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MEDITERRANEAN ACTION PLAN

Meeting of Experts on the implementation of the Action Plans for marine mammals (monk seal and cetaceans) adopted within MAP

Arta, Greece, 29-31 October 1998

CETACEAN STRANDING STUDIES IN THE MEDITERRANEAN

UNEP
RAC/SPA - Tunis, 1998

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CONTENTS

INTRODUCTION

The monitoring of Cetacean stranding provides an opportunity to gather useful observations about a group of animals which are difficult and expensive to study in the natural environment. The term "stranding" is used to refer to the arrival of Cetaceans, on shore or in very shallow waters, either in the form of a carcass or as a distressed living specimen. The exact definition of this second case is somewhat questionable, as will be seen later. However if these events are carefully monitored, and especially if a network is set up for the systematic collection of data, this will lead to:

1) improved data on Cetacean distribution.

2) expanded museum collections for present and future studies.

3) the extensive sampling of materials for research in the fields of morphology, genetics, parasites, age and growth, feeding habits, trace elements and xenobiotic substances accumulation. As a sampler of other marine organisms, the Cetacean also gives information on its prey and, *sensu latu*, on the ecosystem in which it lives.

4) the progress of veterinary sciences regarding this group.

At present, in almost all the Mediterranean countries these studies are considered interesting and productive and are implemented with varying degrees of organization, ranging from dedicated national working groups to independent volunteers.

1. WORKING GROUPS IN THE MEDITERRANEAN COUNTRIES.

Information about cetacean stranding studies is presented hereunder for 11 Mediterranean riparian countries. We do not have sufficient information on the subject for the others. The delegations to this meeting are invited to review the information compiled in this document and to provide the secretariat with their possible comments.

The data presented in this chapter have been obtained from :

1)The national contact persons of the European Cetacean Society.
2)The experts listed in the Directory published by RAC/SPA (1996).
3)The CIESM Group for Marine Mammals (Prof. P. Beaubrun).

Other information was provided by the Monaco Service de l' Environment and the Directors of Institutes of Marine Research of several Mediterranean countries.
The contributions made by all these persons is gratefully acknowledged.

ALGERIA

Boutiba (1993 ; 1994 ; 1996) and Boutiba et *al.* (1997) give information about a program of research on Cetaceans, carried out at the University of Oran. During twenty years (1973 - 1993) 244 cases of stranding or captures have been registered, among which 65 cases of death related to human activities were ascertained. These regarded 22 *Delphinus delphis*, 17

Tursiops truncatus, 7 *Stenella coeruleoalba*, 5 *Globicephala melaena*, 3 *Ziphius cavirostris*, 5 *Physeter macrocephalus* and 6 *Balaenoptera physalus.*

CROATIA

Holcer (1994) announced the future establishment of a network for the monitoring of stranding in the Northern Adriatic. We have not been able to ascertain if, in the meantime, this network has been set up.

FRANCE

Since the seventies the "Centre d'Etude des Mammifères Marins" at La Rochelle has been collecting data from various sources, including stranding, both from the Atlantic and the Mediterranean coastlines of France (Table 3) (Duguy 1978-1988, Duguy et al. 1988).

In 1992, the Groupe d'Etude des Cetaces de Mediterranée, GECEM, began its activity in Montpellier and established a commission on stranding. A network of persons, recognised as qualified by the Ministry of the Environment, collects data and materials from autopsies and prepare observation sheets for the GECEM, which in turn sends the data to the Centre at La Rochelle. In the GECEM group, the persons in charge of the autopsies sample and stock the maximum number possible of organs and tissues considering the state of the carcass. At present the main lines of research are: age and growth, sexual maturity, feeding, genetics, accumulation of heavy metals (Beaubrun, personal communication).
The GECEM publishes annual reports on stranding (Table 4) (Oliver 1994, 95, 96, 97 ; Oliver and Rigollet 1998) and through its bulletin "*Stenella*" provide information about its work in the Mediterranean (Beaubrun, personal communication).

In Corsica, Madame Denise Viale and her team, who worked on stranding since a long time (Viale, 1989 ; 1994 ; 1995 ; Viale et al. 1992 a and b), maintained a rather independent activity.

Species	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	Totals
Stenella coeruleoalba	14	9	26	17	13	12	12	13	12	33	30	191
Delphinus delphis	4	2	-	1	-	1	-	-	3	1	-	12
Tursiops truncatus	4	1	2	1	-	1	-	1	2	5	5	22
Grampus griseus	1	4	1	5	1	2	1	1	1	1	3	21
Globicephala melas	1	1	2	2	3	4	4	1	1	1	2	22
Physeter catodon	-	-	1	-	1	1	2	-	1	-	-	6
Ziphius cavirostris	1	-	1	-	-	-	1	3	1	-	-	7
Balaenoptera acutorostrata	1	-	-	-	-	1	-	-	-	-	-	2
Balaenoptera physalus	1	1	1	2	1	2	-	5	2	2	2	19
TOTALS	27	18	34	28	19	24	20	24	23	43	42	302

Table 1: Stranding of Cetaceans on French Mediterranean coast on the basis of Duguy et al. 1988.

Species	1992	1993	1994	1995	1996	1997	Totals
Balaenoptera physalus	-	3	1	3	3	2	12
Megaptera novaeangliae	-	1	-	-	-	-	1
Physeter macrocephalus	-	1	-	-	1	-	2
Fiseteride	-	1	-	-	-	-	1
Globicephala melas	-	3	1	1	1	1	7
Grampus griseus	-	2	-	1	2	1	6
Tursiops truncatus	-	4	4	3	2	6	19
Delphinus delphis	-	2	1	-	2	-	5
Stenella coeruleoalba	11	16	15	15	30	38	125
Ziphius cavirostris	-	-	-	-	-	1	1
Mesoplodon sp	-	-	-	-	2	-	2
Unidentified	2	2	1	2	6	18	31
TOTALS	13	35	23	25	49	67	212

Table 2: Stranding of Cetaceans on French Mediterranean coast on the basis of GECEM reports.

