of archive (if applicable)	Contact person/institute and refs
Fin whale	Ligurian Sea	Survey effort; sightings; presence of vessels	Researcher	whale watching vessel (BlueWest)	Acquario di Genova	Guido Gnone /ADG
<i>As above</i>	Ligurian e Tyrrhenian Sea, Corsican Sea Sardinian Channel	Sail boat; Visual survey; 54 transect line campaigns photo identification	Crew	Sail boat;	BB	Alberto Marco Gattoni / BB
Cuvier's beaked whale	Ligurian Sea	Survey effort; sightings; presence of vessels	Researcher	whale watching vessel (BlueWest)	Acquario di Genova	Guido Gnone / ADG

Primary species	Area	Data type/method	Collected by	Platform	Location of archive (if applicable)	Contact person/institute and refs
Risso's dolphin	Ligurian Sea	Survey effort; sightings; presence of vessels	Researcher	whale watching vessel (BlueWest)	Acquario di Genova	<i>As above</i>
<i>As above</i>	Ligurian e Tyrrhenian Sea, Corsican Sea Sardinian Channel	Sail boat; Visual survey; 54 transect line campaigns photo identification	Crew	Sail boat;	BB	Alberto Marco Gattoni / BB
Common bottlenose dolphin	Ligurian Sea	Survey effort; sightings; presence of vessels	Researcher	whale watching vessel (BlueWest)	Acquario di Genova	Guido Gnone / ADG
<i>As above</i>	Capo Carbonara MPA (SE Sardinia)	Photo-ID; sightings, Acoustic signature	Researcher	Zodiac 6 m	Capo Carbonara MPA	Federica Maggiani / MPA-CC
<i>As above</i>	North-eastern coast of Sardinia	Behavioural sampling, Photo-ID, Social structure analysis, Underwater behaviour Interaction with aquaculture, Ecological modelling	Scientist	Fish farm boats	*Bottlenose Dolphin Research Institute (Local Photo-ID Catalogue)	Bruno Díaz López / BDRI Díaz López, B. & Shirai, J.A.B. 2007; Díaz López, B. & Shirai, J.A.B. 2008; Castel, C. et al., 2008; Díaz López et al., 2008
<i>As above</i>	North-eastern coast of Sardinia	Trial of acoustic deterrent devices, interaction with gillnets fishery	Fishers & scientist	Fishing boats	<i>As above</i>	Bruno Díaz López / BDRI Troncone, R., et al., 2008
<i>As above</i>	North-eastern coast of Sardinia	Presence/Absence of dolphins	Fish farm workers and volunteers	Fish farm boats	<i>As above</i>	Bruno Díaz López / BDRI Castel, C., et al., 2008
<i>As above</i>	North-eastern coast of Sardinia	Interaction with trawlers	Fishers and scientist	Trawlers	<i>As above</i>	Bruno Díaz López / BDRI
<i>As above</i>	South-western Sicily	Surveys for sighting/photoidentification	researchers	harbour office patrol boats	IAMC-CNR U.O. di Capo Granitola (TP).	Giuseppe Buscaino, Gaspare Buffa, A. Bellante / IAMC-CNR-TR
<i>As above</i>	Kornati National Park - Murterski more (Croatia)	Sightings; Survey effort; Photo-id; navigation; Environmental data	Crew/scientist	Sailing boat-small inflatable boat	Marine Life Conservation	Antonella Impetuoso / MLC
Striped dolphin	Ligurian Sea	Survey effort; sightings; presence of vessels	researcher	whale watching vessel (BlueWest)	Acquario di Genova	Guido Gnone / ADG
<i>As above</i>	Ligurian e Tyrrhenian Sea, Corsican Sea Sardinian Channel	Sail boat; Visual survey; 54 transect line campaigns photo identification	Crew	Sail boat;	BB	Alberto Marco Gattoni / BB
Several species	Mediterranean sea/Central Tyrrhenian	Line transect survey, sightings	Researchers	Ferries	Accademia del Leviatano	Antonella Arcangeli /AL

(see 2.1.1)	sea					
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2.2 Analyses/development of techniques

ADG: Delfini Metropolitani is a research project mainly focused on the bottlenose dolphin habits: habitat use, home range analysis, abundance estimate, interactions with human activity (fishing, trawling, sea traffic). We use photo-ID technique for abundance estimate, home range analysis and social structure analysis. In 2006 we introduced the ArcView GIS as a software tool for spatial analysis.

CRiMM: Described the movements and the home range for cetacean species like Common bottlenose dolphin (*Tursiops truncatus*) is priority to implement conservation measures. Research was carried out through boat surveys, with the use of photo-identifications techniques and with detailed recordings of behavioural data, distribution, sighting frequency, groups composition.

DIBIOGE: All data collected by the BluWest 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.

ISS-MRN: Distribution and movement patterns were related to habitat covariates, behaviour and anthropogenic factors (nets, boats) through the SAS software using different statistical methods comparison. Habitat selection was also determined by goodness of fit chi-square test and then by comparison of confidence intervals of use vs. availability covariates in different habitat classes according to distance from the coast.

Target species	Date	Area	Methods/effort	Parameters/ factors measured	Contact person/institute; refs
Fin whale	May – Sept 2007	Ligurian Sea, Italy	Boat surveys, photo-identification, behavioural sampling (7636 km)	Encounter rate, distribution, abundance, habitat use, behaviour, ecology	TRI
<i>As above</i>	16/02/07-15/11/07	Ligurian Sea	Line transect survey	Spatio-temporal distribution; Habitat	Aurelie Moulins / DIBIOGE
<i>As above</i>	15-3/22-11	Ligurian Sea, Tyrrhenian Sea, Corsican Sea, Sardinian Channel	Sail boat Line transect survey photo identification	Distribution; sighting frequency (1200 miles crossed); Distribution-Sighting frequency - behaviour-Presence absence (1200 miles crossed)	Alberto Marco Gattoni / BB
<i>As above</i>	7-1/8-31	Tuscan Archipelago	Line transect survey	Distribution	S. Nuti, D. Bedocchi/ CETUS
<i>As above</i>	1-1/12-31	Versilia water	Line transect survey	Distribution	<i>As above</i>
<i>As above</i>	End of May – Sept.	Mediterranean sea/Central Tyrrhenian sea	Line transect survey	Distribution: distance from coastline & bathymetry; Sighting frequency: Sightings/hours	Antonella Arcangeli /AL
Sperm whale	May – Sept 2007	Ligurian Sea, Italy	Boat surveys, photo-identification, behavioural sampling (7636 km)	Encounter rate, distribution, habitat use, abundance, behaviour, ecology	TRI
Cuvier's beaked whale	16/02/07-15/11/07	Ligurian Sea	PhotoID, Line transect survey	Population estimates, Spatio-temporal distribution; Habitat	Massimiliano Rosso / DIBIOGE

