RESEARCH ACTIVITIES AND CONSERVATION
STATUS OF CETACEANS IN ITALY (*)

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Cetacea - Italy - conservation - marine pollution - bycatch.

INTRODUCTION

There is today a general conviction in Italy, among both 
scientists and laypersons, that most if not all cetacean populations 
found in the seas surrounding the Italian peninsula and islands are 
facing serious threats to their well-being and survival (Anon., 1991). The 
awareness of such condition, which was also brought to the 
attention of the general public through frequent coverages by the 
mass media, was largely stimulated by a growing of interest towards 
cetacean ecology and conservation among many Italian zoologists.

Although the lack of information on even the approximate sizes 
of most populations involved is preventing an adequate assessment of 
the impact of human activities on these marine mammals, simply the 
large number of cetacean carcasses found in recent years in Italy is 
generating widespread concern for the conservation of Mediterranean 
cetaceans and seems to justify apprehension for their future.

Goal of this paper is to:
1. review the available knowledge of the status of cetaceans living in 
the seas surrounding Italy,

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2. outline what evidence exists of the array of environmental threats they are facing, and
3. suggest possible solutions and research directions.

Research activities

In the past cetaceans were never the subject of systematic study by Italian zoologists, the impetus for most of the older investigations being provided by episodical strandings and captures, generating largely anatomical and morphological descriptions. Italian zoologists who demonstrated a particular interest in this subject included, around the turn of the century, E.H. Giglioli, E.F. Trois, S. Richardi, E. Ninni, C. Parona and A. Carruccio; more recently, in the '50s and in the '60s, A. Boognari, G. Tamino and E. Tortone.

In July 1979 the World Wildlife Fund - Italy launched a program named "Progetto Cetacei", in cooperation with the Institute of Zoology and Comparative Anatomy of the University of Messina and the Civic Natural History Museums of Milano and Venezia, and with the support and participation of the Italian Ministry for Merchant Marine. Goals of the program consisted in the collection of information on sightings, strandings, and accidental captures of cetaceans in the seas surrounding Italy, to provide an updated description of their distribution and an indication of their relative abundance, necessary to a first evaluation of their conservation status. Several other research institutions, including the Museum of Natural History of Genova, the Museum of Zoology of Roma, and other laboratories involved in the collection and study of stranded cetaceans (Cagnolaro et al., 1986), were later involved in the program, under the coordination of A. Di Natale. Data were collected from a very large amount of sighting and stranding reports, and compiled by A. Di Natale in the reports of the International Commission for the Scientific Exploration of the Mediterranean Sea (ICSEM).

Although the scientific merit of "Progetto Cetacei" was weakened by the impossibility of verifying the quality of the data, generally thought to be rather heterogeneous, this initiative represented the first attempt of a nation-wide organized, systematic description of the conservation status of cetaceans in Italy, with the involvement of a large number of recognized research institutions, and promoting the awareness on cetaceans within the general public.
Between the end of 1985 and the beginning of 1986 the foundation of the Centro Studi Cetacei (20 October 1985, during the I National Conference on Cetaceans held in Riccione) and of the Tethys Research Institute (31 January 1986) marked the onset of a new impetus in cetacean research in Italy.

The Centro Studi Cetacei (CSC), an operational branch of the Società Italiana di Scienze Naturali, located at the Civic Nat. Hist. Museum of Milan, aimed at the promotion of knowledge of cetaceans in the Italian seas, has a membership of about 80 scientists from numerous Italian natural history and zoological museums, and from public and private research institutions (Cagnolaro, 1985) (2). The main activity carried out by the CSC consists in the creation and management of a national cetacean stranding monitoring program (Progetto Spiggamenti). Instrumental to the functioning of such program was the cooperation of a wide number of participating parties, including:

1. the Italian Ministry of Merchant Marine, which ensured the collaboration of the Coast Guard (Capitanerie di Porto);
2. personnel from the Carabinieri, Guardia di Finanza, and Guardie Forestali);
3. the 24h/day telephone answering service provided free by Europ Assistance Italia S.p.A.;
4. the World Wide Fund for Nature Italy; and finally
5. the Adriatic Sea World of Riccione.

