

**ITALY. PROGRESS REPORT ON CETACEAN RESEARCH, JANUARY 2005 TO DECEMBER 2005,
WITH STATISTICAL DATA FOR THE SEASON 2003/04**

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This report summarises information obtained from: Centro Interdisciplinare di Bioacustica e Ricerche Ambientali, University of Padova (CIBRA); Dipartimento di Scienze Ambientali "G. Sarfatti", Università degli Studi di Siena (DSA-UNISI); Dipartimento di Scienze Biomediche Comparate della Facoltà di Medicina Veterinaria dell'Università degli Studi di Teramo (DSBC-FMV-UNITE); Istituto Centrale per la Ricerca scientifica e tecnologica Applicata al Mare (ICRAM); Dipartimento Scienze Ambientali – Laboratorio Biomarkers, Università di Siena (LB-DSA-UNISI); Italy Mediterranean Tissue Bank for Marine Mammals, Department of Experimental Veterinary Science, University of Padua (MTBMM-UniPa); Laboratory of Animal Cognition and Comparative Neuroscience, Department of Psychology, University of Trieste and WWF-Miramare Marine Reserve (LACCN-UNITS&WWF-MMR); Centro Studi Cetacei (CSC); Tethys Research Institute (Tethys); BATTIBALENO no profit, Bottlenose Dolphin Research Institute (BDRI); Centro Ricerca Delfini - CTS Ambiente ONLUS (CRC-CTS); CE.TU.S. Centro di Ricerche sui Cetacei (CE.TU.S); Marine Life Conservation Onlus (MLC).

1. Species and stocks studied

Common name	IWC recommended scientific name	Area/stock(s)	Items referred to
Fin whale	<i>Balenoptera physalus</i>	Ligurian Sea; Tyrrhenian Sea; Mediterranean Sea	2.1.1, 2.1.2, 2.2, 3.1.1, 3.2, 4.1, 4.4, 5.9, 6.2, 9, 10, 11, 11.2,
Cuvier's beaked whale	<i>Ziphius cavirostris</i>	Ligurian Sea	2.1.1, 2.2, 3.1.1, 8, 9, 11
Sperm whale	<i>Physeter macrocephalus</i>	Ionian Sea; Tyrrhenian Sea/Ionian Sea (Strait of Messina)	2.1.1, 2.2, 3.1.1, 4.1, 4.4, 5.9, 11, 9
Long-finned pilot whale	<i>Globicephala melas</i>	Ligurian Sea	3.1.1, 4.1
Risso's dolphin	<i>Grampus griseus</i>	Adriatic Sea; Ligurian Sea; Tyrrhenian Sea/Ionian Sea (Strait of Messina), Northern Adriatic Sea	2.1.1, 2.2, 3.1.1, 4.1, 4.3, 4.4, 5.9, 9, 10, 11
Striped dolphin	<i>Stenella coeruleoalba</i>	Adriatic Sea; Ligurian Sea; Tyrrhenian Sea/Ionian Sea (Strait of Messina)	2.1.1, 2.2, 4.1, 4.3, 4.4, 5, 5.9, 7.3.1, 11, 11.2
Common Bottlenose dolphin	<i>Tursiops truncatus</i>	North and north-eastern Sardinia (including the Maddalena Archipelago National Park); Eastern Ionian Sea; north-western Greece, Amvrakikos Gulf; Northern and Central Adriatic Sea; Ligurian Sea ; Tyrrhenian Sea/Ionian Sea (Strait of Messina)	2.1, 2.1.1, 2.1.2, 2.2, 3.1.1, 4.1, 4.3, 4.4, 5, 5.9, 7.3, 7.3.3, 9, 10, 11.1., 11.2.
Short-beaked common dolphin	<i>Delphinus delphis</i>	Eastern Ionian Sea; Tyrrhenian Sea/Ionian Sea (Strait of Messina)	2.1.1, 2.2, 3.1.1, 4.1, 7.3.1, 7.3.3, 9, 10, 11

2. Sightings data

2.1 Field work

2.1.1 SYSTEMATIC

Area/stock(s)	Period	Species (# of sightings)/year	Notes	Organisation
Ionian Sea (Gulf of Catania)	February-December 2005	Sperm whales	Acoustic detection 24/24h with NEMO fixed station See chapter 9, NEMO Project and see SC-58-E19	CIBRA
North-western Greece, Amvrakikos Gulf	June – September 2005	Common bottlenose dolphins (91)/ 2005	Boat surveys; 50 daily surveys/year 2005	Tethys
Eastern Ionian Sea, Kalamos	June-September 2005	Short-beaked common dolphins (7)/2005, common bottlenose dolphins (36)/2005	Boat surveys; 66 daily surveys	Tethys
Ligurian Sea	May-October 2005	Fin whale (33)/2005, striped dolphin (173)/2005, Risso's dolphin (10)/2005, Cuvier's beaked whale (6)/2005, sperm whale (7)/2005	Boat surveys; 84 daily surveys	Tethys
Ligurian/Tyrrhenian Sea	April/August 2005	Fin whale (8)/2005, sperm whale (3)/2005, common bottlenose dolphin (7)/2005, Risso's dolphin (12)/2005, long-finned pilot whale (1)/2005, striped dolphin (30)/2005	Sailing boat Visual survey 22 transect line campaigns photo identification	Battibaleno
Ligurian e Tyrrhenian Sea, Corsican Sea Sardinian Channel	August/November 2005	Fin whale (10)/2005, sperm whale (2)/2005, common bottlenose dolphin (2)/2005, Risso's dolphin (7)/2005, long-finned pilot whale (1)/2005, striped dolphin (5)/2005	Sailing boat Visual survey 18 transect line campaigns photo identification	Battibaleno
Tyrrhenian Sea/Ionian Sea (Strait of Messina)	June-December 2005	Striped dolphin (23)/2005 Common bottlenose dolphin (14)/2005 Sperm whale (8)/2005 Risso's dolphin (1)/2005 Short-beaked common dolphin (1)/2005	Boat surveys; 80 daily surveys/year 2005	Tethys
North-eastern Sardinia (Maddalena archipelago)	2005	Common bottlenose dolphin (35)/2005	Boat surveys; 82 daily surveys	Centro Ricerca Delfini - Caprera