GREECE

Several groups work on Cetacean stranding, without however any national coordination. Cebrian (1992) reported massive stranding of *Stenella coeruleoalba* during the epizootic 1991-92. During the same period the Hellenic Society for the Study and Protection of the Monk Seal, fearing an extension of the pathology, distributed a marine mammal stranding questionnaire form to 550 coastal authorities and activated a 24-hour hotline for anyone wanting to report a stranding (Androukaki and Tounta, 1994).
In the period August 1991 - February 1994, 235 reports of stranded Cetaceans were collected: 87 *Stenella coeruleoalba*, 7 *Delphinus delphis*, 17 *Ziphius cavirostris*, 11 *Tursiops truncatus*, 1 *Globicephala melas*, and 1 *Grampus griseus* ; 111 cases remained unidentified.
Sampling of sick striped dolphins has revealed the DMV antigen. However, in the meantime other research has shown in vitro that DMV can affect bottlenose dolphin cells but not the cells of the Mediterranean monk seal (Osterhaus et al., 1992).

Frantzis (1997) recently mapped a series of "unusual" strandings (=all species except *T. truncatus* and *S. coeruleoalba*): *Physeter catodon, Ziphius cavirostris, Grampus griseus, Pseudorca crassidens, Mesoplodon* sp.

The same author reported (1998) the very uncommon stranding of twelve specimens of *Ziphius cavirostris* on 38 Km of coast (Kyparissiakos Gulf) on 12-13 May 1996, at the same time as the testing of an acoustic system for submarine detection carried out by the RV Alliance (NATO).

ISRAEL

Cetacean stranding are monitored by the Israel Marine Mammal Research & Assistence Centre (IMMRAC), Haifa. Activities include rehabilitation at the Naval High School and autopsies of recently diseased beached animals at Kimron Veterinary Institute (Goffman, personal communication).

ITALY

The Italian organisation for the study of stranding is one of the largest in the Mediterranean.

The "Centro Studi Cetacei" (CSC) was established in 1985 as part of the Società Italiana di Scienze Naturali, which pursued active studies on Cetaceans at the Milan Museum of Natural History. The aim was to promote these studies, favouring closer contact among all the Italian researchers and institutions concerned. The group's first project, "Progetto spiaggiamenti", sought to create a national network for the collection of data and materials from stranding along the Italian coast-line.
The Italian coastline, about 8000 Km, was divided into 16 zones, in each of which one member of the CSC was responsible for data and material collection. When a stranding occurs, this information is quickly passed on to Milan, thanks to the sponsorship of the Europe Assistance Italy Insurance Company which has provided the use of its round-the-clock answering service. From Milan the information is immediately transmitted to the researcher in charge of the zone (corrispondente di zona) in which the stranding has occurred: he activates the first-aid team if the animal is alive or the carcass-recovery team if the animal is dead. Generally the carcasses

(medium or small-sized animals) are transported to a museum for dissection and sampling. At present the working group has 100 members.
In eleven years of activity, 2147 strandings have been monitored (Table 3 and fig. 1), that is a significant number on the Mediterranean scale. Considering the different Italian seas, the maximum of stranding per km of coast has been registered in the Ligurian Sea (fig. 2).
Among the data collected in the period 1986-1990 (total stranded n° = 934) traumatic death was ascertained for 347 specimens. These data were presented in detail by Cagnolaro and Notarbartolo (1992) (Table 4).
The principal cause of mortality in the case of violent Cetacean deaths proved to be fishing activities, mostly large-scale pelagic driftnetting for swordfish. Such an impressive by-catch of marine mammals mainly registered in the Ligurian Sea had a strong impact on public opinion and led to a temporary suspension of driftnetting in 1991 on a national scale. A more permanent measure was the exclusion of driftnetting in an area of the Ligurian Sea (Ministerial decree issued by the Ministero Marina Mercantile 18/7/90 ; 22/5/91 ; 19/6/91 ; 12/8/92 , which is still in force now) designated "Santuario dei Cetacei" (Orsi Relini et al., 1992) (fig. 3).
Although stranding caused by fishing activities fell in the following years, one needs to remember that in the mean time fishermen had learned to conceal the killings by weighing down the carcasses.
The peak of stranding registered in 1991 is due to a morbillivirus epizootic, which affected particularly *Stenella coeruleoalba* and *Tursiops truncatus*.
The overall composition and distribution of the stranding seems to reflect the relative abundance of Cetaceans registered at sea (Notarbartolo et al., 1993), with the exception of some large Odontocetes, like *Physeter macrocephalus* and *Ziphius cavirostris*, which spend a long time diving and are therefore rarely observed. The specimen of *Kogia simus* is the only one registered in the Mediterranean.

A great number of skeletons or skulls (376 in ten years) have been collected and preserved in Italian museums, which now have assembled a total of more than 700 specimens of living species (Cagnolaro, 1996); these form a consistent basis for biometrical studies, an important tool for the assessment of the originality of the Mediterranean cetofauna. These also register some important changes in species composition in the last century (Poggi, 1986; Cagnolaro, 1996).
The sampling of tissues carried out by the Centro Studi Cetacei has had, in its ten years of activity, the following main focuses (Podestà et al., 1997):

- Levels of organochlorines and heavy metals
- Accumulation and detoxification systems of mercury
- Bacterial and viral infections
- Enzymatic systems
- Parasites
- Stomach content analyses
- Histo-physiology on the digestive apparatus, liver and lung
- Osteology