(2) Researchers of the following Institutions collaborate with the CSC: Museo Zoologico “La Specola”, Firenze; Museo Civico di Storia Naturale, Genova; Museo Provinciale di Storia Naturale, Livorno; Museo Civico di Storia Naturale, Milano; Museo Ittico, Pescara; Museo di Storia Naturale e del Territorio, Calci (Pisa); Museo Civico di Zoologia, Roma; Museo Civico di Storia Naturale del Salento, Calimera (Lecce); Museo dell’Accademia dei Fisiocritici, Siena; Museo Civico di Storia Naturale, Venezia; Acquario Civico, Stazione Idrobiologica, Milano; Adriatic Sea World, Riccione; Dipartimento di Biologia animale e dell’Uomo, Università “La Sapienza”, Roma; Dipartimento di Biologia evoluzionistica e Dipartimento di Biologia ambientale, Università di Siena; Istituto di ricerca sulla pesca marittima del CNR, Ancona; Laboratorio di Biologia Marina, Bari; Istituto di Analisi e Tecnica farmaceutica, Università di Genova; Istituto di Zoologia, Università di Genova; Consorzio Regionale di Idrobiologia e Pesca (già I.S.T.I.P.), Livorno; Istituto di Anatomia degli animali domestici e Istituto di parasitologia, Facoltà di Medicina veterinaria, Università di Milano; Tethys Research Institute, Milano; Istituto di Parasitologia, Università “La Sapienza”, Roma; Istituto Zooprofilattico, Salerno; Istituto sperimentale talassografico, Taranto; Istituto di Anatomia Comparata, Università di Urbino.
When a stranding is reported to the CSC through the centralized answering service in Milano (phone no. 02 - 54241), mostly by personnel of the Coast Guard, a reconnaissance party is organized locally within the network of the CSC members and collaborators. Data are then collected on species, size, sex, and other parameters; a necropsy to ascertain the cause of death is performed when possible; finally, specimens are collected *in toto* or in part for preservation in museum collections and for further investigation. Recently (1990) two sub-projects were launched to further increase the potential of the *Progetto Spiaggiamenti*:

1. the monitoring of the levels of selected xenobiotic compounds (trace elements and organochlorines) in the tissues of the stranded cetaceans, coordinated by S. FOGARDI, University of Siena, and
2. the organization and training of intervention teams, specialized in the handling of live strandings, coordinated by A.L. STANZANI, Adriatic Sea World.

The stranding data collected by the CSC are published on a yearly basis on the *Atti della Società Italiana di Scienze naturali (Centro Studi Cetacei, 1987, 1988, 1989, 1990, in press).*

Unlike the *Centro Studi Cetacei*, the *Tethys Research Institute* is a private, non-profit scientific organization, managed by a small number of zoologists. The principal aim of *Tethys* is the study of the ecology and population biology of cetaceans in Italy based on recently developed methods, such as individual photoidentification, bioacoustics, the use of biopsies remotely collected from free-ranging individuals for genetic and toxicologic analyses, and the systematic sampling of behaviour. The main projects carried out by the *Tethys Research Institute* concerned the distribution and relative abundance of cetaceans in the seas surrounding Italy (*NOTARBARTOLO DI SCIARA et al.*, 1990), the ecology of fin whales in the Ligurian Sea (*ZANARDELLI et al.*, in press), the socioecology of bottlenose dolphins in the Northern Adriatic Sea (*BEARZI et al.*, in press) and in Eastern Sardinia (*BEARZI & NOTARBARTOLO DI SCIARA*, in press), the distribution of cetaceans in the Greek Ionian islands (*POLITI et al.*, in press), sperm whale bioacoustics (*BORSANI et al.*, in press), and, finally, the proposal for the institution of a Biosphere Reserve in the Ligurian-Corsican-Provençal Basin (*NOTARBARTOLO DI SCIARA et al.*, 1991).

After 1985 other initiatives were started concerning the advancement of knowledge of cetaceans in Italy, including systematic studies
on the pelagic trophic chains of the Ligurian Sea, carried out at the Institute of Zoology of the University of Genova (RELINI et al., in press), and regular surveys conducted from ferries in the Central Tyrrhenian Sea (MARINI et al., 1991).