2.1.2 OPPORTUNISTIC, PLATFORMS OF OPPORTUNITY

Area/stock(s)	Period	Species (# of sightings)	Notes	Organisation
Northern Adriatic Sea	January - December 2005	Common bottlenose dolphins (19)	Ship surveys; 18 daily surveys/2005, across four seasons	Tethys
Central Adriatic Sea	Summer 2005	Common bottlenose dolphins (7)	Boat-based surveys; 18 daily surveys/2005	MLC

BDRJ: The study on bottlenose dolphins took place along the north-eastern coast of Sardinia (Italy). Boat-based observations were undertaken regularly between January 2005 and December 2005. 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 and dolphin sighting frequency. Observations were conducted from a 5.30m boat. In order to know the relationship of the bottlenose dolphins and aquaculture, fish farm based observations were regularly undertaken from January 2005 to December 2005. Data were collected by scientists and volunteers. On each boat-based survey, we recorded environmental and anthropogenic variables. The daily bottlenose dolphin encounter ratio (DER) was 0.43 (computed as $DER = N_s / \text{search effort (h)}$, where N_s is the total number of sightings).

CE.TU.S: Surveys are carried out in two study areas in the North Tyrrhenian Sea: the first between La Spezia and Livorno (1300 Km²) and the second around the Tuscany Archipelago (Capraia, Pianosa and Elba Islands) (2500 Km²). Work conducted from the "Krill", a 40ft catamaran, or a sailing-boat Comet Class.

2.2 Analyses/development of techniques

Area/stock(s)	Species	Methods	Results	Organisation
Ligurian Sea	Fin whale, striped dolphin, Risso's dolphin, Cuvier's beaked whale, sperm whale	Boat surveys, photoidentification, behavioural sampling	<ul style="list-style-type: none"> Habitat use Fin whale abundance Risso's dolphin abundance Population estimate Site – fidelity Behaviour, ecology, feeding habits Airoidi <i>et al.</i> in press, Gaspari <i>et al.</i> in press, Jahoda <i>et al.</i> in press; Panigada <i>et al.</i> 2005	Tethys
Ligurian/Tyrrhenian Sea	Fin whale	Sail boat Transect line campaigns – photo identification	(700 miles crossed) -Abundance distribution - -Sighting frequency - behaviour - Presence absence	Battibaleno
Tyrrhenian Sea/Ionian Sea (Strait of Messina)	Striped dolphin, common bottlenose dolphin, sperm whale	Boat surveys, photo-identification, spatial modelling	<ul style="list-style-type: none"> Encounter rates Distribution Habitat use and preferences Population estimate Site – fidelity 	Tethys
North-western Greece, Amvrakikos Gulf	Common bottlenose dolphin	Boat surveys, photoidentification	<ul style="list-style-type: none"> Sighting frequency, distribution (survey effort in 2005: 91 sightings over 623 km travelled on effort) 	Tethys
Eastern Ionian Sea	Common bottlenose dolphin	Boat surveys, photoidentification, behavioural sampling	<ul style="list-style-type: none"> Sighting frequency, distribution (survey effort in 2005: 36 sightings over 2,954 km travelled on effort) Bearzi and Costa 2005, Bearzi <i>et al.</i> 2005, 2006	Tethys
Northern Adriatic Sea	Common bottlenose dolphin	Ship surveys	<ul style="list-style-type: none"> Sighting frequency, distribution (survey effort in 2005 19 sightings over 1335 km travelled on effort) 	Tethys
Eastern Ionian Sea	Short-beaked common dolphin	Boat surveys, photoidentification, behavioural sampling	<ul style="list-style-type: none"> Sighting frequency, distribution (survey effort in 2005 7 sightings over 2,954 km travelled on effort) Agazzi and Bearzi 2005, Bearzi <i>et al.</i> 2005, 2006	Tethys
Ligurian e Tyrrhenian Sea, Corsican Sea Sardinian Channel	All species	Sail boat Transect line campaigns – photo identification	(1000 miles crossed) Distribution-Sighting frequency - behaviour- Presence absence	Battibaleno