Target species	Date	Area	Methods/effort	Parameters/ factors measured	Contact person/institute; refs
Risso's dolphin	May – Sept 2007	Ligurian Sea, Italy	Boat surveys, photo-identification, behavioural sampling (7636 km)	Encounter rate, distribution, habitat use, abundance, behaviour, ecology	TRI
<i>As above</i>	16/02/07-15/11/07	Ligurian Sea	PhotoID	Population estimates	Massimiliano Rosso / DIBIOGE
<i>As above</i>	7-1/8-31	Tuscan Archipelago	Line transect survey, Capture-Mark-Recapture	Distribution; Photo-Id	S. Nuti, D. Bedocchi/ CETUS
<i>As above</i>	15-3/22-11	Ligurian & Tyrrhenian Sea, Corsican Sea, Sardinian Channel	Sail boat Line transect survey photo identification	Distribution; sighting frequency (1200 miles crossed); Distribution-Sighting frequency - behaviour-Presence absence (1200 miles crossed)	Alberto Marco Gattoni / BB
Common bottlenose dolphin	Jan-Dec 2007	Ligurian Sea	Boat-based random survey; photo-ID	Spatio-temporal distribution; sighting frequency; habitat use; abundance; home range	Guido Gnone / ADG
<i>As above</i>	16/02/07-15/11/07	Ligurian Sea	PhotoID, Line transect survey	Population estimates, Habitat	Massimiliano Rosso / DIBIOGE
Common bottlenose dolphin	1-1/12-31	Versilia water	Line transect survey, Capture-Mark-Recapture	Distribution; sighting frequency; Abundance; Photo-Id	S. Nuti, D. Bedocchi/ CETUS
<i>As above</i>	7-1/8-31	Tuscan Archipelago	Line transect survey, Capture-Mark-Recapture	Distribution; sighting frequency; Abundance; Photo-Id	<i>As above</i>
<i>As above</i>	01/07/07 - 31/09/07	Follonica Gulf (Tyrrhenian Sea)	Line transect survey Photoidentification Acoustic	Distribution, Sighting frequency; acoustic	Luigina Fattorosi /DELPH
<i>As above</i>	1-30/06/07 & 1-14/09/07	Aeolian Archipelago	Line transect survey; Photoidentification	Distribution; sighting frequency; habitat use; movement patterns.	Monica Francesca Blasi/ISS-MRN; Blasi <i>et al.</i> , 2008; Blasi <i>et al.</i> , 2007.
<i>As above</i>	3-12-29/08/07	Capo Carbonara MPA (SE Sardinia)	Line transect survey (visual and acoustic)	Distribution; sighting frequency, whistles	Federica Maggiani / MPA-CC
<i>As above</i>	01/01/07-31/12/07	Northeastern Saridinia	Line transect survey	Distribution; sighting frequency; groups composition, behaviour	Alberto Fozzi & Francesca Magnone / CRiMM
<i>As above</i>	End of May – Sept.	Mediterranean sea/Central Tyrrhenian sea	Line transect survey	Distribution: distance from coastline & bathymetry; Sighting frequency: Sightings/hours	Antonella Arcangeli /AL
<i>As above</i>	Jan - Sept 2007	South-western Sicily	<i>Ad libitum</i>	Distribution; sighting frequency	Giusi Buscaino, Gaspare Buffa, A. Bellante / IAMC-CNR-TR
<i>As above</i>	Jan - Dec 2007	NW Greece, Amvrakikos Gulf	Boat surveys, photo-identification (2937 km)	Encounter rate, distribution, abundance	TRI
<i>As above</i>	June - Sept 2007	Eastern Ionian Sea, Greece	Boat surveys, photo-identification, behavioural sampling (2846 km)	Encounter rate, distribution, abundance	TRI
<i>As above</i>	19/08/07-23/08/07	Kornati National Park Murterski more (Croatia)	Mark / Re-capture (natural markings)	Distribution; sighting frequency; habitat use; feeding near fish farm	Antonella Impetuoso / MLC

Target species	Date	Area	Methods/effort	Parameters/ factors measured	Contact person/institute; refs
Common bottlenose dolphin	Jan-Nov 2007	North-eastern coast of Sardinia	140 boat surveys and 163 sightings, photo-identification and social structure studies, behavioural sampling, underwater observations and feeding behaviour, bioacoustics, interaction with human activities (tourism, fisheries & aquaculture), Ecological modelling	<ul style="list-style-type: none"> • Encounter rates • Distribution • Habitat use and preferences • Population estimate (Photo-ID) • Association index (HWI) • Site – fidelity (GIS) • Behaviour, ecology, feeding habits • Respiratory patterns • Underwater observations • Trial of acoustic deterrent devices • Bycatch and incidental captures • Trophic levels • Mass balance models 	Díaz Lopez, B./BDRI; Díaz López, B. & Shirai, J.A.B., 2008; Díaz López, B. & Shirai, J.A.B. 2007; Castel, C. et al., 2008; Troncone, R., et al., 2008; Bunke et al., 2008; Díaz López et al., 2008.
Short-beaked common dolphin	June - Sept 2007	Eastern Ionian Sea, Greece	Boat surveys, photo-identification, behavioural sampling (2846 km)	Encounter rate, distribution, abundance	TRI
Striped dolphin	May – Sept 2007	Ligurian Sea, Italy	Boat surveys, behavioural sampling (7636 km)	Encounter rate, distribution, habitat use, behaviour, ecology	<i>As above</i>
<i>As above</i>	16/02/07-15/11/07	Ligurian Sea	Line transect survey	Spatio-temporal distribution; Habitat	Aurelie Moulines / DIBIOGE
<i>As above</i>	Jan-Dec 2007	Ligurian Sea	Boat-based random survey	Spatio-temporal distribution; sighting frequency; habitat use	Guido Gnone / ADG
<i>As above</i>	15-3/22-11	Ligurian & Tyrrhenian Sea, Corsican Sea Sardinian Channel	Sail boat Line transect survey photo identification	Distribution; sighting frequency (1200 miles crossed); Distribution-Sighting frequency - behaviour-Presence absence (1200 miles crossed)	Alberto Marco Gattoni / BB
<i>As above</i>	7-1/8-31	Tuscan Archipelago	Line transect survey	Distribution	S. Nuti, D. Bedocchi/ CETUS
<i>As above</i>	End of May – Sept.	Mediterranean sea / Central Tyrrhenian sea	Line transect survey	Distribution: distance from coastline & bathymetry; Sighting frequency: Sightings/hours	Antonella Arcangeli /AL
<i>As above</i>	Jan-Sept 2007	South-western Sicily	<i>Ad libitum</i>	Distribution; sighting frequency	Giusi Buscaino, Gaspare Buffa, A. Bellante / IAMC-CNR-TR

3. MARKING DATA

3.1 Field work

3.1.1 Natural marking data

DIBIOGE: All data collected by the bluWest and DIBIOGE were used for the photoID analysis.