Furthermore, notable progress was made in the promotion of the awareness of the general public, mostly through the educational activities of the Fondazione Cetacea in Riccione.

Background: cetacean species found in the Italian seas

A brief account of the cetacean species found in the Italian seas is given here, as an update from earlier reviews (CAGNOLARO et al., 1983; see also NOTARBARTOLO DI SCIARA, in press).

Regular species:

— Fin whale, *Balaenoptera physalus* (Linnæus, 1758), the only Mysticete conspicuously present in the Mediterranean, commonest in the Ligurian and Corsican Seas, and, to a lesser degree, in the remaining seas except the Adriatic Sea.

— Sperm whale, *Physeter macrocephalus* Linnaeus, 1758, the largest Odontocete and the second largest cetacean found in the Mediterranean, rarer than the fin whale, observed mostly in the deeper waters surrounding Corsica, Sardinia and Sicily. The large number of individuals found entangled in swordfish driftnets is a cause for concern about its survival in this region.

— Curvier’s Beaked whale, *Ziphius cavirostris* G. Cuvier, 1823, uncommon and seldom observed at sea, but consistently present in the stranding record along the Ligurian, Sardinian and Latial coasts.

— Long-finned pilot whale, *Globicephala melas* (Traill, 1809), not uncommon in the Ligurian Sea, although rather spotty in its distribution and frequency of occurrence.

— Risso’s dolphin, *Grampus griseus* (G. Cuvier, 1812), regularly occurring along the continental shelf edge, especially where the slope is steepest, in the Ligurian, Tyrrhenian and Ionian Seas.

— Bottlenose dolphin, *Tursiops truncatus* (Montagu, 1821), the most frequent cetacean species on the continental shelf throughout the Italian seas; the most frequent cetacean in the Adriatic Sea and in the Sicily Channel.
Striped dolphin, *Stenella coerulea* (Meyen, 1833), once poorly known and considered very rare in the Mediterranean, it has become in the last decades by large the commonest cetacean in most Italian seas, notably the Ligurian, Tyrrhenian and Ionian Seas. The increase of this species has been apparently paralleled by a decrease of Common dolphins.

Common dolphin, *Delphinus delphis* Linnaeus 1758, once considered the commonest cetacean in the Mediterraneen, as is well documented and proved by museum collection records (ARBOCCO, 1969; POGGI, 1982 and 1986), its numbers have now dramatically decreased throughout the Italian seas. The Common dolphin is represented by only 4 specimens in the last five years' stranding record (Table I) (CENTRO STUDI CETACEI, 1988, 1989, in press). Also sightings of Common dolphins have become quite rare in Italy (NOTARBOCCO DI SCIARA et al., 1990). It must be noted, however, that in the past years the Striped dolphin was often confused with the Common dolphin, as demonstrated by frequent mistaken identifications of skeletal material in the museum collections, and by misidentifications of published photographs (e.g., see TORTONESE, 1965). The extraordinary decline of Common dolphins in the Mediterranean is certainly among the most fascinating and challenging issues in the study of the ecology of Italian cetaceans.

**Occasional species (most probably wanderers from the North Atlantic Ocean):**

Minke whale, *Balaenoptera acutorostrata* Lacépède, 1804, missing from both the Italian published stranding and sighting records of the last few years.

Killer whale, *Orcinus orca* (Linnaeus, 1758), the presence of which was documented recently in the Ligurian Sea (NOTARBOCCO DI SCIARA, 1987).


Rough-toothed dolphin, *Steno bredanensis* (G. Cuvier, 1828), recently sighted in a large group (approx. 160 specimens) south of Sicily (WATKINS et al., 1987).
Accidental species

— Dwarf sperm whale, *Kogia simus* (Owen, 1866), the first and only record for the Mediterranean, represented by one specimen stranded in Tuscany in 1988 (Centro Studi Cetacei, 1989; Baccetti et al., 1990).

In addition, in older times two more accidental species were recorded in the Italian seas:

— Northern Right whale, *Eubalaena glacialis* (Müller, 1776), a specimen of which stranded near Taranto in 1877 (Capellini, 1877).