3. Marking data

3.1 Field work

3.1.1 NATURAL MARKING DATA

Species	Feature	Area/stock	Calendar year/season/ no. photographed	Catalogue d (Y/N)	Catalogue total	Contact person/institute
Fin whale	Dorsal fin, blaze and chevron, major scars	Ligurian Sea	2005/spring-summer/not analysed yet	Y	403	Tethys
Fin whale	Dorsal fin and scarce	North Tyrrhenian Sea & Elba Island	3	Y	3	CE.TU.S.
Fin whale	Permanent mark	Ligurian/Tyrrhenian Sea	2005/ April-November/30	Y	5	Battibaleno
Sperm whale	Flukes, white body patches	Ligurian Sea	2005/spring-summer/not analysed yet	Y	40	Tethys
Sperm whale	Flukes, white body patches	Tyrrhenian Sea/Ionian Sea (Strait of Messina)	2005/summer-autumn-winter/8	Y	8	Tethys
Long-finned pilot whale	Dorsal fin	Ligurian Sea	2005/spring-summer/none	Y	68	Tethys
Cuvier's beaked whale	Dorsal fin	Ligurian Sea	2005/spring-summer/not analysed yet	Y	32	Tethys
Risso's dolphin	Dorsal fin; body scars	Ligurian Sea	2005/spring-summer/not analysed yet	Y	330	Tethys
Common bottlenose dolphin	Dorsal fin	North-western Greece, Amvrakikos Gulf	2004/summer/12 2005/summer/7	Y	112	Tethys
Common bottlenose dolphin	Dorsal fin	Eastern Ionian Sea	2004/summer/6 2005/summer/NOT ANALYZED YET	Y	66	Tethys
Common bottlenose dolphin	Dorsal fin	Northern Adriatic Sea	year 2005 /year round/7	Y	29	Tethys
Common bottlenose dolphin	Dorsal fin	Northern Adriatic Sea	2005/summer/7	Y	22	Antonella Impetuoso and Caterina Fortuna (MLC & Blue World)
Common bottlenose dolphin	Dorsal fin	Ligurian Sea	2005/spring-summer/none	Y	68	Tethys
Common bottlenose dolphin	Dorsal fin	Tyrrhenian Sea/Ionian Sea (Strait of Messina)	2005/summer-autumn-winter/22	Y	22	Tethys
Common bottlenose dolphin	Dorsal fin	Golfo Aranci (eastern Sardinia)	2005/all seasons/20	Y	24	Bottlenose Dolphin Resarch Institute – BDRI
Common bottlenose dolphin	Dorsal fin	Maddalena archipelago National Park (north-eastern Sardinia)	2005/5	Y	92	F. Magnone; Centro Ricerca Delfini, Caprera.
Common bottlenose dolphin	Dorsal Fin	North Tirrenian Sea and Elba Island	21	Y	161	CE.TU.S.
Common bottlenose dolphin	Dorsal fin	Tyrrhenian Sea/Ionian Sea (Strait of Messina)	2005/summer-autumn-winter/22	Y	22	Tethys
Short-beaked common dolphin	Dorsal fin; white patch	Eastern Ionian Sea	2004/summer/3 2005/summer/0	Y	81	Tethys

3.1.2. ARTIFICIAL MARKING DATA

NA

3.1.3 TELEMETRY DATA

NA

3.2 Analyses/development of techniques

NA

4. Tissue/biological samples collected

The Mediterranean Tissue Bank for Marine Mammals (**MTBMM-UniPa**) was established in January 2002 at the Department of Experimental Veterinary Science of the University of Padua, Italy. The bank collects fragments of tissues sampled from marine mammals stranded along the Mediterranean coastline and distributes them to scientists working in the field. Tissues are a critical resource for biomedical and innovative research in anatomy, histo-pathology, genetics and toxicology, and the bank exploits the potentials of stranded animals to serve the scientific community of dolphin and whale investigators.

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	2005/spring- summer/1	Y	-	192	Tethys / Dr. Letizia Marsili (LB- DSA-US) / Dr. Martine Berubé, University of California at Berkeley
Fin whale	Ligurian Sea	1	Y	1	131	LB-DSA-US; A. Natoli, University of Durham
Sperm Whale	Ligurian Sea	2005/spring- summer/none	-	-	3	Tethys / Dr. Letizia Marsili, (LB- DSA-US) / Daniel Engelhaupt, University of Durham
Cuvier's beaked whale	Ligurian Sea	1	Y	in progress	1	LB-DSA-US
Long-finned pilot whale	Ligurian Sea	2005/spring- summer/ none	-	-	4	Tethys
Risso's dolphin	Ligurian Sea	2005/spring- summer/1	Y	in progress	28	Tethys / Dr. Letizia Marsili, (LB- DSA-US) / Stefania Gaspari, University of Durham
Risso's dolphin	Tyrrhenian Sea (Aeolian Archipelago)	1	Y	in progress	1	LB-DSA-US
Common bottlenose dolphin	Eastern Ionian Sea	2005summer/no ne	-	-	10	Tethys / Dr. Letizia Marsili, (LB- DSA-US) / Ada Natoli, University of Durham
Common bottlenose dolphin	North-western Greece, Amvrakikos Gulf	2005/summer/n one	Y	-	8	Tethys
Common bottlenose dolphin	Tyrrhenian Sea	1	Y	1	11	LB-DSA-US)
Short-beaked common dolphin	Eastern Ionian Sea	2005/summer/n one	-	-	15	Tethys / Dr. Letizia Marsili (LB- DSA-US) / Ada Natoli, University of Durham
Striped dolphin	Ligurian Sea	2005/spring- summer/14	Y	in progress	198	Tethys / Dr. Letizia Marsili (LB- DSA-US) / Stefania Gaspari, University of Durham
Striped dolphin	Ligurian Sea	28	Y	28	185	LB-DSA-US; A. Natoli, University of Durham