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, Italy	14	Y	431	TRI
<i>As above</i>	Permanent mark dorsal fin	Ligurian e Tyrrhenian Sea, Corsican Sea Sardinian Channel	4	Y	14	Alberto Marco Gattoni / BB
Sperm whale	Flukes	Ligurian Sea, Italy	38	Y	60	TRI
Long-finned pilot whale	Dorsal fin	Ligurian Sea, Italy	Analysis in progress	Y	Analysis in progress	<i>As above</i>
Cuvier's beaked whale	NA	Ligurian Sea	analysis in progress	Y	113	Massimiliano Rosso / DIBIOGE
<i>As above</i>	Dorsal fin	Ligurian Sea, Italy	0	Y	40	TRI
Risso's dolphin	Dorsal fin	Ligurian Sea	analysis in progress	Y	418	Massimiliano Rosso / DIBIOGE
<i>As above</i>	Dorsal fin, body scars	Ligurian Sea, Italy	Analysis in progress	Y	Analysis in progress	TRI
<i>As above</i>	Permanent mark Dorsal fin	Ligurian e Tyrrhenian Sea, Corsican Sea Sardinian Channel	9	Y	52	Alberto Marco Gattoni / BB
<i>As above</i>	Dorsal fin	Tuscan Archipelago	7	Y	28	S. Nuti, D. Bedocchi/ CETUS
Common bottlenose dolphin	Dorsal fin	Ligurian Sea	61	Y	171	Guido Gnone / ADG
<i>As above</i>	Dorsal fin	Ligurian Sea, Italy	Analysis in progress	Y	68	TRI
<i>As above</i>	Dorsal fin	Ligurian Sea, Tyrrhenian Sea	analysis in progress	Y	395	Massimiliano Rosso / DIBIOGE
<i>As above</i>	Dorsal fin	Versilia water	21	Y	113	S. Nuti, D. Bedocchi/ CETUS
<i>As above</i>	Dorsal fin	Tuscan Archipelago	8	75	35	<i>As above</i>
<i>As above</i>	Dorsal fin	Follonica Gulf (Tyrrhenian Sea)	3	Y	10	Luigina Fattorosi /DELPH
<i>As above</i>	Dorsal fin	Aeolian arcipelago (Tyrrhenian Sea)	15	Y	In progress	Monica Francesca Blasi/ISS-MRN; Blasi et al., 2007.
<i>As above</i>	Dorsal fin	N.E. Saridinia	NA	Y	140	Alberto Fozzi & Francesca Magnone / CRiMM
<i>As above</i>	Dorsal fin and body marks	North-eastern coast of Sardinia	48	Y	68	Díaz López, B./BDRI; Díaz López, B. & Shirai, J. A.B. 2007; Díaz López, B. & Shirai, J.A.B. 2008
<i>As above</i>	Dorsal fin	South-western Sicily	15	Y	46	Giusi Buscaino, Gaspare Buffa, A. Bellante / IAMC-CNR-TR
<i>As above</i>	Dorsal fin	Kornati National Park - Murterski more (Croatia)	31	Y	69	Antonella Impetuoso / MLC
<i>As above</i>	Dorsal fin	NW Greece, Amvrakikos Gulf	132	Y	156	TRI

<i>As above</i>	Dorsal fin	Eastern Ionian Sea, Greece	33	Y	98	<i>As above</i>
Species	Feature	Area/stock	No. photo-id'd	Catalogue (Y/N)	Catalogue total	Contact person/institute; refs
Short-beaked common dolphin	Dorsal fin	Ligurian Sea, Italy	1	Y	3	<i>As above</i>
<i>As above</i>	Dorsal fin	Eastern Ionian Sea, Greece	10	Y	146	<i>As above</i>

3.1.2. Artificial marking data

Not relevant for Italian research projects.

3.1.3 Telemetry data

Not relevant for Italian research projects.

3.2 Analyses/development of techniques

ADG: We use photo-ID technique for abundance estimate, home range analysis and social structure analysis. We keep a bottlenose dolphin photo-ID catalogue in the eastern Ligurian Sea since 2001. Since 2006 we started to match our catalogue with research groups operating in contiguous areas (Tuscany, Corsica, Western Ligurian Sea), in order to describe the spatial behaviour of the bottlenose dolphin on a larger scale. The MCP (Minimum Convex Polygon) technique is also used for home range analysis (Mohr, 1947).

CETUS: CETUS mainly applies the following analyses to the existing datasets:

- Capture-Mark-Recapture technique by Photo-Id with abundance estimation using Schnabel, Schumacher-Eschmeyer and Jolly-Seber methods;
- G.I.S. techniques to create distributions area and sightings frequency probability;
- Respiration patterns;
- Social structure;
- Absolute abundance and fertility estimations and trends matching different years;
- Management of Photo-Id catalogue for Bottlenose Dolphins and Risso's Dolphins;
- Creation of a software to manage sightings data, to match and to find photo-identified individuals;
- Improvement about the knowledge of parentale cares in bottlenose dolphins society;
- Monitoring and improvement of the knowledge regarding cetacean behaviours in presence of fisheries, nautical activities;
- Acoustical emission analysis;
- Collecting data regarding cetacean abundance and distribution in new areas in the Tuscan Archipelago.

DIBIOGE: All sighted animals have been analyzed photographically using the matrix-photo identification and population size were estimated using the program CAPTURE. Bottlenose dolphin dorsal fin were characterized using EUROFLUKES.

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
Fin whale	Ligurian Sea, Italy	2007/summer – 0	Y	Analysis in progress	192	TRI / Cristina Fossi, Letizia Marsili, University of Siena / Martine Berubé, University of Stockholm
<i>As above</i>	Ligurian Sea	2	2	0	2	Maurizio Wurtz / DIBIOGE
Sperm whale	Ligurian Sea, Italy	2007/summer - 0	Y	3	3	TRI / Cristina Fossi, Letizia Marsili, University of Siena / Daniel Engelhaupt, University of Durham

<i>As above</i>	South-western Sicily	2007/spring - 11	Y	In progress	1	Giusi Buscaino, Gaspare Buffa, A. Bellante / IAMC-CNR-TR
Species	Area/stock	Calendar year/season - no. collected	Archived (Y/N)	No. analysed	Total holdings	Contact person/institute
Long-finned pilot whale	Ligurian Sea, Italy	2007/summer – 17	Y	0	20	TRI; LB-DSA-UNISI; LEM-UNIFI
Cuvier's beaked whale	South-western Sicily	2007/spring - 9	Y	In progress	1	Giusi Buscaino, Gaspare Buffa, A. Bellante / IAMC-CNR-TR
Risso's dolphin	Ligurian Sea, Italy	2007/summer – 0	Y	28	28	TRI / LB-DSA-US / LEM-UNIFI
<i>As above</i>	Ligurian Sea	4	Y	0	16	LB-DSA-UNISI; LEM-UNIFI
<i>As above</i>	Ligurian Sea	1	1	0	1	Maurizio Wurtz / DIBIOGE
Common bottlenose dolphin	Ligurian Sea Tyrrhenian Sea	4	4	5	4	<i>As above</i>
<i>As above</i>	South-western Sicily	2007/summer - 8	Y	In progress	1	Giusi Buscaino, Gaspare Buffa, A. Bellante / IAMC-CNR-TR
<i>As above</i>	Amvrakikos Gulf (Greece)	2007 - 6	Y	-	20	TRI
<i>As above</i>	Eastern Ionian Sea, Greece	2007 - 0	Y	-	10	TRI; LB-DSA-UNISI; Ada Natoli / University of Durham
Short-beaked common dolphin	Eastern Ionian Sea, Greece	2007 - 0	Y	-	15	<i>As above</i>
Striped dolphin	Ligurian Sea, Italy	2007/summer – 40	Y	Analysis in progress	283	TRI / LB-DSA-UNISI / LEM-UNIFI
<i>As above</i>	Ligurian Sea	4	4	0	4	Maurizio Wurtz / DIBIOGE
<i>As above</i>	South-western Sicily	2007/summer - 9	Y	In progress	1	Giusi Buscaino, Gaspare Buffa, A. Bellante / IAMC-CNR-TR
<i>As above</i>	South-western Sicily	2007/autumn - 10	Y	In progress	1	<i>As above</i>