Results from the stranding monitoring program

A summary of the cetacean specimens recorded through the stranding monitoring program (*Progetto Spiaggiamenti*) of the Centro Studi Cetacei (Centro Studi Cetacei, 1987, 1988, 1989, 1990, in press), subdivided by species and by year, is shown in Table 1. Figures 1 and 2 represent respectively the species composition of the determined fraction (68.7%) of the strandings throughout the 3 year period and the geographic distribution.

Table 1 - Summary of cetacean specimens recorded in Italy through the Stranding Monitoring Program of the Centro Studi Cetacei, 1986-1990.

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Fin whale</td>
<td>5</td>
<td>5</td>
<td>—</td>
<td>4</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td>Sperm whale</td>
<td>4</td>
<td>19</td>
<td>15</td>
<td>13</td>
<td>5</td>
<td>56</td>
</tr>
<tr>
<td>Dwarf sperm whale</td>
<td>—</td>
<td>—</td>
<td>1</td>
<td>—</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td>Cuvier's Beaked whale</td>
<td>1</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>2</td>
<td>17</td>
</tr>
<tr>
<td>False killer whale</td>
<td>—</td>
<td>—</td>
<td>1</td>
<td>1</td>
<td>—</td>
<td>2</td>
</tr>
<tr>
<td>Pilot whale</td>
<td>—</td>
<td>—</td>
<td>10</td>
<td>7</td>
<td>1</td>
<td>18</td>
</tr>
<tr>
<td>Risso's dolphin</td>
<td>2</td>
<td>14</td>
<td>10</td>
<td>6</td>
<td>7</td>
<td>39</td>
</tr>
<tr>
<td>Bottlenose dolphin</td>
<td>6</td>
<td>28</td>
<td>39</td>
<td>32</td>
<td>20</td>
<td>125</td>
</tr>
<tr>
<td>Common dolphin</td>
<td>—</td>
<td>1</td>
<td>1</td>
<td>—</td>
<td>—</td>
<td>2</td>
</tr>
<tr>
<td>Striped dolphin</td>
<td>26</td>
<td>77</td>
<td>85</td>
<td>66</td>
<td>106</td>
<td>360</td>
</tr>
<tr>
<td>Undetermined</td>
<td>12</td>
<td>60</td>
<td>61</td>
<td>113</td>
<td>46</td>
<td>292</td>
</tr>
<tr>
<td>Total</td>
<td>56</td>
<td>209</td>
<td>227</td>
<td>247</td>
<td>195</td>
<td>934</td>
</tr>
</tbody>
</table>
May 1986 to 31 December 1990, for 347 (37.2%) the probable cause of death could be determined (Table 2). The principal cause of mortality (83%) among the explainable cetacean deaths is by far represented by the interference with human fishing activities, including tuna purse seine (Magnaghi & Podesta, 1987), but mostly large-scale pelagic driftnetting for swordfish, which is likely to cause the drowning of several thousands cetacean specimens every year (Podesta & Magnaghi, 1989; Notarbartolo di Sciara, 1990). Such an impressive by-catch of marine mammals, presently protected by national and international regulations, induced the Italian highest legislative bodies to suspend driftnetting in 1991 (Di Natale & Notarbartolo di Sciara, in press). This aspect will not be explored further in the present paper, as it is discussed in detail elsewhere (A. Di Natale, this volume).

Table 2 - Likely causes of death of 347 cetacean specimens found along the Italian shores and in Italian coastal waters between 15 May 1986 and 31 December 1990.

<table>
<thead>
<tr>
<th>Cause of death</th>
<th>Percent</th>
</tr>
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<tbody>
<tr>
<td>Incidental capture in fishing gear</td>
<td>83.0%</td>
</tr>
<tr>
<td>Injury, mostly from firearms</td>
<td>10.1%</td>
</tr>
<tr>
<td>Vessel ramming</td>
<td>3.5%</td>
</tr>
<tr>
<td>Ingestion of foreign objects (mostly plastic)</td>
<td>2.9%</td>
</tr>
<tr>
<td>Other (*)</td>
<td>0.6%</td>
</tr>
</tbody>
</table>

(*) Two dolphin specimens found together in the stomach of a shark (*Carcharodon carcharias*).