4.2 Samples from directed catches or bycatches

NA

4.3 Samples from stranded animals

Species	Area/stock	Calendar year/ season total	Archived (Y/N)	Tissue type(s)*	Contact person/institute
<i>Grampus griseus</i>	Adriatic Sea	2005/1	Y	Various organs	Camilla Butti Bruno Cozzi University of Padua
<i>Common Bottlenose dolphin</i>	Northern Adriatic Sea	2	Y	None, sample in bad conditions	Paolo Zucca, University of Trieste
<i>Common Bottlenose dolphin</i>	Northern Adriatic Sea	2004/1	Y	Liver, blood, teeth, fat, brain, milk – standard	Paolo Zucca, University of Trieste
<i>Common Bottlenose dolphin</i>	Adriatic Sea	2005/5	Y	Various organs	Camilla Butti Bruno Cozzi University of Padua
<i>Common Bottlenose Dolphin</i>	Maddalena Archipelago National Park	2005/2	Y	Liver, kidney, heart, skin, blubber, muscle.	Picottini, M; Centro Ricerca Delfini, Caprera.
<i>Striped dolphin</i>	Adriatic Sea Ligurian Sea	2005/3	Y	Various organs	Camilla Butti Bruno Cozzi University of Padua
<i>Striped dolphin</i>	Maddalena Archipelago National Park	2005/2	Y	Liver, kidney, heart, skin, blubber, muscle.	Picottini, M; Centro Ricerca Delfini, Caprera.
<i>Striped dolphin</i>	Mar Ligure	2002-2004	Y	Liver, blubber, muscle, fat, stomach, melon, kidney, lung	Simonetta Corsolini/Dipartimento Scienze Ambientali, via Mattioli 4, Siena, Italy

4.4 Analyses/development of techniques

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).

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).

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. This data will be valuable for long-term field study of free-ranging cetaceans. 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

(Mascia Brunelli, Milan, Italy) + 10% gamma irradiated fetal calf serum (Mascia Brunelli) + 1% MEM Not Essential Aminoacids (NEAA) solution 100X (Mascia Brunelli) + 1% Penicillin/Streptomycin 100X (Mascia Brunelli) + 0.1% Amphotericin B 100X (Mascia Brunelli) 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) (Mascia Brunelli) containing antibiotic (Penicillin/Streptomycin 100X (Mascia Brunelli) and antimycotic (Amphotericin B 100X (Mascia Brunelli)) 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 (Mascia Brunelli) 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.

DSA-UNISI: Tissue samples of stranded dead animals were analysed in order to detect persistent organic pollutants (chlorinated hydrocarbons).

5. Pollution studies

LB-DSA-US: 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 4.4 Section.**

CSC & LB-DSA-US: Samples from 4 specimens collected in the Tyrrhenian sea (brain, blubber, liver and muscle from 2 striped dolphins and 2 bottlenose dolphins) were analysed by the LB-DSA-US to verify levels of PCBs, DDTs e HCB.

LB-DSA-US & Fondazione Cetacea: Samples from 2 specimens collected by the Fondazione Cetacea in the Adriatic sea (brain, blubber, liver and muscle from 1 bottlenose dolphin and 1 Risso's dolphin) were also analysed by the LB-DSA-US to verify levels of PCBs, DDTs e HCB.

DSA-UNISI: The Department of Environmental Science of the University of Siena (Italy) has carried out research on the presence of chlorinated hydrocarbons (PCBs, pesticides, PCDDs, PCDFs) and the relative dioxin Toxic Equivalents (TEQs) in cetaceans from the Mediterranean Sea since many years.

CRC-CTS: Between August 2002 and December 2005, 22 stranded dolphins were found along the north-eastern coast of Sardinia. Of these, 10 animals were identified as bottlenose dolphins (*Tursiops truncatus*), 11 as striped dolphins (*Stenella coeruleoalba*) and 1 as rough-toothed dolphin (*Steno bredanensis*). Eight specimen were found in good condition (4 bottlenose dolphins: 1 newborn, 1 juvenile, 1 sub-adult, 1 adult; and 4 striped dolphins: 2 newborn, 2 adults) and were dissected to take tissue and organ samples, to investigate the bioaccumulation of heavy metals and PCBs. The highest concentrations of mercury (Hg) were found in the liver, followed by the kidneys, lungs, muscle and skin. In the liver of the bottlenose dolphin (adult, female) were found 456,4 ppm/w.w. The PCBs highest concentrations were found in the blubber, 12,24 ppm/w.w. (Picottini, 2005)

6. Statistics for large cetaceans

6.1 Direct catches (commercial, aboriginal and scientific permits) for the calendar year 2004

NA

6.2 Non-natural mortality for the calendar year 2004

Species	Area/stock	Males	Females	Total	Cause	Methodology
Fin whale	Mediterranean Sea	1	2	3	Ship strike	Post mortem

See Table below for details.

6.2.1 STRANDINGS OR DEAD WHALES ENCOUNTERED AT SEA

Please indicate how the cause of death was determined (Det.): N = full necropsy, V = visual observation entangled, cuts, etc., U = could not be determined. Provide a contact that can give further details if needed.