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

Species	Area/stock	Tissue type(s)	No. collected	Archived (Y/N)	No. analysed	Contact person/institute
Common bottlenose dolphin	Aeolian Archipelago	teeth, skeleton	1	Y	0	Monica Francesca Blasi/ISS-MRN; /ISS-MRN
<i>As above</i>	Ligurian Sea Tyrrhenian Sea	Skin+blubber	4	3	3	Maurizio Wurtz / DIBIOGE
Striped dolphin	Aeolian Archipelago	Skin, teeth, skeleton	1	Y	0	Monica Francesca Blasi/ISS-MRN; /ISS-MRN
<i>As above</i>	Ligurian Sea	Skin+blubber	5	5	3	Maurizio Wurtz / DIBIOGE

4.3 Samples from stranded animals

Species	Area/stock	Tissue type(s)	No. collected	Archived (Y/N)	No. analysed	Contact person/institute
Fin Whale	Tyrrhenian Sea Ligurian Sea	Several internal organs*	4	Y	3	Maristella Giurisato & Bruno Cozzi / SperiVet Sandro Mazziariol/UNIPD-PATH / LB-DSA-UNISI
<i>As above</i>	Mediterranean Sea	Skin, muscle	2	Y	0	Nicola Maio, CSC
Sperm whales	South-western Sicily	Skin, blubber, muscle, liver,	11	Y	In progress	Giusi Buscaino, Gaspare Buffa, A. Bellante / IAMC-CNR-TR
Cuvier's beaked whale	Italian waters	As above	3	Y	In Stock	Maristella Giurisato & Bruno Cozzi / SperiVet Sandro Mazziariol/UNIPD-PATH
<i>As above</i>	Ligurian Sea	Skin+blubber, Pancreas, Liver, Lung, Kidney, Ovary, Stomach, Spleen, Heart, Melon, Brain, Pelvic bones, Uterus, Urinary bladder	54	54	7	Maurizio Wurtz / DIBIOGE
<i>As above</i>	South-western Sicily	Skin, blubber, muscle, kidney, lung, intestine, melon, stomach, teeth	9	Y	In progress	Giusi Buscaino, Gaspare Buffa, A. Bellante / IAMC-CNR-TR
Long finned pilot whale	Italian waters	Blubber, melon, skin, muscles, lungs, liver, parasites	1	Y	In Stock	Maristella Giurisato & Bruno Cozzi / SperiVet Sandro Mazziariol/UNIPD-PATH
Risso's dolphin	Italian waters	Skull	2	Y	0	<i>As above</i>
<i>As above</i>	Ligurian Sea	Skull	1	Y	0	Michela Podestà, MSNM
<i>As above</i>	Ionian Sea	Lung, brain, spleen, liver, intestine, kidney, heart, testis, penis, skin, skeletal muscle	14	Y	14	Giovanni Di Guardo/DCBSUT
<i>As above</i>	Ionian Sea	Skin, blubber, liver, muscle, brain, genital apparatus, kidney	2	Y	0	LB-DSA-UNISI
Common bottlenose dolphin	Italian waters	As above	13	Y	In Stock	Maristella Giurisato & Bruno Cozzi / SperiVet
<i>As above</i>	Tyrrhenian, Adriatic seas	Lung, brain, spleen, lymph nodes, liver, kidney, heart, stomach, blood	15	Y	15	Giovanni Di Guardo/DCBSUT
<i>As above</i>	Tyrrhenian Sea	Skin, blubber, melon, liver, muscle, brain, genital apparatus, kidney	7	Y	4	LB-DSA-UNISI

Species	Area/stock	Tissue type(s)	No. collected	Archived (Y/N)	No. analysed	Contact person/institute
Common bottlenose dolphin	N.E. Sardinia	Skin, blubber, muscle, liver, kidney,	1	Y	0	Alberto Fozzi & Francesca Magnone / CRiMM
<i>As above</i>	South-western Sicily	Skin, blubber, muscle, heart, liver, kidney,	8	Y	In progress	Giusi Buscaino, Gaspare Buffa, A. Bellante / IAMC-CNR-TR
<i>As above</i>	NW Greece, Amvrakikos Gulf	skin	1	Y	-	TRI
<i>As above</i>	NW Greece, Amvrakikos Gulf	skin, teeth, muscle, blubber, liver	1	Y	-	TRI - Maristella Giuriso & Bruno Cozzi / SperiVet
<i>As above</i>	Eastern Ionian Sea, Greece	skin, teeth, muscle, liver, kidney, blubber, teeth	1	Y	-	<i>As above</i>
Striped Dolphin	Italian waters	Skull	10	Y	0	<i>As above</i>
<i>As above</i>	Ligurian, Tyrrhenian, Adriatic seas	Lung, brain, spleen, lymph nodes, liver, kidney, heart, stomach, skin, blood serum	67	Y	54	Giovanni Di Guardo/DCBSUT
<i>As above</i>	Tyrrhenian Sea	Skin, blubber, melon, liver, muscle, brain, genital apparatus, kidney, lung, heart	9	Y	7	LB-DSA-UNISI
<i>As above</i>	Ligurian Sea	Skull	11	Y	0	Michela Podestà, MSNM
Striped Dolphin	Ligurian Sea	Skin+blubber, Pancreas, Liver, Lung, Kidney, Ovary, Stomach, Spleen, Heart, Melon, Brain, Pelvic bones, Uterus, Urinary bladder	40	40	9	Maurizio Wurtz / DIBIOGE
<i>As above</i>	N.E. Sardinia	Skin, blubber, muscle, liver, kidney,	2	Y	0	Alberto Fozzi & Francesca Magnone / CRiMM
<i>As above</i>	South-western Sicily	Skin, blubber, muscle, heart, liver, kidney, lung, teeth, stomach, intestine, blood	20	Y	In progress	Giusi Buscaino, Gaspare Buffa, A. Bellante / IAMC-CNR-TR

*Formalin fixed and frozen tissues include most internal organs and the brain if undamaged. For details see: <http://www.mammiferimarini.sperivet.unipd.it/eng/index.htm>

4.4 Analyses/development of techniques

IAMC-CNR-TR: A sample of blood of one specimen of Striped dolphin stranded alive in the coast of south-western Sicily was analysed to investigate the presence of an infection of *Morbillivirus*. The results of analysis showed the absence of this infection in this specimen. The analysis of stable isotopes in the samples of all specimens stranded are in progress.