In comparison to by-catch in fishery operations, the remaining known mortality causes, even summed together, appear to be of minor relevance (Table 2). Thirty-five specimens belonging to 3 odontocete species (*Grampus griseus*, *Tursiops truncatus* and *Stenella coeruleoalba*) were found with what were most likely mortal injuries, largely caused by firearm bullets and hand-held harpoons. Twelve individuals, belonging to three species (*B. physalus*, *P. macrocephalus* and *S. coeruleoalba*) died as a result of a collision with surface craft. There is an extensive record in the literature concerning cetaceans (mostly belonging to the largest species) rammed by vessels or injured by propellers in the seas surrounding Italy and in the western Mediterranean: these include fin whales (Duguy, 1978; Duguy
& Vallone, 1976; Viale, 1978; Poggi 1982; Di Natale & Mangano, 1983; Duguy et al., 1983), sperm whales (Tamino, 1953; Duguy et al., 1983), pilot whales (Di Natale, 1983b; Duguy et al., 1983), common dolphins (Duguy et al., 1983), and striped dolphins (Di Natale, 1983a). Finally, 10 specimens (including G. griseus and S. coerulescens) were found with part of their digestive tract completely obstructed by foreign debris (mostly plastic), and were probably starved to death. Ingestion of plastic debris by odontocetes, including Ziphius cavirostris, has been reported before in the Italian seas (Cagnolaro et al., 1986).

Conservation status and causes of mortality of cetaceans in the Italian seas

The main difficulty in the evaluation of the conservation status of cetaceans in the Mediterranean Sea, and in the seas surrounding Italy in particular, stems from the generalized lack of knowledge of the sizes of the cetacean populations, and the consequent absence of a quantitative basis for the timely assessment of decreasing trends (Anon., 1991). The only available census of any Mediterranean cetacean species was performed on striped dolphins during summer 1991 throughout the Western Mediterranean (excluding the Tyrrhenian Sea and the Sardinia Channel), and yielded an estimate of 225,000 specimens present in that area at the time of the survey (Forcada et al., in press).

In the seas surrounding Italy the direct take of cetaceans has never been the subject of regular, organized activity. Furthermore, after 21 May 1980 a decree of the Ministry of Marchant Marine has prohibited the taking, possession, transportation and trade of all cetacean species. In addition, cetaceans are protected by the Washington Convention (CITES), of which Italy is a signatory nation. Therefore, in contrast to other regions of the world’s oceans, in Italian waters cetacean mortality caused by deliberate killing apparently has always had a modest impact on the populations involved. The harpooning of smaller, bow-riding odontocetes, partly incentivated by an illegal market for the so-called musciame (1), is limited to

(1) Musciame: word of arabic origin meaning sun-dried dolphin fillet. An illegal delicacy, it is still consumed, presumably in minor quantities, mostly in Liguria and Tuscany.
artisanal and basically opportunistic fishing activities, that are least likely to cause any appreciable effect in the populations (Giglioli, 1880; Podenzana, 1888; Ninni, 1901; Tortonese, 1965; Duguy et al., 1983). In addition, a small number of odontocete specimens is regularly found dead, with lethal whounds caused by firearms (Cagnolaro, 1969; Duguy, 1978; Centro Studi Cetacei, 1988, 1989, 1990, in press). The exact circumstances of such events are unknown; both the well-known animosity of coastal fishermen towards dolphins in general, seen as competitors and destructors of their gear (Consiglio et al., in press), and the questionable habit of some 'sport' fishermen of using cetaceans as targets for shooting practice, are plausible conjectures.

In recent years, however, the negative impact of indirect human activities on cetacean life in Italy has become far more important than the modest number of deliberate kills.

The analysis of the strandings presented above provides an indication of the major factors of mortality for cetaceans in the Italian seas, and to a certain degree allows a comparison among those factors. However, an absolute evaluation of the differential impact of all causes on the different species, and of the consequences of such impact on population sizes and distribution, is impossible at this moment.

Fishery by-catch certainly constitutes a major cause of mortality for striped dolphins.

A conservative estimate of over 3,000 striped dolphins drowned each year in drift nets in the Italian seas alone (Notarbortolo di Scion, 1990) is not sustainable if it exceeds the limit of 2% of the population (Anon., 1990), as the census performed by Forcada et al. (in press) seems to indicate.