Whale species	Sex	Location	Cause of death	Det.	Source or contact institution, contact name and telephone and/or e-mail
A. Fin whale	U	Capo Frasca (Oristano)	U	U	Centro Studi Cetacei Onlus e Museo Civico di Storia Naturale di Milano 2004; Table compiled by Michela Podestà, michela_podesta@hotmail.com
B. Fin whale	U	S. Marinella (Roma)	U	U	Same as above
C. Fin whale	F	43° 56,8 N - 008° 40,0 E	U	U	Centro Studi Cetacei Onlus e Museo Civico di Storia Naturale di Milano 2006; Table compiled by Michela Podestà, michela_podesta@hotmail.com
D. Fin whale	F	43° 41,1 N - 007° 54,5 E	aborted foetus	N	CSC (centrostudicetacei@libero.it) & Natural History Museum (IWC) Contact person: Michela Podestà, michela_podesta@hotmail.com
E. Fin whale	M	Genova harbour	Ship strike	V	Same as above
F. Fin whale	F	Genova harbour	Ship strike	V	Same as above
G. Fin whale	F	Livorno harbour	Ship strike	V	Same as above
H. Sperm whale	U	S. Marinella (Roma)	U	U	Centro Studi Cetacei Onlus e Museo Civico di Storia Naturale di Milano 2004; Table compiled by Michela Podestà, michela_podesta@hotmail.com
I. Sperm whale	U	Lerici (La Spezia)	U	U	Centro Studi Cetacei Onlus e Museo Civico di Storia Naturale di Milano 2006; Table compiled by Michela Podestà, michela_podesta@hotmail.com
J. Sperm whale	M	5 miles SouthWest Ischia (Napoli)	U	U	Same as above
K. Sperm whale	U	Beach on Pantelleria Island	U	U	Same as above
Comments: D. With placenta. E and F. Propeller wounds. G. In port on bow of ferry.					

6.2.2 OBSERVED OR REPORTED SHIP STRIKES

Please indicate type of vessel, e.g. High-speed Ferry (HSF), Large Cargo (LC), Military, Fishing Vessel (FV), Passenger Carrying Excursion (PC), Other (O). Fate: Indicate if the whale swam away (X), appeared seriously injured (I), killed (D).

Whale species	Sex	Date	Location	Vessel type	Speed	Fate	Source or contact
A. Fin whale	M	03/05	Genova harbour	U	U	D	CSC (centrostudicetacei@libero.it) & Natural History Museum (IWC Contact person: Michela Podestà, michela_podesta@hotmail.com)
B. Fin whale	F	09/05	Genova harbour	U	U	D	Same as above
C. Fin whale	F	10/05	Livorno harbour	O	U	D	Same as above
Fin whale (D)	U	27.08.2002	Muggia north italian coast north Adriatic sea	O	0	X	Francesco Zuppa Miramare marine reserve

Comments: A and B. Propeller wounds. C. In port on bow of ferry "MobyAki" of the Moby Line. (D) the animal entered inside a touristic harbour and there were several contacts with the harbour docks and vessels without any damage; it has been helped to leave the harbour with the assistance of a Coastguard boat

CSC: Earlier years' statistics for both whales and small cetaceans are available for the period 1986-1995 (Bortolotto and Podestà 1997) included in Borri *et al.* (1997) and for the period 1986-2001 (Podestà and Bortolotto 2001, Bortolotto and Podestà 2004). In the calendar year 2004, 129 specimens belonging to the order Cetacea were recovered along the coasts of Italy (Centro Studi Cetacei e Museo di Storia Naturale di Milano 2006). The CSC 2005 report on strandings is in preparation (contact person: M. Podestà, Natural History Museum of Milan and Luigi Valerio, Parco Regionale Riviera di Ulisse of Gaeta).

6.2.3 FISHERY BYCATCH

Whale species	Sex	Date	Location	Fate	Targeted fish species	Gear	How observed?	Source or contact
A. Humpback whale	U	04/04	Off coast of Siracusa	R	U	U	M	Centro Studi Cetacei Onlus e Museo Civico di Storia Naturale di Milano 2006; Table compiled by Michela Podestà, michela_podesta@hotmail.com
B. Sperm whale	M	07/04	Off coast Porto Tramatzu, Muravera (Cagliari)	R	U	U	M	Same as above
C. Sperm whale	U	08/04	50 miles SouthWest Capo Palinuro (Salerno)	R	swordfish	GND	DA	Same as above

Comments: A. released the day after. B. two specimens entangled together. C. five specimens entangled together; two released the same day of the first sighting, three released the day after.

FAO FISHING DESCRIPTION AND CODES

FAO FISHING GEAR CATEGORIES: GILLNETS AND ENTANGLING GEAR

Set gillnets (anchored)
Driftnets

GNS
GND

6.3 Earlier years' statistics

This would be a place to include any corrections to statistics presented in earlier years. It may also be appropriate to include references to studies that utilise time series of data here.

7. Statistics for small cetaceans

7.1 For the calendar year 2004

See below.

7.2 Direct catches (commercial, aboriginal and scientific permits)

NA

7.3 Non-natural mortality for the calendar year 2003 and 2004

Species	Area/stock	Males	Females	Total	Cause	Methodology
A. Risso's dolphin	Mediterranean Sea	1		1	Bycatch	Visual
B. Common bottlenose dolphin	Mediterranean Sea	2	1	6	Bycatch	Visual
C. Striped dolphin	Mediterranean Sea	2	2	8	Bycatch	Visual

See Table in paragraph 7.3.3.

7.3.1 STRANDINGS OR DEAD SMALL CETACEANS ENCOUNTERED AT SEA

Species	Sex	Location	Cause of death	Det.	Source or contact institution, contact name and telephone and/or e-mail
Common bottlenose dolphin (1)	?	Beach of Partaccia Marina Di Massa	Ship strike?	U	CE.TU.S., Police and ASL (Sanitary Unit) cetus@supereva.it
Common bottlenose dolphin	?	Floating at sea near Kalamos, Ionian Greece	Bycatch	-	Tethys
Risso's dolphin (2)	?	Beach of Marina di Carrara	?	U	CE.TU.S., Police and ASL (Sanitary Unit) cetus@supereva.it
Short-beaked common dolphin	?	Paleros, Ionian Greece	Bycatch	-	Tethys
Striped dolphin	F	Tyrrhenian Sea/Ionian Sea (Strait of Messina)	?	-	Tethys

Comments: (1) Deep and long cut on the left side; (2) Advanced state of decay.