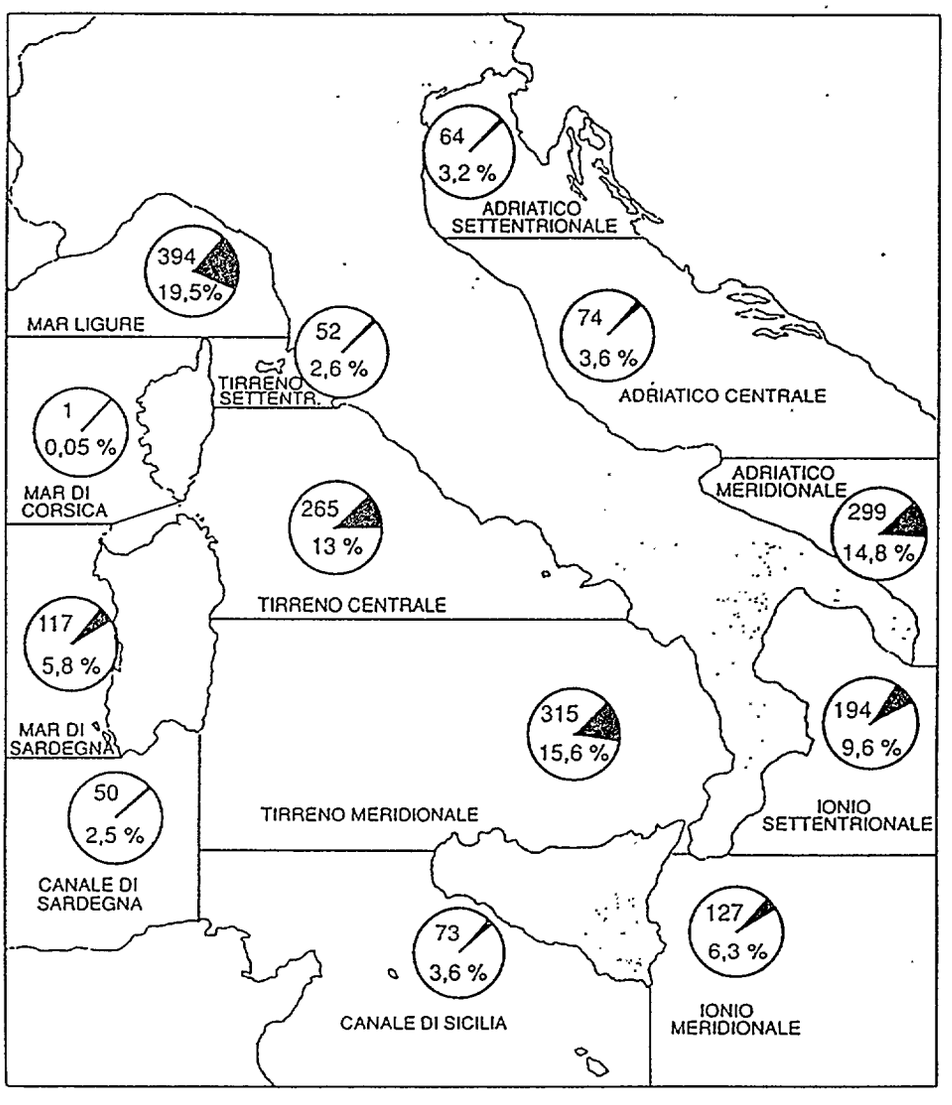

Fig. 1 : Distribution of strandings and accidental catches registered by the "Centro Studi Cetacei" in the period 1986-1995 (from Podestà et al., 1997).

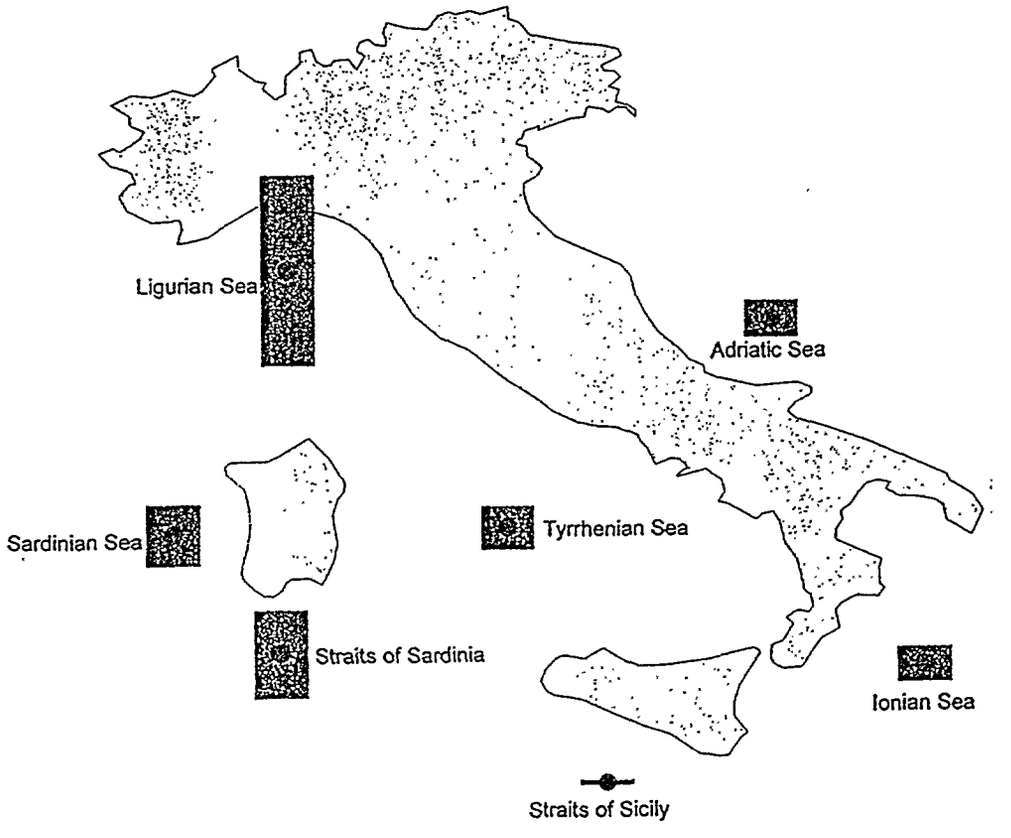

Fig. 2 : Stranding index (n° stranded / km of coast) calculated on the basis of strandings and accidental catches registered by the Centro Studi Cetacei in the period 1986-1995