In addition to the fisheries, also marine pollution is likely to have an important impact on Mediterranean cetacean populations (Anon., 1991). The effects of pollution, however, are even more difficult to monitor and detect. Pollution, for example, may have accounted for the stranding of an unknown number of specimens among those (62.8% of the total) for which the poor state of conservation at the time of finding or the lack of expert inspection has prevented the determination, even approximate, of the cause of death. Many Mediterranean habitats, both coastal and pelagic, are highly contaminated by heavy metals (Viale, 1978; Ferrara & Maserti, 1986; Bacci, 1989) and by chlorinated hydrocarbons (Geyer et al.,
1984), which enter the marine food chain (FOCARDI et al., 1988) and accumulate, among others, in cetaceans (VIALE, 1978; DUGUY, 1978; ALZIEU & DUGUY, 1979; CARLINI & FABBRI, 1990; FOCARDI et al., 1990, 1991, in press). Pollution from polychlorinated byphenyls (PCBs), a group of organochlorine pollutants having a well-documented capacity to depress the immune system of mammals, has also been linked to viral epizootics as a potential co-factor in the mass die-off of striped dolphins which occurred in the Western Mediterranean in 1990 and 1991 (BORRELLI & AGUILAR, 1991). Acute intoxication of an unknown origin was responsible for a die-off of striped dolphins and loggerhead turtles (Caretta caretta), which occurred along the Apulian shores (Northern Ionian Sea and Southern Adriatic Sea) in early 1987; in that occasion over 40 dolphins and 200 turtles were found dead and dying on the beach, within a limited stretch of coastline and over a span of few weeks (CARDELLICCHIO et al., 1987; CENTRO STUDI CETACEI, 1988).

Although the monitoring of the contaminant levels in the stranded cetaceans in Italy is currently performed on an opportunistic basis, a more systematic collection and analysis of tissues from the stranded animals is now being planned by the Centro Studi Cetacei. The program includes the involvement of a network of cooperating analytical laboratoires, tightly coordinated to ensure methodological uniformity and consistent calibration of standards. Programmes involving the monitoring of organochlorines in free-ranging cetaceans are being carried out as well, currently limited to fin whales and striped dolphins (FOCARDI et al., 1991, in press).

CONCLUSIONS

We propose that the main causes of man-induced mortality for the cetacean populations living in the Italian seas are:
1. incidental captures in fishing gear (mostly pelagic driftncets), and
2. marine pollution.

However, whereas the former proposition is corroborated by evidence provided by the stranding record, the latter remains to be demonstrated and explored in sufficient detail. Other causes, including direct killing, vessel ramming and ingestion of foreign debris, appear to be of minor relevance.

In conclusion, in order to provide the knowledge necessary to the
adoption of appropriate measures for the conservation of cetaceans in the Italian seas, the following measures are suggested:

1. Assessment of the sizes and demographic parameters of the main cetacean populations, through carefully designed sighting cruises and long-term individual identification programs;

2. Develop time series to monitor their variation or fluctuation patterns;

3. Monitoring of the levels and dynamics of the major contaminants in cetaceans, by analyzing biopsies collected from free-ranging animals of known sex;

4. Clinical evaluation of the pathological effects of the observed contaminant levels in cetaceans;

5. Continuation of the systematic monitoring of the causes of death of cetaceans stranded in Italy, complementing the pathological data with biological data, such as age composition and reproductive status of the stranded specimen necropsied;

6. Systematic monitoring of the cetacean by-catch by the Italian fisheries, through the establishment of an independent observers' program and of a cooperative relationship between the fishing and the scientific communities;

7. Establishment of protected areas in regions of importance for particular cetacean populations, such as in coastal areas where bottlenose dolphins still abound (Bearzi & Notarbartolo di Sciara, in press), or in pelagic areas where large feeding concentrations of cetaceans still exist (Notarbartolo di Sciara et al., 1991).
ACKNOWLEDGEMENTS

The collection of the data presented in this paper was made possible by the cooperation of a large number of zoologists, affiliated with several Italian research institutions and natural history museums, operating within the mainframe of the Centro Studi Cetacei of the Società Italiana di Scienze Naturali (Museo Civico di Storia Naturale, Milano), in cooperation with the World Wide Fund for Nature - Italy and the Adriatic Sea World of Riccione. Their invaluable contribution to the present synthesis is gratefully acknowledged. Best thanks to the Italian Ministry of Merchant Marine and to Europ Assistance for their active collaboration. A special thank to Prof. Giulio Relini, chairman of the Società Italiana di Biologia Marina, who has been responsible for the organization of this stimulating meeting, and has always been for us a source of encouragement and inspiration.