LB-DSA-UNISI: 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), polycyclic aromatic hydrocarbons (PAHs), flame retardants (BFRs) and trace elements. In the biological material of stranded specimens were valuated only residue levels: chlorinated hydrocarbons (HCB, DDTs and PCBs), polycyclic aromatic hydrocarbons (PAHs), flame retardants (BFRs) and trace elements.

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 63Ni electron capture detector and an SBP-5 bonded phase capillary column (30 m long, 0.2 mm i.d.). The carrier gas was N₂ 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 µg/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). To detect Flame Retardants (PBDE), after extraction of samples, the extracts were analyzed on a GC/MS system (HP 6890 gas chromatograph coupled to an HP 5973 low-resolution mass spectrometer) using both EI and negative-chemical ionization (NCI) on an HP-5MS (5% phenyl methyl siloxane) capillary column, according to Pettersson *et al.* (2004). For the trace elements analysis, lyophilised and homogenised samples were acid-digested and analysed for trace elements using Atomic Absorption Spectrometry (AAS) and Emission Spectrometry (AES). Particularly FIMS-AAS (Flow Injection Mercury System) for determining Hg, THGF-AAS (Transversely Heated Graphite Furnace) and ICP-AES (Inductively Coupled Plasma).

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% CO₂, 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 (Fig. 1). 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: 1µg/ml, 5µg/ml and 25µg/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.

5. POLLUTION STUDIES

IAMC-CNR-TR: In progress.

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), PAHs and trace elements in cetaceans from the Mediterranean Sea since many years. A new research investigate on the levels of flame retardants in cetaceans. **See 4.4 Section.**

6. STATISTICS FOR LARGE CETACEANS

6.1 Corrections to earlier years' statistics for large whales

This section does not apply to Italian activities.

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

This section does not apply to Italian activities.

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		2	21/07/2006 08/07/2006	Ligurian Sea			X	During whale survey	TRI
* These two fin whales have been observed free-ranging at sea with scars related to a previous ship collision .									
Key: High-speed Ferry (HSF), Large Cargo (LC), Military (M), Fishing Vessel (FV), Passenger Carrying Excursion (PC), Other (O). The whale swam away (X); the whale appeared seriously injured (I); the whale was killed (D).									

6.3.2 Fishery bycatch of large whales

None.

7. STATISTICS FOR SMALL CETACEANS

CoNISMa: Council Regulation (EC) No 812/2004 requires Italy 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. Within the Italian programme, in 2007, over 1000 hauls were observed. None cetacean bycatch event was recorded.

7.1 Corrections to earlier years' statistics for small cetaceans

None.

7.2 Direct catches of small cetaceans for the calendar year 2006

This section does not apply to Italian activities.

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)

Species	Sex	No.	Date	Location	Vessel type	Speed	Fate	How observed	Contact person/ institute and refs
Striped dolphin	M	1	23/8/06	San Remo (IM), Ligurian Sea	U	U	D	Post mortem	Michela Podestà, MSNM

7.3.2 Fishery bycatch of small cetaceans

Species	Sex	No.	Date	Location	Fate	Targeted fish species	Gear	How observed?	Source or contact
Common bottlenose dolphin	M	1	6/7/06	Siniscola	D	U	U	M	CRiMM
As above	U	1	January 06	(40°59N, 009°37E)	D	-----	NSC*	DA	Bruno Díaz López / BDRI
As above	U	1	March 06	U	D	<i>Mullus surmulletus</i>	GTR**	Photo	Bruno Díaz López / BDRI
As above	M	1	05/07/07	Mazara del Vallo (TP)	D	Not available	Not available	Stranded ***	Giuse Buscaino, Gaspare Buffa, A. Bellante / IAMC-

<i>As above</i>	M	1	06/05	N38°34'/E01 4°37'	death	Not available	LX	Post mortem ****	Monica Francesca Blasi/ISS-MRN
Common bottlenose dolphin	M	1	06/07	N38°34'/E01 4°37'	death	Not available	Pobably GND	Post mortem ****	Monica Francesca Blasi/ISS-MRN
Striped dolphin	F	1	06/06	N38°34'/E01 4°37'	death	<i>Xiphias gladius</i>	GND	Post mortem ****	Monica Francesca Blasi/ISS-MRN
Comments: *Incidental capture in aquaculture antipredator nets (NSC). (Díaz López, B. & Shirai, J. A.B. 2007); **Entangled in gear; *** Founded stranded with the fins cut off; ****Entangled in driftnets, cut off and floating on water.									

8. STRANDINGS

CIBRA & MSNM: With grants from the Ministry of Environment, the University of Pavia (CIBRA) and the Natural History Museum of Milan (MSNM) created a coordination centre for the collection and management of stranding data produced by the many stranding networks now working on the Italian coasts. Data include also bycatches and ship collisions information. The database of strandings on the Italian coasts is available online at the address: <http://mammiferimarini.unipv.it>; it includes historical data published by Centro Studi Cetacei since 1986 and data produced by the stranding networks that recently joined the coordination centre.

CRiMM: In Northeastern Sardinia the CRiMM onlus Foundation's area of jurisdiction for strandings is between Capo Ferro (Northern limit) and Capo Monte Santo (South limit), islands and islets included except those included in the National Park of La Maddalena. During 2007 there has been 7 cases of stranding of dead dolphins. In 3 cases (1 common bottlenose dolphin, 2 striped dolphin) it was possible collect tissue samples (skin, blubber, muscle, liver, kidney).

CSC: A network to monitor cetacean stranding along the Italian coasts has been operating since 1986 coordinated by CSC, resulting in annual stranding reports as well as scientific outputs. Activities are in cooperation with other Institutions. In year 2002 CSC turned into an NGO taking the name of CSC Onlus - Italian Association for the study of marine reptiles and mammals. On Dec 2007 the new Board has been elected. The contact person is Alessandro Bortolotto, president of the CSC <centrostudicetacei@libero.it>. Data regarding strandings that occurred along the coasts of Italy during the year 2007 are presently being collected, filed and examined (contact persons: CSC Board; www.centrostudicetacei.org).

IAMC-CNR-TR: A research program aimed at monitoring cetacean stranding along the south-western Sicilian coast is working since 1999 at the IAMC-CNR of Mazara del Vallo. The study covered an area of 80 Km between Marsala (TP) and Sciacca (TP). Twenty-three single stranding events of cetaceans were recorded from 1999 to date in the coast of south-western Sicily. The strandings of the years 2006 and 2007 are reported in the following table.

SperiVet: With grants from the Ministry of Environment, the University of Padua maintains a tissue bank for cetacean specimens. Details on the tissues in stock and procedure on how to obtain the are available at <http://www.mammiferimarini.sperivet.unipd.it/eng/index.htm>.