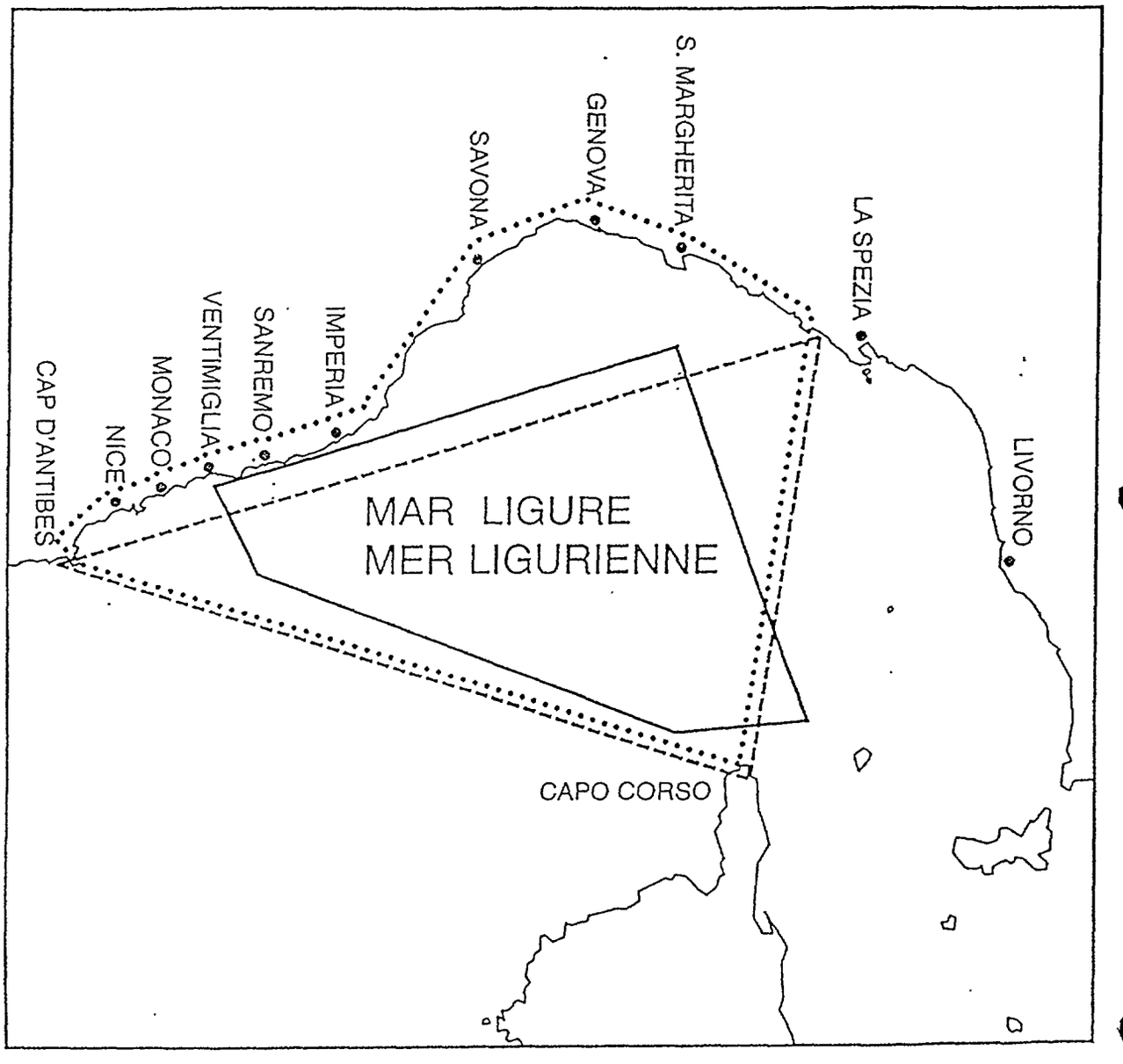

Fig. 3 : Various profiles of the area prohibited to the Italian swordfish driftnetters from 1990 onward. The dotted line indicates the area in which the driftnet prohibition is still enforced.

Species	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Totals
Balaenoptera physalus	5	5	-	4	6	3	1	2	2	3	3	34
Balaenoptera acutorostrata	-	-	-	-	-	1	-	1	-	-	-	2
Balaenoptera sp.	-	-	-	-	-	-	-	1	-	-	-	1
Physeter macrocephalus	4	19	15	13	5	6	7	5	5	9	5	93
Ziphius cavirostris	1	5	4	5	2	-	7	1	4	3	4	36
Globicephala melas	-	-	12	7	1	11	8	1	1	1	2	44
Grampus griseus	2	14	10	6	7	4	7	7	6	6	8	77
Tursiops truncatus	6	28	39	32	20	64	28	24	29	14	27	311
Delphinus delphis	-	1	1	-	2	2	1	2	1	2	2	14
Stenella coeruleoalba	26	77	85	67	106	329	71	71	54	54	48	988
Pseudorca crassidens	-	-	1	1	-	1	-	-	-	-	-	3
Kogia simus	-	-	1	-	-	-	-	-	-	-	-	1
Unidentified	12	60	61	116	46	129	40	25	21	13	20	543
TOTALS	56	209	229	251	195	550	170	140	123	105	119	2147

Table 3: Stranding of Cetaceans along the coasts of Italy, on the basis of the Centro Studi Cetacei annual reports.

Cause of death	Percent
Incidental capture in fishing gear	83.00%
Injury, mostly from firearms	10.10%
Vessel ramming	3.50%
Ingestion of foreign objects (mostly plastic)	2.90%
Other	0.60%

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

Table 4: Likely causes of death of 343 cetacean specimens found along the Italian shores and in Italian coastal waters between 15 May 1986 and 31 December 1990 (Cagnolaro and Notarbartolo, 1992)

MOROCCO

A "Groupe d'Etude des Cétacés et Pinnipèdes du Maroc" is active in Rabat, at the "Département de Zoologie et Ecologie Animale" of the Scientific Institute. Recent work based both on observation at sea and on stranding has been presented by Bayed (1997).