7.3.2 OBSERVED OR REPORTED SHIP STRIKES

NA

7.3.3 FISHERY BYCATCH

Species	Sex	Date	Location	Fate	Targeted fish species	Gear	How observed?	Source or contact
A. Risso's dolphin	M	05/04	Villasimius (Ca)	D	U	U	M	Centro Studi Cetacei Onlus e Museo Civico di Storia Naturale di Milano 2006; Compiled by Michela Podestà, michela_podesta@hotmail.com
B. Common Bottlenose dolphin	M	01/03	Eboli (Salerno)	D	U	U	DA	Centro Studi Cetacei Onlus e Museo Civico di Storia Naturale di Milano 2004; Compiled by Michela Podestà, michela_podesta@hotmail.com
C. Common Bottlenose dolphin	U	04/03	Arbatax (Nuoro)	D	U	U	M	Centro Studi Cetacei Onlus e Museo Civico di Storia Naturale di Milano 2004; Compiled by Michela Podestà, michela_podesta@hotmail.com
D. Common Bottlenose	U	06/03	Orbetello (Grosseto)	D	U	U	M	Same as above
E. Common Bottlenose dolphin	U	03/04	Civitavecchia (Roma)	D	U	U	DA	Centro Studi Cetacei Onlus e Museo Civico di Storia Naturale di Milano 2006; Compiled by Michela Podestà, michela_podesta@hotmail.com
F. Common Bottlenose	F	07/04	Porto Tolle (Rovigo)	D	U	U	DA	Same as above
G. Common Bottlenose	M	10/04	Ostia (Roma)	D	U	U	M	Same as above
Common bottlenose dolphin (1)	?	19 July 2005	Floating at sea near Kalamos, Ionian Greece	D	-	-	Floating adrift	Tethys
Common Bottlenose dolphin	U	Nov/04	U	R	Red mullet	GTR	A	Org.: BDRI Contact: Bruno Díaz, B_D_R_I@yahoo.com
Common Bottlenose dolphin	M	12/05	40°59'N; 009°38'E	D	Red mullet	GTR	M	Org.: BDRI Contact: Bruno Díaz, B_D_R_I@yahoo.com
H. Striped dolphin	U	05/03	Villa S.Giovanni (Rc)	D	U	U	DA	Centro Studi Cetacei Onlus e Museo Civico di Storia Naturale di Milano 2004; Compiled by Michela Podestà, michela_podesta@hotmail.com
I. Striped dolphin	U	06/03	Pizzo Calabro (VV)	D	U	U	M	Same as above
J. Striped dolphin	U	07/03	Vibo Valentia	D	U	U	M	Same as above
K. Striped dolphin	M	07/03	Curinga (Cz)	D	U	U	M	Same as above
L. Striped dolphin	U	07/03	Bruzzano (Rc)	D	U	U	M	Same as above
M. Striped dolphin	M	07/03	S. Croce (Rg)	D	U	U	M	Same as above
N. Striped dolphin	F	08/03	Quartu (Ca)	D	U	U	M	Same as above
O. Striped dolphin	F	07/04	Muravera (Ca)	D	U	U	M	Centro Studi Cetacei Onlus e Museo Civico di Storia Naturale di Milano 2006; Compiled by Michela Podestà, michela_podesta@hotmail.com
Short-beaked common dolphin	?	Early April 2005	Floating at sea near Paleros, Ionian Greece	D	-	-	Stranded	Tethys
Comments: none. (1) See Table above.								

7.4 Earlier years' statistics

Species	2002		Indirect		Live Rep.	2003		Indirect		Live Rep.	2004		Indirect		Live Rep.
	Direct		Rep.	Est. total		Direct		Rep.	Est. total		Direct		Rep.	Est. total	
	Rep.	Est. total				Rep.	Est. total				Rep.	Est. total			
Striped dolphins	-	-	8	-	-	-	-	1+6 ^a	-	-	-	-	1	-	-
Common Bottlenose dolphins	-	-	1	-	-	-	-	3	-	-	-	-	3	-	-
Common dolphins	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-
Risso's dolphins	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-
Unid. dolphins	-	-	2	-	-	-	-	-	-	-	-	-	1	-	-

Compiled by Michela Podestà Natural History Museum of Milan (Centro Studi Cetacei 2003, ^aICRAM, unpublished data; Centro Studi Cetacei Onlus e Museo Civico di Storia Naturale di Milano 2004, Centro Studi Cetacei Onlus e Museo Civico di Storia Naturale di Milano 2006).

8. Strandings

Focal institutions/individuals who can be contacted:

- Banca Italiana Tessuti, Prof. Bruno Cozzi, Department of Experimental Veterinary Science, Viale dell'Università 16, 35020 Legnaro (PD), Italy (bruno.cozzi@unipd.it)
- CSC Onlus - Italian Association for the study of marine reptiles and mammals. The contact person is Alessandro Bortolotto, president of the CSC (centrostudicetacei@libero.it).
- Paolo Zucca DVM Ph D, Laboratory of Animal Cognition and Comparative Neuroscience, Department of Psychology, University of Trieste, Via S. Anastasio, 12 - 34100 Trieste Italy, Mobile: +39-339-6777224 Fax: +39-040-636479 E-mail: zucca@units.it web: http://www.psico.units.it/labs/acn-lab/eng_p/e042b1_stres.html
- Francesco Zuppa Biologist, WWF-Miramare Marine Reserve, Viale Miramare, 349 – 34014 Trieste Italy, +39-040-224147, e.mail zuppa@riservamarinamiramare.it web www.riservamarinamiramare.it

9. Other studies and analyses

DSBC-FMV-UNITE: The Department of Comparative Biomedical Sciences of the Veterinary Faculty of the University of Teramo is focused on stranded cetacean pathology, particularly on morbillivirus. The team led by Prof. Giovanni Di Guardo is cooperating with Prof. Seamus Kennedy (Agri-Food and Biosciences Institute of Northern Ireland, Veterinary Sciences Division, UK).