Strandings occurred in 2006				
Species	No. strandings	No. post mortems	Contact person(s)/ Institute(s)	Contact email address(es)
Fin whale	2	2	Michela Podestà/ MSNM & Gianni Pavan/CIBRA; Sandro Mazzariol / UNIPD PATH	bancadatispiaggiamenti@hotmail.it ; sandro.mazzariol@unipd.it
Pilot whale	2	1	Michela Podestà/ MSNM & Gianni Pavan/CIBRA; Sandro Mazzariol / UNIPD PATH	bancadatispiaggiamenti@hotmail.it ; sandro.mazzariol@unipd.it
Cuvier's beaked whale	6	1	Michela Podestà/ MSNM & Gianni Pavan/CIBRA; Maurizio Wurtz / DIBIOGE	bancadatispiaggiamenti@hotmail.it ; Menkab.unige@gmail.com
Risso's dolphin	5	3	Michela Podestà/ MSNM & Gianni Pavan/CIBRA; Giovanni Di Guardo/DCBSUT; Sandro Mazzariol – UNIPD PATH	bancadatispiaggiamenti@hotmail.it ; gdiuardo@unite.it ; sandro.mazzariol@unipd.it
Common bottlenose dolphin	5	5		gdiuardo@unite.it
As above	2	-		sandro.mazzariol@unipd.it
As above	28	5	Michela Podestà/ MSNM & Gianni Pavan/CIBRA; Giovanni Di Guardo/DCBSUT; Sandro Mazzariol – UNIPD PATH	bancadatispiaggiamenti@hotmail.it ; gdiuardo@unite.it ; sandro.mazzariol@unipd.it
As above	1	0	Federica Maggiani/MPA-CC	f.maggiani@amcpapocarbonara.it
Short-beaked common dolphin	1	0	As above	f.maggiani@amcpapocarbonara.it

Species	No. strandings	No. post mortems	Contact person(s)/ Institute(s)	Contact email address(es)
Short-beaked common dolphin	1	0	Michela Podestà/ MSNM & Gianni Pavan/CIBRA	bancadatispiaggiamenti@hotmail.it
Striped dolphin	23	16	Michela Podestà/ MSNM & Gianni Pavan/CIBRA; Giovanni Di Guardo/DCBSUT; Maurizio Wurtz / DIBIOGE	bancadatispiaggiamenti@hotmail.it ; gdiuardo@unite.it ; Menkab.unige@gmail.com
Undetermined	9	0	Michela Podestà/ MSNM & Gianni Pavan/CIBRA	bancadatispiaggiamenti@hotmail.it

Strandings occurred in 2007				
Species	No. strandings	No. post mortems	Contact person(s)/ Institute(s)	Contact email address(es)
Fin whale	5	3	Michela Podestà/ MSNM & Gianni Pavan/CIBRA	bancadatispiaggiamenti@hotmail.it
Sperm whale	2	0	<i>As above</i>	bancadatispiaggiamenti@hotmail.it
Cuvier's beaked whale	3	1	Michela Podestà/ MSNM & Gianni Pavan/CIBRA	bancadatispiaggiamenti@hotmail.it
Pilot whale	2	1	Michela Podestà/ MSNM & Gianni Pavan/CIBRA	bancadatispiaggiamenti@hotmail.it
Risso's dolphin	3	1	<i>As above</i>	bancadatispiaggiamenti@hotmail.it
Common bottlenose dolphin	32	6	<i>As above</i>	bancadatispiaggiamenti@hotmail.it
Striped dolphin	37	13	Michela Podestà/ MSNM & Gianni Pavan/CIBRA	bancadatispiaggiamenti@hotmail.it
Undetermined	13	0	Michela Podestà/ MSNM & Gianni Pavan/CIBRA	bancadatispiaggiamenti@hotmail.it

9. OTHER STUDIES AND ANALYSES

ADG: According to our results, the bottlenose dolphin habitat in the Ligurian Sea is confined within the 100m isobath (Caltavuturo *et al.*, 2005; Gnone *et al.*, 2005; Manfredini *et al.*, 2007). Two different bottlenose dolphin communities live along the Eastern Ligurian coast: community A, located between Portofino (west) and Punta Mesco (east), having a few exchanges with contiguous areas; community B, located between Punta Mesco (west) and Punta Bianca (east), having a lot of exchanges with southern areas. Community A consists of approximately 45 individuals (2006, closed population estimators - Schnabel, 1938; Schumacher-Eschmeyer, 1943). Community B consists of approximately 120 individuals (2006, open population estimator – Jolly, 1965; Seber, 1965) (Gnone *et al.*, 2006; Nuti *et al.*, 2006; Frigerio, 2008). The two different communities seem very different in terms of newborn presence ($A > B$), average number of individuals per sighting ($A > B$), individual home range ($A > B$) and also for the amount of dorsal fin marks ($A < B$) (Frigerio *et al.*, 2008; Saporiti *et al.*, 2008). These results suggest a natal attraction phenomenon (Mann and Smuts, 1998), producing aggregations of females. Dolphins sighted between Punta Mesco (west) and Punta Bianca (east) show a frequent association with trawlers (Bellingeri *et al.*, 2008). The pleasure boating is confined within 3 nm from the coast line. This produce a complete overlapping with the bottlenose dolphin habitat in the western portion of the research area, where the 100m isobath runs close to the coast line, and a partial overlapping in the eastern area, where the 100m isobath runs more out to sea (Manfredini *et al.*, 2007).

ARPAT: The “Tuscan Cetacean Observatory” represents the contribution of Tuscany Regional Council to a wider international initiative with the contribution of Italy, France and Principality of Monaco: the formerly known “Cetacean Sanctuary”. The Tuscany Region is planning a network system among the departments of Universities, the Regional Environmental Protection Agency (ARPAT) and the other institutions or associations in order to coordinate all the activities, both on the coast and in the sea, directed to the study and the observation of marine mammals. The involvements with the Italian Government, the Environmental Ministry and Archipelago national Park need to be related to the regional competences and tasks facing international Organizations, European Union and the other regions involved in the project. The “Tuscan Cetacean Observatory” is open to all the public and private bodies involved with biodiversity, sea waters protection and

environmental indexes application, through the monitoring of marine mammals: this especially directed to their routes in the Mediterranean Sea, Ligurian and Tyrrhenian seas and along the coasts of Tuscany, Sardinia and southern France. The Observatory headquarter will be placed in the Capoliveri council, Elba Island (Tuscany Region, Italy). This ongoing proposal has been submitted to EU for the financing in the frame program 2007-2013.