SLOVENIA

In Slovenia there is no scientific organisation undertaking studies on Cetaceans (Lipej, personal communication). However, Researchers from the Marine Biological Station of Piran and some enthusiasts, mostly students of biology, have the subject among their fields of interest. Some recent work has been published (Krystufek and Lipey, 1993).

SPAIN

Several groups work on stranding along the coast of the Iberian Peninsula (López Fernández 1997 ; Sequeira et al. 1997) and some reports date back as far as the seventies (Casinos and Filella, 1975 ; 1981).

Before 1994, some joint reports on stranding in the Mediterranean were produced by the University of Barcelona (Dr. A. Aguilar and J. Forcada) and the University of Valencia (Dr. T. Raga), covering almost all Mediterranean Spanish waters (Tables 5 and 6).

In 1994 the monitoring of stranding on the Catalan coast was taken over by the Fundacio CRAMC (Centre Recuperació Animals Marins Catalunya) which reported 10 cases in 1994 and 26 in 1995 (Alegre *et al.* 1997).

Species	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	Totals
Stenella coeruleoalba	1	4	2	3	9	11	7	6	8	11	19	81
Delphinus delphis	-	1	4	-	-	-	2	1	-	-	1	9
Tursiops truncatus	1	2	-	1	2	5	5	9	3	1	3	32
Grampus griseus	-	1	-	1	1	-	2	-	2	-	1	8
Globicephala melas	1	-	-	1	1	6	1	-	-	-	1	11
Physeter catodon	1	2	1	-	1	3	-	2	2	1	-	13
Ziphius cavirostris	-	-	1	-	2	2	-	-	-	2	-	7
Mesoplodon densirostris	-	-	-	1	-	-	-	-	-	-	-	1
Balaenoptera physalus	1	-	1	1	-	1	1	1	1	3	1	11
TOTALS	5	10	9	8	16	28	18	19	16	18	26	173

Table 5: Stranding of Cetaceans on Spanish Mediterranean coast on the basis of Duguy *et al.* (1988).

			Prov. Cont.						Baleares		
Species	**n° Total**	**%**	**Girona**	**Barcelo.**	**Tarrago.**	**Castellon**	**Valencia**	**Alicante**	**Mallorca**	**Minorca**	**Ibiza**
Stenella coeruleoalba	81	46.8	7	29	9	6	16	12	1	1	
Delphinus delphis	5	2.8	-	1	1	-	2	1	-	-	
Tursiops truncatus	36	20.8	5	1	6	5	4	11	-	1	
Grampus griseus	8	4.6	1	1	-	1	1	2	-	1	3
Globicephala melas	11	6.3	-	-	-	-	5	6	-	-	1
Physeter catodon	13	7.5	-	-	2	1	2	5	1	1	
Ziphius cavirostris	7	4.0	2	-	3	1	-	-	-	-	1
Mesoplodon densirostris	1	0.5	-	-	-	1	-	-	-	-	1
Balaenoptera physalus	11	6.3	-	4	2	1	2	-	1	1	
TOTALS	173	-	15	36	23	16	32	37	3	5	6
N° Species	9	-	4	5	6	7	7	6	3	5	4

Table 6 : Frequency of strandings, (1977-1987) in the provences: Girona, Barcelona, Tarragona, Castellon, Valencia, Alicante, Mallorca, Minorca, Ibiza (Duguy et al.,1988)

TUNISIA

Chakroum (1994) gave a brief report of the status of Cetaceans in Tunisian marine waters (11 species) on the basis of stranding and accidental catches. In Tunisia there is no working group on stranding (Bradai, personal communication). However, relevant episodes of stranding have appeared in the literature for some time (Heldt, 1949; Chakroun, 1966; Ktari-Chakroun, 1980, 1981; Ben Mustapha, 1986; Bradai, 1991, 1992).

TURKEY

So far a stranding network has not yet been set up (Ozturk B., personal communication). However, recording sheets have been distributed among sailors, divers, fisherman etc. in all coastal areas of Turkey (Ozturk B., 1995). Data about Cetacean strandings in the Turkish Mediterranean and Aegean Sea over the last 20 years are in press. (Ozturk and Ozturk 1998).

BLACK SEA COUNTRIES

In the Black Sea there are three networks for strandings (Birkum, personal communication):

1) the Ukrainan network has been organised by the BREMA Laboratory (Crimea, Simferopol) since February 1989;
2) the Bulgarian network has been organised by the Institute of Fisheries (Varna) since March 1997;
3)the Georgian network is organised be the Institute of Black Sea Ecology and Fisheries (Batumi) since March 1997.

All three national networks now work together under the technical and scientific supervision of the Ukrainian network, whose staff is the most experienced. All three institutions collect stranding and by-catch data, carry out autopsies and take samples for further examination in Ukraine (BREMA Lab; histopathology and parasites), Belgium (The Free University of Brussels Ecotoxicology Laboratory; trace metals and chlorinated hydrocarbons) and Germany (The University of Giessen Institute of Veterinary Pathology; immunohistochemical virology).

Three species of Cetaceans are known in the Black Sea: the harbour porpoise *(Phocoena phocoena)*, the bottlenose dolphin *(Tursiops truncatus)* and the common dolphin *(Delphinus delphis)*.

Since February 1989, Cetacean stranding have been recorded along the Crimean coast of the Black Sea. The entire length of the coastline which is permanently under study is about 650 km: from Karkinit Bay at the north-west to Kerch Strait at the East. In addition, since 1990, 120-180 km of Azov's coastline have been examined each year. A total of 817 strandings have been recorded. Those from the period 1989-94 were reported in detail by Birkum *et al.* (1996).

Species	1989	1990	1991	1992	1993	1994	Totals
Harbour porpoises	46	225	4	4	5	1	285
Common Dolphin	10	38	2	-	6	26	82
Bottlenose dolphin	3	20	3	4	1	3	34
Unidentified dolphins	44	12	5	1	4	5	71
TOTALS	**103**	**295**	**14**	**9**	**16**	**35**	**472**

Table 7 : Cetacean stranding on the Crimean coast (Birkum *et al.* 1996).