RIASSUNTO

I Cetacei dei mari italiani sono esposti a numerose minacce dirette ed ambientali indotte dall’uomo, suscettibili di incrementare la loro mortalità a livelli insostenibili. Tuttavia l’attuale mancanza di informazione in merito alla consistenza e alla dinamica delle loro popolazioni rende impossibile una pertinente valutazione dei rispettivi problemi e delle possibili soluzioni. Tra tutte le cause di mortalità due meritano particolare considerazione: l’interazione con le attività di pesca e l’inquinamento del mare. L’esame dei repertori degli spiaggiamenti indica che gli altri fattori di mortalità, quali abbattimento con armi da fuoco, smeronamenti da parte di natanti e ingestione di corpi estranei hanno minor rilevanza. Vengono individuati un certo numero di ambiti di ricerca che devono urgentemente essere avviati al fine di fornire le necessarie conoscenze per valutare e adottare appropriate misure di tutela.
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TAVOLA I: Figg. 1-6
PLATE I: Figs. 1-6

(Foto Magagni & Podestà)
Recovery of the carcass of an immature male Spermwhale (Physseter macrocephalus L.), 11.75 m long, stranded at Forte dei Marmi (Tuscany, Italy), 17 June 1988. Skeleton at the Civic Museum of Natural History of Milan.

2 - Capodoglio (Physseter macrocephalus L.), grande maschio di 19 m circa, rinvenuto vivo avvolto in rete spadara il 31 agosto 1988 al largo dell'Isola di Stromboli (Isole Eolie, Messina), liberato il 10 settembre, ritrovato il 5 nuovamente impigliato con un triplice avvolgimento di rete e liberato vicino a Lipari il 6 settembre dai sommozzatori della Guardia di Finanza di Messina e da Antonio Di Natale
(Foto Di Natale)
A large male sperm whale (Physseter macrocephalus L.), approx. 19 m long, found entangled in a pelagic driftnet on 31 August 1988 offshore of Stromboli (Eolian Islands). Released by the end of the next day, it was found entangled again in another driftnet on 5 September 1988 and released near Lipari the following day by the diving team of the Guardia di Finanza and by Antonio Di Natale.

3 - Maschio di Stenella striata (Stenella coerulealba (Meyen)), lungo 2,10 m, ricuperato presso Ventimiglia, in Liguria, il 24 maggio 1989. Notare la profonda mutilazione con l'asportazione della punta caudale.
(Foto Magagni & Podestà)
A male Striped Dolphin (Stenella coerulealba (Meyen)) 2.10 m long recovered near Ventimiglia (Liguria, Italy), 24 May 1989. Notice the extensive mutilation involving the loss of the tail flukes.

4 - Una femmina di Zifio (Ziphius cavirostris (G. Cuvier)), lunga 4,71 m, spiaggiata presso San Remo (Liguria) il 18 maggio 1983.
(Foto Magagni & Podestà)
A female Cuvier's Beaked Whale (Ziphius cavirostris (G. Cuvier)), 4.71 m long, stranded near San Remo (Liguria, Italy), 18 May 1983.

5 - Una fase della campagna di ricerca sulla Balenottera comune (Balaeonoptera physalus (L.)) condotta dall'Istituto Tethys nel Mar Ligure.
(Foto S. Airolà)
A phase of the research campaign on Fin whales (Balaeonoptera physalus (L.)) by the Tethys Research Institute in the Ligurian Sea.

8 - Un Tursiop (Tursiops truncatus (Montagu)) ripreso nel Mare Adriatico durante una fase del programma di studio dell'Istituto Tethys sulla socio-ecologia ed il comportamento della specie.
(Foto G. Bearzi)
The social ecology and behaviour of Bottlenose dolphins (Tursiops truncatus (Montagu)) in the Adriatic Sea is the subject of a long-term study by the Tethys Research Institute.