BDRI: Other BDRI's research projects:

- Social analysis: we investigate association patterns of 249 bottlenose dolphin feeding groups off Sardinia Island (Italy) from January 2000 - May 2007, and describe how their association behaviour is related to their response to food patches created by human activities (Díaz López & Shirai, 2007; Díaz López & Shirai, 2008). We also tested the hypothesis that dolphins have different social structures with different feeding activities: associations should decrease during opportunistic feeding behaviours as it is easier to capture prey and cooperation is not as necessary. Additionally, our studies elucidate the role that habitat modification plays in producing changes in complex social structures.
- Mass-balance models: an ecosystem approach to study the effects of aquaculture on the Aranci bay (Sardinia, Italy) was implemented by using a trophic mass balance model in order to estimate the potential effects of fin fish aquaculture and, therefore, to identify the species playing a key-role in ecosystem (Díaz López et al., 2008; Bunke et al., 2008). Additionally, this study was used to evaluate the conflict between bottlenose dolphins and aquaculture. Mass-balance models were built using Ecopath software to characterise and compare the present state of the ecosystem versus a reconstructed past model representing the bay before the start of aquaculture activities. Based on the results, the possible effect of dolphins in the fish farm activities is not substantial.
- 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 fish farm was assessed combining direct observations from fish farm boats with photo-identification studies. The incidental bottlenose dolphin capture observed in large, loose predator nets (1 dolphin per month) is cause for concern, as it is questionable whether or not the bottlenose dolphins in the area can sustain incidental capture of this magnitude. The information gained from these studies shows the necessity for further regulations to be established, both in the use of predator nets and management of marine fish farms (Díaz López, B. & Shirai, J.A.B. 2007; Díaz López, B. & Shirai, J.B.A. 2008; Castel et al., 2008).
- Trial of acoustics deterrents and a study of the interactions between bottlenose dolphin and fishing activities: the deployment trial was carried out on commercial fishing trips from Golfo Aranci (Sardinia) over the course of the summer. Our results show that the use of Pingers has an effective mitigation in the negative interaction between dolphins and fishing, but due to the short duration of the trials (three months) does not exist definitive proves that acoustic devices have a long-term effectiveness. The factors of Dinner Bell and Habituation must be considered.
- 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.

CGC: During the 2007, Natoli conducted genetic data analysis on the following projects:

- *Taxonomy and population identity of the New Zealand common dolphin.* In collaboration with Karen Stockin (Massey University, New Zealand). We tested the taxonomic status of the New Zealand common dolphin comparing it with long and short beaked common dolphin populations from other oceans. The analysis was conducted on a total of 267 samples using mtDNA sequences. We also analysed the population structure within New Zealand waters testing whether inshore, offshore habitat use and site fidelity may have a role in determining population structure in this species. The article is in preparation.
- *Population identity of the bottlenose dolphin across the Gibraltar Strait and the Alboran Sea.* In collaboration with Ana Canadas (Alnitak, Spain), Renaud De Stephanis (CIRCE, Spain) and Susanna Garcia Tiscar (Universidad Autonoma Madrid, Spain). We analysed the population structure of the bottlenose dolphin across the Strait of Gibraltar and the Alboran Sea screening 8 microsatellite loci on 68 samples. Data were compared with an existing database including samples from other areas of the Mediterranean Sea, Black Sea and Eastern North Atlantic. The aim of the project was to test whether population boundaries may be influenced by biological (e.i oceanic currents, water temperature, primary production) rather than geographical boundaries (the actual strait). The assessment of the population identity is also relevant in the context of conservation of this species and management plans for this areas. Results were presented at the ECS Conference in 2008 and the related article is in preparation.

CIBRA: After the successful conclusion of the NEMO-ONDE Project, a new project has been setup by INFN (National Institute of Nuclear Physics), INGV (National Institute of Geophysics and Vulcanology) and CIBRA.

The new project, named LIDO (Listening Into Deep Ocean) has been granted by EEC, and will start with the deployment of a pair of underwater acoustic monitoring platforms on the eastern coast of Sicily.

ConsMed: Two projects, funded by Italian Ministry of Environment and relevant to this report, were carried out in 2007.

- 1) *USE OF ACOUSTIC DEVICES IN ORDER TO REDUCE THE INTERACTIONS BETWEEN FISHERIES AND DOLPHINS IN SANCTUARY "PELAGOS"*. The project was closed at the end of 2007 with presentation of collected and elaborated data and some consequent management indications. Various small drift nets, the so-called "ferrettare", used by fishermen in some zones inside the Sanctuary characterized as focal for the interactions, were equipped with "pinger" of three different companies. Comparison among them and results to reduce incidental by-catch are the output of the project. The compulsory application of these devices on this kind of net in the Sanctuary area is strongly advised.
- 2) *DEFINITION OF A CODE OF CONDUCT FOR THE WHALE-WATCHING, AD HOC FOR THE INTERNATIONAL SANCTUARY "PELAGOS"*. The first activity was the update of WW operators list and the presentation of a questionnaire in order to estimate the various kinds and different purposes of this activity in the Sanctuary "Pelagos". It was obtained a register of the operators of WW according to a future creation of a professional roll of High Quality Whale Watching. It has been moreover supplied a panoramic of the existing national and international specific legislations. Was translated and adapted for the Sanctuary the Code of Conduct for WW proposed by ACCOBAMS. The project was completed on march 2008.

CSC: During the year 2007, A. Bortolotto, L. Valerio and M. Tocchetti organized the 7th Italian National Conference on Cetaceans and Sea Turtles in Rome (5th and 6th of December). Over 100 participants attended the Conference that included over several oral and poster presentations and two foreign invited speakers (Niels van Elk from the Netherlands and Frances Gulland from California, USA) with the publication of a book of abstracts (both printed and .pdf version downloadable from the official web site) (Centro Studi Cetacei, 2007). On december 2nd 2006, an agreement between the CSC and Napoli's University Parthenope was signed. On may 2007, an agreement between the CSC, Istituto Zooprofilattico Sperimentale del Mezzogiorno, Napoli's Università degli Studi di Napoli Federico II and Centro Studi Ecosistemi marini was signed in order to re-organize and improve the stranding network in Regione Campania. During the year 2007 a new Museo del Mare, Sezione Animali Protetti "Carmine di Silvestro" on Mediterranean mammals and reptiles was established in Pescara (Lungomare Paolucci) with the contribution of Regione Abruzzo. Contact person within the CSC Board is Vincenzo Olivieri. Specimens coming from the activity of the CSC network are included in the exhibit.

DCBSUT: Following *post-mortem* examination, on the above biological samples obtained from striped dolphins and bottlenose dolphins found stranded lifeless in 2007 along the Italian coastline detailed histopathological investigations were carried out, coupled with in-depth immunohistochemical (IHC) (Di Guardo *et al.*, 2004), indirect immunofluorescence (IIF), reverse transcription-polymerase chain reaction (RT-PCR) (Frisk *et al.*, 1999) and serological studies against *Morbillivirus* infection, which apart from serology, yielded negative results in all dolphins under study. More in detail, the blood sera from 4 striped dolphins (1 male calf, 1 subadult female and 2 adult females) found stranded between August and September on the Ligurian Sea coast of Italy (Imperia province) showed presence of anti-*Morbillivirus* (*Canine Distemper Virus*, CDV) neutralizing antibodies, with positive titres ranging from 1:10 to 1:40.