The identified causes of death included the following:

1) An epizootic of unknown origin which affected especially the harbour porpoises, but also the other two species during 1989-90.
2) A second epizootic (1994), by an unidentified virus; which regarded mainly common dolphins.
3) Catches in bottom set gill-nets for sturgeon and turbot, particularly in the Azov Sea. These concern porpoises and bottlenose dolphins, as the common dolphin is absent in this area (Krivokhizhin S.V. et Birkum A.A., jr 1998).

2. THE PROBLEM OF LIVE STRANDED ANIMALS

When a live Cetacean appears in very shallow waters, the main problem is to decide whether or not human intervention is required. Even an offshore species can appear in coastal waters and show behaviour which is rapidly interpreted as " strange" even though the animal is healthy. In the Ligurian Sea the list of species that enter and leave harbours has recently included *Balaenoptera physalus*. A fin whale remained inside the port of Genoa about eight hours (it was impossible to ascertain whether it was filtering fish or something else) and subsequently, with the help of the Coast Guard, which maintained a traffic-free zone, returned to open waters.

Sometimes, in their desire to "help" the animal, volunteers can prove more harmful than useful. Moreover, it may occur that "first aid" is promoted, if not organised, by private commercial organisations which manage aquariums, delphinaria or "sea worlds". They see saving Cetaceans as an useful publicity which counterbalances the fact that they make their money maintaining Cetaceans in captivity and exhibiting them in circus-like activities.

Delphinaria, with their pools and (sometimes) veterinarians, can present themselves as the only bodies capable of taking care of stressed animals. While in some cases this can be true, it is also true that they tend to consider every Cetacean (especially if it belongs to an uncommon but easy handled species) as in need of help.

Another critical point regards veterinarians directly: given a very stressed animal (like the numerous specimens of *Stenella* beached during the last epizootic) is it more correct to transform it into an experimental animals (kept in captivity, to exploit for every possible information for future use) or to introduce euthanasia?

In 1990 Italy's "Centro Studi Cetacei", begun a "progetto vivi". There some of the above mentioned contradictions persist, due to the lack of independent "hospital" centers. Borri (1997), as the co-ordinator of the group, argues that aid to distressed animals is insignificant in terms of conservation, but necessary on ethical grounds. These apply both because of the

sick individuals in themselves but also because their isolation in a hospital pool can result in the isolation of pathological agents, which in turn has a positive effect on the free living population (Borri, personal communication). Any intervention should never become a publicity stunt.

However on the basis of "first aid" interventions increasing number of veterinarians are gaining experience in the field of Cetaceans. A list of analyses to be carried out has been compiled (Benvenuto, 1997) to ensure maximum clinical data and to facilitate the choice of therapy.
Of course, each time a Cetacean is caught live in fishing gear there is generally no question about what action to take. Many volunteers, maritime authorities, researchers, enthusiasts, seamen etc., are normally ready to help the animal to regain its freedom (Di Natale, 1997).

3. FUTURE STRANDING STUDIES ON A MEDITERRANEAN SCALE

Given the general interest in Cetacean studies and the recent heightening of awareness of conservation problems, reflected in the presence of 17 countries at the signing of the AGREEMENT ON THE CONSERVATION OF CETACEANS OF THE BLACK SEA, MEDITERRANEAN SEA AND CONTIGUOUS ATLANTIC AREA (Monaco, November 1996), the time is ripe for an attempt to organise stranding studies in the Mediterranean according to common principles and practices. This is what is envisaged by Annex 2, Conservation Plan, of the above mentioned ACCOBAMS.

The CIESM Marine Mammals Group and the RAC/SPA could be responsible for the preparation of forms. Probably there will be no problems about accepting tested procedures regarding stranding of dead animals. When we are dealing with living specimens, however, the conflict between conservation, progress in veterinary sciences and ethics still needs to be thoroughly debated if we are to reach a final general agreement about a code of conduct. This is a very important point and once more an international scientific forum is needed.

In appendices I and II forms prepared by the Italian Centro Studi Cetacei and the Caribbean stranding network are given as examples and as possible models for Mediterranean forms. The Caribbean form has been prepared for E-mail transmission, which is probably also the easiest way to maintain a Mediterranean network. Countries which have established national or at least regional networks should have no difficult in sending to CIESM the same data already prepared for national use.

A similar situation applies at present on most Mediterranean coastlines. However, there are also countries where research is at a very early stage and, as ACCOBAM argues, it is necessary "that assistance be provided, in a spirit of solidarity, for research training, and monitoring of Cetaceans and their habitats as well as for the establishment and improvement of scientific and administrative institutions".

In conclusion, the problems of Cetaceans stranding can be summed up in the following points:

a) General monitoring of dead animals.

b) Scientific use of massive stranding events, due to pathologies or particular human nuisances such as those evidenced by Frantzis (1998) on Ziphius cavirostris.

c) Living animals in need of veterinarian help.

For case a) many countries have a routine of studies - generally starting on the basis of volunteers which work in the field - and these actions have only to be led to common results. The RAC/SPA and CIESM could establish standardised procedures. The CIESM Working Group on Cetaceans, which has worked in this sense on sightings and has produced the Provisional Atlas of Mediterranean Cetaceans (Beaubrun, 1995) could be charged of the preparation of Mediterranean Stranding Reports (on paper or in web). The cost could be very reduced, given that almost all research Institutions and CIESM are linked by E-mail, and CIESM has its own webpage.

Case b) The simultaneous stranding of several Cetaceans requires too much work for a local volunteer team. An international group for field work could be funded, inside the same CIESM

Group in agreement with RAC/SPA, to obtain the maximum exploitation from the point of view of research of the rare case of massive stranding. Here funding is necessary, especially for quick travels of the working teams.