CIBRA: In 2005 it was completed the Mediterranean database and GIS of Cuvier's beaked whales strandings. A paper was submitted to the Journal for Cetacean Research and Conservation (Podesta et. al., in press). The work was carried out in cooperation with the Civic Museum of Natural History of Milan (Italy), the SPAWAR Center (San Diego, US), the NURC (NATO Undersea Research Center, La Spezia, Italy), and colleagues from other Mediterranean countries.

Acoustic Surveys - In year 2005 CIBRA participated to two research cruises aimed at performing combined visual / acoustic surveys (ZIPHIUS 05 and CEDAR 05) and comparing different detection techniques, including radar imaging of the sea surface (CEDAR 05). In both sea trials the PAM (Passive Acoustic Monitoring) workstation developed by CIBRA was extensively used. In the CEDAR cruise continuous 24/24h monitoring was performed with 48kHz bandwidth and real-time GIS plotting of detected acoustic events to be correlated with visual sightings and radar detections. In late September 2005 CIBRA was in charge of the bioacoustic part of a wide NURC (NATO Undersea Research Center, La Spezia, Italy) research campaign (Ziphius '05) in the Ligurian Sea to study Cuvier's beaked whales, characterize their habitat, and possibly remotely record their acoustic signals. Up to five different platforms worked at the same time, with different tasks. CIBRA team was onboard the Krill, a 12 meters long catamaran, with the CIBRA PAM equipment based on a high quality towed array, now improved with a wideband low-noise front-end to allow digital recording with nearly 92 kHz bandwidth. The use of the improved PAM equipment allowed the successful acoustic detection of diving Cuvier's beaked whales; for the first time sub-surface hydrophones recorded click series with features exactly matching the description given by Johnson et al. 2005 (based on D-TAG recording). This result is relevant for setting up affordable and easy to use equipment to be used for mitigation operations in areas where the presence of Cuvier's beaked whales must be estimated and monitored.

PAM Workstation for the implementation of mitigation procedures - The PAM (Passive Acoustic Monitoring) equipment developed at CIBRA (Pavan & Manghi, 2004; Pavan et al., 2004), to be used for both research and the implementation of mitigation policies, has been improved to meet new requirements for the accurate measure

of short-term and long-term underwater noise statistics. It was used in seismic surveys in the Pacific Ocean and in the Atlantic Ocean on board of the RV Ewing (Columbia University, Lamont-Doherty Earth Observatory) to implement NMFS (National Marine Fishery Service, USA) Permits. The PAM equipment was also improved to support the detection of Cuvier's beaked whales by expanding the bandwidth and lowering the self-noise. Extensively tested in the ZIPHIUS 05 cruise it allowed the positive detection of a couple of beaked whales diving at less than 1 nautical mile of distance. This result is relevant for setting up equipment to be used for mitigation operations in areas where the presence of Cuvier's beaked whales is expected and has to be carefully monitored.

NEMO Project - Within the large NEMO Project that addresses the underwater detection of high energy neutrino (Riccobene et al., 2003; Riccobene et al., 2004), an experimental deep station, named ONDE, has been developed to measure underwater acoustic noise. It has been placed on the sea bottom 21 km East offshore Catania at 2000 m depth. It is connected to the shore labs through electro-optical cables to provide real-time monitoring and it is operating since the end of January 2005. The main experiments hosted by the station concerns the study of the underwater acoustic environment to develop the strategies required for the acoustic detection of acoustic pulses generated by high energy neutrino passing through water. The experiment is highly interdisciplinary and other than providing long term data on the underwater noise, it also provides an unique opportunity to study the acoustic emissions of marine mammals living in the area or passing through it during their seasonal movements within the Mediterranean basin. Four calibrated broad-band hydrophones, sampled at 96 kHz, send digital data to the shore lab 24/24h; as the continuous recording was not possible due to storage space constraints (uncompressed recording would require 124GB/day), recordings were made at intervals (5minutes/hour). Nonetheless the amount of data acquired is huge (more than 2TB); data analysis is still in progress to map the sperm whales transiting in the area and possibly prove their seasonal movements. Tracking algorithms developed to track the movements of impulsive acoustic sources will reveal the movement of sperm whales whilst in the detection range and allow an accurate count and measure of their sizes. Data about fin whales has not been analyzed yet.

ICRAM: Since 2004, an introductory programme (**FormCCPP**) on protected species and areas for Italian Harbour Offices' personnel is carried out by ICRAM researchers on National scale. This project is co-financed by the *Comando Generale delle Capitanerie di Porto* and *Ministero dei Trasporti*. The programme aims to provide updated information on Mediterranean marine biodiversity to improve monitoring and surveillance activities. Particular emphasis is given to legal and monitoring aspects (including observation on wild and strandings observations) concerning cetaceans, sea turtles and cartilaginous fishes.