IAMC-CNR-TR: Experiments to study the interaction (depredation) of *Tursiops truncatus* with artisanal fisheries and to assess the efficiency of an acoustic device (Pinger DDD2 STM-SEAMED) to reduce the depredation were carried out in a Mediterranean area (Egadi Island Sea, W-Sicily; April and May 2006). Two identical monofilament bottom set nets (900 m length), one of them equipped with acoustic device and the other one without, were used. For each catch, data on fished (species, weight), damages (number, position and dimensions of holes/tears), and dolphin's presences were collected. Dolphin behaviour, group composition, Photo-ID of exemplars and GPS tracks of dolphin movements were monitored simultaneously with inflatable boat surveys. A total of 58 catches were carried out. Dolphins in the fishing area were sighted 11 times over 29 (38%) confirming the interaction with fishing activities. Significant differences between control and pinger nets were detected as refers to the fished abundance and fished species.

During 2006 and 2007 a study of cetaceans population in the north western Sicilian Channel was carried out in order to provide a feasibility plan for the development of dolphin watching activities (project Seamed-dolphin "*Studio delle popolazioni di Cetacei presenti nella parte nord-occidentale del Canale di Sicilia finalizzato allo sviluppo di un attività di Dolphin-Watching*", Financed by Sicilian Government, POR 2000/2006). The project, was concluded in 2007, showed that a possible Dolphing Watchin activity could be develop in the sea area between Capo Granitola and Capo San Marco (South Sicily) for the high percent of sightings numbers (80%) of *Tursiops truncatus*.

ICRAM: Within the project "*Bycatch Italia-ACCOBAMS*", funded by the Fishery General Directorate of the Italian Ministry of Agriculture, Food and Forestry to the ACCOBAMS Secretariat, in 2007 ICRAM was in

chage of coordinating a set of scientific activities carried out in Italy. The programme, funded within the Italian commitments toward the Habitat Directive (Article 12, paragraph 4), the EC Regulation 812/2004, and the ratification Laws of ACCOBAMS (Law 27/05) and PELAGOS Sanctuary (Law 391/01), had as main objectives: i) the elaboration of standard protocols for data collection on interactions between fisheries and cetaceans within the ACCOBAMS area (a draft is currently circulating for a feedback among experts working within the ACCOBAMS area); ii) the assessment of the historical and present status of such interactions within Italian waters through a workshop, held in Rome on the 10th-11th September 2007; iii) data collection in the Tyrrhenian and Ligurian Sea in Spring-Winter 2007, and iv) the creation of an international network of experts on these issues through a synergy between ACCOBAMS and GFCM. The Workshop on the assessment of historical and present data on cetacean-fisheries interactions (bycatch and depredation) within Italian waters outlined three main points: 1) Past research programmes and present opportunistic data seem to highlight a general low level of bycatch events; however, large pelagic driftnets (both in terms of length and mesh size) and new mitigation measures against depredation, such as anti-predator nets – proved to have a high impact; 2) Potentially highly impacting illegal fishing operations were still ongoing at the time of this workshop, but the nature of such activity does not allow estimating proper bycatch rates. These operations are illegal both in terms of fishing gears' deployed (often net/s cumulatively longer than 2.5 km) and target species [species, such as swordfish, tunas, and some species of sharks, contained in Annex VIII of Regulation (EC) 894/97 and following modifications]. In addition, it is interesting to note that Article 9 of the Regulation (EC) 812/2004, stating “*from 1 January 2008, it shall be prohibited to keep on board, or use for fishing, driftnets*”, it only applies to waters of the Baltic Sea, the Belts and the Sound. Therefore, there are not restrictions applying to other European waters, including the European Mediterranean sea, apart those on net length, target species and target species' minimum length/weight; 3) In Italy there is only one independent observer scheme on pelagic trawlers, in compliance to Regulation (EC) 812/2004.

In 2007 ICRAM also concluded 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*”, devoted to produce a synthesis of the available data on some of the main human activities present in the area of the Mediterranean Pelagos Sanctuary (87,500 km²), analysing their typology and their spatial distribution. The project, coordinated by L. Tunesi and founded by the Italian Ministry of Environment, was composed by three main modules: 1- Identification and classification of the main human activities in the area of the Sanctuary and their analysis on spatial scale (researchers: S. Agnesi, A. Annunziatellis, T. Di Nora), 2- Acoustic noise (researcher: J.F. Borsani), 3- Mitigation guidelines of artisanal fishing activities (researcher: G. Lauriano). Specific attention was paid in defining specific criteria to analyse the different data typologies on GIS basis, and to identify the main lacks of information relevant in supporting the start-up of the management. This study allowed the identification of areas where human uses are more intensive to suggest the development of new specific research activities devoted to collect data essential in supporting the effective management of this pelagic Sanctuary.

ISS-MRN: In the project area bottlenose dolphin commonly access to trammel nets (GTR) of local fishermen looking for food. This can cause a permanent close contact between dolphins and human activities, which decreases the natural habituation of research for food and group size (Blasi *et al.* 2008). Data related to the use of driftnets in the waters of Filicudi Islands were also recorded in 2006 (Mussi *et al.*, 2006; Blasi *et al.*, 2006). In Filicudi Island the number of illegal fishing boats in 2006 (n=12; mean length 13,2 m, range 12-15 m) has increased, compared to the 2005 monitoring season (n=7). A first preliminary analysis showed that in Filicudi Island the range of net length in 2006 (5,5-22 km) is quite similar to that obtained in the 2005 monitoring season (15–22,5 km). This data shows that many of the problems attaining the conservation of cetacean species in the area are related to fishing and involve socio-economic issues, i.e. tourists that buy swordfish and tuna are not informed on fishing methods, thus supporting an illegal business, as well as inhabitants that sell illegal swordfish in restaurants.

LEM-UNIFI: The Laboratory of Molecular Ecology – L.E.M.- (University of Florence, Italy) develop molecular genetic techniques to reconstruct evolutionary history of animal populations, assess levels of genetic divergence to identify units for conservation and estimate genetic relationships for reintroduction programs of endangered species. LEM works on vulnerable taxa such as Komodo dragons, wolfs, sea turtles and cetaceans.

Two ongoing cetaceans projects are: 1) Identification of “conservation units” of the striped dolphin *Stenella coeruleoalba* in the Mediterranean Sea by population genetic analysis; 2) Social Organization, individual associations and genetic patterns of Risso's dolphins (*Grampus griseus*) in the North-west Mediterranean Sea. The first project is carried out in collaboration with the Department of Environmental Sciences, Univesity of Siena, Italy, whereas the latter with Tethys Research Institute, Italy.

MSNM: The Natural History Museum of Milan coordinated with CIBRA the centre for the collection and management of stranding data produced by the many stranding networks working on the Italian coasts. Data include also bycatches and ship collisions information. Stranded animals on the Ligurian coasts were collected,

studied and osteological samples preserved in the scientific collections. Studies on age determination and bone density are carried on with SperiVet in Padua.

SperiVet: The personnel of the Department of Experimental Veterinary Science of the University of Padua continues a systemic approach at new methods of age determination involving bone density and X-ray examinations. Studies on the pathology of stranded cetacean are currently underway at the Department of Public Health, Comparative Pathology and Veterinary Hygiene of the University of Padua.

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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	