The last case is the most difficult, because the establishment of a fair rescue net and hospital centre is an expensive enterprise. If these kind of actions are to be taken in account (the public opinion generally requires them), an international funding is needed and the RAC/SPA could be the "super partes" headquarter in this sense with the scientific support of CIESM Group.

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ANNEX 1

CENTRO STUDI CETACEI

SCHEDA RINVENIMENTO CETACEO **N. 0001**

SPECIE _____

LOCALITA' _____ COM. _____ PROV. _____

DATA PRIMA SEGNALAZIONE _____

Sesso: [M] [F] Lunghezza totale (cm): _____ Misurata: _____ A occhio: _____

Peso: _____ Segni particolari: _____

_____

Condizioni esemplare: ❑ vivo ❑ appena morto ❑ decomposizione moderata

❑ decomposizione avanzata ❑ mummificato o scheletro

TIPO DI EVENTO

❑ spiaggiamento ❑ speronamento ❑ cattura ❑ decesso in mare ❑ altro _____

data presunta evento: _____ data presunta decesso: _____

SEGNALAZIONE

Nome, cognome, indirizzo ed eventuale Ente di appartenenza di chi per primo ha segnalato l'evento: _____

_____

_____

RICOGNIZIONE

data: _____ ora: _____ località: _____

Iniz. del nome, cognome per esteso di tutti i partecipanti alla ricognizione: _____

_____

_____

Ente di appartenenza del principale ricognitore: _____

Fotografie: [NO] [SÌ] dove depositate _____

Rilevament biometrici: [NO] [SÌ] dove depositati _____

Necroscopia: [NO] [SÌ] da chi effettuata (nome+ente) _____

Campionamento organi: [NO] [SÌ]

Destinazione esemplare: _____

depositato nel Museo _____

parti conservate _____

Nominativi di persone o Enti da citare nel rendiconto annuale: _____

_____

_____

PER NOTE EVENTUALI UTILIZZARE IL RETRO O FOGLI AGGIUNTIVI

_____

Firma Timbro Ente appartenenza

PARASSITOLOGIA

(formalina al 10 %, dopo 24 ore rinnovare la soluzione)

Campioni di tutti i parassiti o cisti rinvenuti nei vari organi, indicando il tipo di ciste o parassita e l'organo di provenienza:

_____

_____

_____

_____

Parte del contenuto stomacale in formalina al 10 %:_____;

INVIATI A _____ DATA_____

CONTENUTO STOMACALE

(in toto in formalina al 10 % in tampone fosfato)

Gli eventuali "becchi" di Cefalopodi o altri residui scheletrici dovranno essere inviati a chi ne ha fatto richiesta:

INVIATI A _____ DATA_____

N O T A ! ! !

Dato che per la musealizzazione dei reperti osteologici dei Cetacei il cranio è l'elemento di gran lunga più importante, NI CASO SI TRATTI DI UNA SPECIE SIGNIFICATIVA, si deve assolutamente evitare ogni azione che possa recare qualsi: tipo di danno alla scatola cranica, limitandosi a prelevare il cervello soltanto dal foro occipitale. Si raccomanda inoltre astenersi dall'apertura della scatola cranica nei casi in cui l'animale non sia morto di recente e sia logico aspettarsi che struttura istologica del cervello sia compromessa.

ATTENZIONE ! ! !

ISTRUZIONI PER IL PRELIEVO DEL CERVELLO

ISTOPATOLOGIA: il cervello va prelevato in toto; un emisfero, dopo aver effettuato dei profondi tagli longitudinali (dalla superficie superiore a quella inferiore) alla distanza di 1 cm circa l'uno dall'altro, va fissato in formalina al 10 % in tampone fosfato, da rinnovare dopo 24 ore. Il preparato va posto in un contenitore sul cui fondo sia posizionato uno strato poroso.

VIROLOGIA: congelare il secondo emisfero a –20°C.

ANALISI GENETICA

(in apposito fissativo da richiedere a: Dott. Luca BUCCHINI - Dipartimento di Genetica e Microbiologia Via Abbiategrasso, 404, 27100 Pavia. Tel. 0382/505540. Fax 0382/528496.)

un frammento di pelle_____;

INVIATI A_____ DATA_____

CENTRO STUDI CETACEI

SCHEDA PRELIEVI PER ANALISI **N. 0001**

SPECIE _____

LOCALITA' _____ COM. _____ PROV. _____

DATA PRIMA SEGNALAZIONE _____

RICOGNITORE _____

Prelievi effettuati da _____ data _____

ISTOPATOLOGIA

(1 cm cubo in formalina al 10 % in tampone fosfato)

❑ cervello	❑ cuore	❑ fegato	❑ gonadi	❑ intestino	❑ linfonodi
❑ mammella	❑ melone	❑ milza	❑ muscolo	❑ pancreas	❑ polmone
❑ prepuzio	❑ rene	❑ stomaco	❑ trachea	❑ utero	❑ vescica

INVIATI A _____ DATA _____

BATTERIOLOGIA

(4 cm cubi a -20°C)

❑ fegato	❑ intestino	❑ milza	❑ polmone	❑ rene

INVIATI A _____ DATA _____

VIROLOGIA

(4 cm cubi a -20°C)

❑ cervello	❑ fegato	❑ linfonodi	❑ milza	❑ polmone	❑ rene

INVIATI A _____ DATA _____

CHEMIO-TOSSICOLOGIA

in Eparina	2 cm cubi in fissativo	6 cm cubi in azoto liquido	-30°C
❑ sangue	❑ fegato	❑ cervello	❑ fegato
		❑ cute	❑ grasso
		❑ fegato	❑ melone
			❑ muscolo
			❑ rene