In 2005-2006, the Ministry of Environment funded a study (**PELAGOS**) on the "Anthropogenic impact on Cetaceans within the Pelagos Sanctuary: analysis of data series on acoustic disturbance and artisanal fishery" (Contact person: Dr. Leonardo Tunesi). This study entail the following steps: 1) assessment and spatial analysis of main anthropogenic activities impacting Cetaceans (GIS), 2) study of the acoustic disturbance, and 3) elaboration of guidelines on legal measures and/or ecological mitigations of the impact of fishery activities on cetaceans.

ICRAM is also providing technical support to the Italian Pelagos Steering Committee (Ministry of Environment) on the national measures for the conservation of marine mammals and their habitat (**CoPilot**).

LB-DSA-US: 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.

CSC: In 2005, Bortolotto and Podestà, members of the CSC Board, participated in the preparation of a multimedia CD-Rom on marine mammal biology (Cozzi 2005).

During the year 2005, A. Bortolotto, L. Valerio and M. Tocchetti organized the 6th National Conference on Cetaceans and Sea Turtles at Sperlonga (LT) (26th and 27th of November). The day before the 20th anniversary of the stranding network was celebrated in front of authorities and the press. During the celebration the agreement of moving the secretariat inside the Regional Park Riviera di Ulisse was signed.

Over 100 participants attended the Conference that included over 30 oral presentations and four invited speakers (Seamus Kennedy, Charles A. Manire, Alike M. Panagopoulou, Lucia Rueda) with the publication of a book of abstracts (both printed and .pdf version downloadable from the official web site) (Centro Studi Cetacei, 2005).

CE.TU.S: Bottlenose dolphin's population reproductive parameters; vocalizations and sounds emissions; fisheries interactions; Bottlenose dolphin's population dynamics.

Tethys: Studies carried out by Tethys Research Institute are summarised in the table below:

Area	Species	Methodology	Data analysis	Results
Ligurian Sea	Risso's dolphin	Skin swabbing, genetic analysis	Population structure	<ul style="list-style-type: none"> study started: 1997 a relatively fluid model of kin structure of the Risso's dolphins in the Ligurian population trend for female philopatry, and male dispersal. Gaspari <i>et al.</i> in press
Ligurian Sea	Risso's dolphin	Boat surveys, photoidentification	Abundance estimate	<ul style="list-style-type: none"> study started: 1998 Airoldi <i>et al.</i> in press
North-western Greece, Amvrakikos Gulf	Common bottlenose dolphin	Boat surveys, photoidentification	sighting frequency, habitat use, population dynamics, social organization, behaviour, ecology, feeding habits	<ul style="list-style-type: none"> study started: 2001 relative sighting frequency one order of magnitude higher than in the adjacent Kalamos area abundant prey resources
Eastern Ionian Sea	Common bottlenose dolphin	Boat surveys, photoidentification, behavioural sampling (focal group)	sighting frequency, habitat use, population dynamics, social organization, diurnal behaviour, ecology, feeding habits	<ul style="list-style-type: none"> study started: 1993 mean sighting frequency 0.61 groups/100km in 1997-2003 mean group size 6.8 individuals no longitudinal changes in sighting frequency and group size high levels of site fidelity for a small portion of catalogued individuals, while the majority of individuals are transient dolphins present at low but relatively stable densities throughout the study period Bearzi <i>et al.</i> 2005, 2006
Northern Adriatic Sea	Common bottlenose dolphin	Opportunistic ship surveys	Distribution, habitat use, GLM	preliminary data: <ul style="list-style-type: none"> bottlenose dolphin only regular cetacean species in the area mean encounter rate 1.10 groups/100km
Eastern Ionian Sea	Short-beaked common dolphin	Boat surveys, photoidentification, behavioural sampling (focal group)	sighting frequency, habitat use, population dynamics, social organization, diurnal behaviour, ecology	<ul style="list-style-type: none"> study started: 1993 encounter rates decreased dramatically over the study period decrease in mean group size highly resident community with low rates of immigration decline in number of encountered individuals fission-fusion society Bearzi and Costa 2005, Bearzi <i>et al.</i> 2005, 2006
Eastern Ionian Sea	Short-beaked common dolphin	collection of fish scales lost by prey during surface-feeding events	diet	<ul style="list-style-type: none"> main prey during surface feeding include sardines and anchovies Agazzi and Bearzi 2005
Ligurian Sea	Striped dolphin	Behavioural sampling (focal group)	Diurnal behaviour	<ul style="list-style-type: none"> study started: 2000 definition of behavioural categories in striped dolphins (<i>Stenella coeruleoalba</i>) in the Ligurian Sea Sanctuary in the presence of boats the presence of calves was found inversely associated to bow-riding and appeared critical in determining the attitude towards the boat. the time profiles of bow-riding events declined within the first 25 min of sampling, both in terms of duration and number of animals involved. Jahoda <i>et al.</i> in press

CRC-CTS: In standard collection of data, feeding strategies were divided into 4 categories: FCA, feeding in coastal areas (0-0,5 nautical miles from the coast); FPA, feeding in pelagic areas (over 0,5 nautical miles from the coast); FFB, feeding following fishing boats; FFN, feeding on fixed fish nets. Sightings related on feeding activities count as the 40 % of total.

Significant differences in mean group size between FCA and FPA were evidenced, with smaller groups in coastal area.

Considering data about photo-identified, it's possible to suppose an individual specialization in feeding strategies, reflecting different habitat use between sexes. In detail males seem not to use the coastal area, that it is a preferential nursery area, (Fozzi *et al.*, 2005)

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