Polmoni

Pleure

SISTEMA CARDIOVASCOLARE ed EMOPOIETICO

APPARATO URINARIO

APPARATO GENITALE

SISTEMA NERVOSO ed ENDOCRINO

ORGANI DI SENSO

CONCLUSIONI

CENTRO STUDI CETACEI

SCHEDA NECROSCOPIA **N. 0001**

SPECIE _____

LOCALITA' _____ COM. _____ PROV. _____

DATA PRIMA SEGNALAZIONE _____

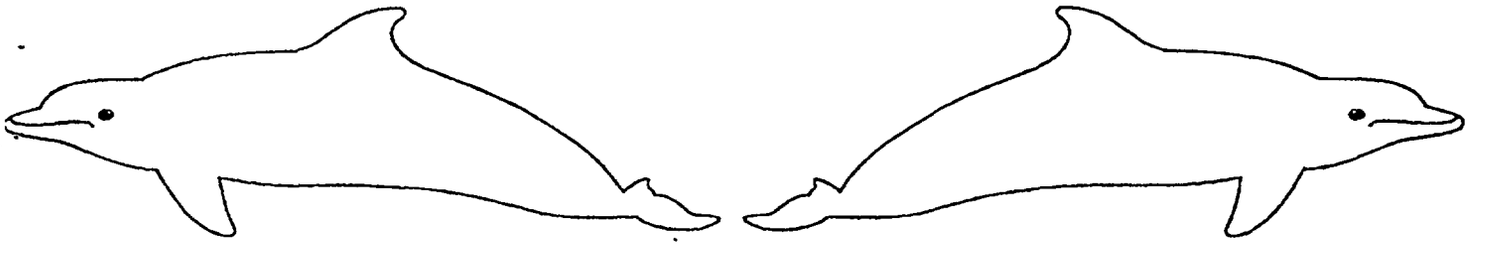
RICOGNITORE _____

Necroscopia effettuata da _____ data _____

CUTE E SOTTOCUTE
LESIONI

A) FERITE:	1 = taglio	2 = punta	3 = arma da fuoco	4 = contuse	5 = lacero-contuse.
B) CONTUSIONI:	1 = I grado	2 = II grado	3 = III grado	4 = IV grado	
C) ULCERE	D) PIAGHE	E) ASCESSI	F) CISTI	G) PARASSITI	

(indicare sulla figura il tipo di lesione, es. A 1)



_____

_____

APPARATO MUSCOLARE

_____

_____

STRUTTURA OSSEA

_____

_____

APPARATO DIGERENTE - PERITONEO

_____

_____

FEGATO

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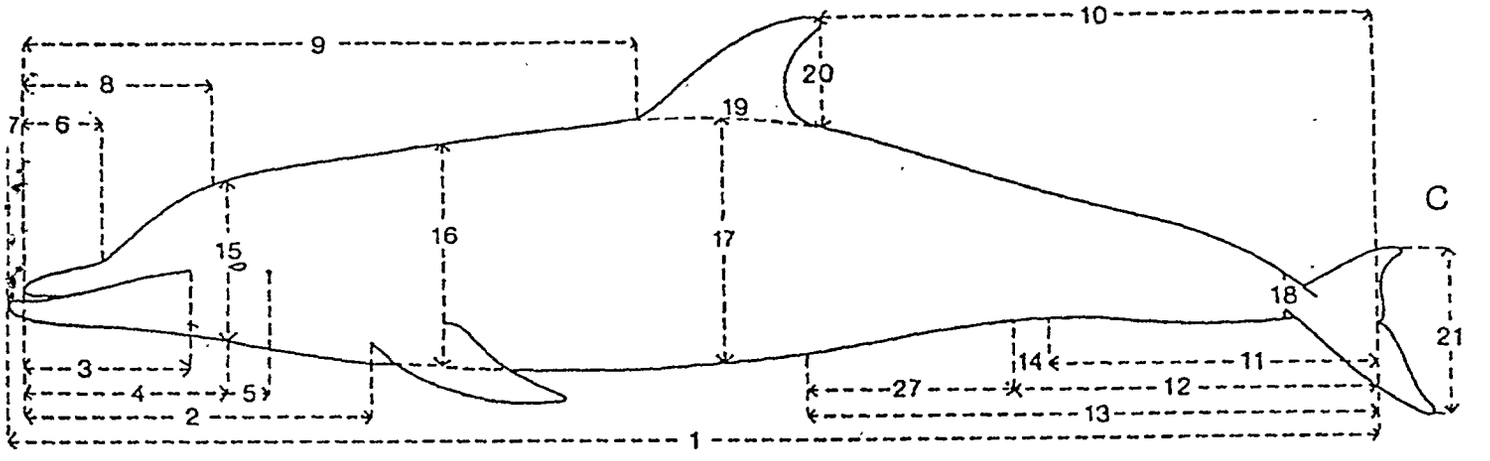
_____

APPARATO RESPIRATORIO

rime vie respiratorie _____

CENTRO STUDI CETACEI

SCHEDA N. 0001



BIOMETRIA CETACEI SPIAGGIATI

1 - Lunghezza totale _____ Peso_____

2 - Apice rostro - inserzione anteriore pinna pettorale _____

3 - Apice rostro - estremità posteriore bocca _____

4 - Apice rostro - margine anteriore occhio _____

5 - Apice rostro - orifizio auricolare _____

6 - Lunghezza del rostro _____

7 - Apice rostro - apice mandibola _____

8 - Apice rostro - estremità anteriore sfiatatoio _____

9 - Apice rostro - inserzione anteriore pinna dorsale _____

10 - Estremità posteriore pinna dorsale - centro coda _____

11 - Orifizio anale - centro coda _____

12 - Centro apertura genitale - centro coda _____

13 - Ombelico - centro coda _____

14 - Centro apertura genitale - ano _____

15 - Altezza del corpo al margine anteriore occhio _____

16 - Altezza del corpo all'inserz. post. pinna pettorale _____

17 - Altezza del corpo al centro pinna dorsale _____

18 - Altezza del corpo all'inserzione laterale coda _____

19 - Lunghezza pinna dorsale alla base _____

20 - Altezza pinna dorsale _____

21 - Lunghezza pinna caudale _____

22 - Centro coda - margine esterno lobo coda _____

23 - Larghezza massima della pinna pettorale _____

24 - Lunghezza pinna pettorale inserzione anteriore _____

25 - Lunghezza pinna pettorale inserzione posteriore _____

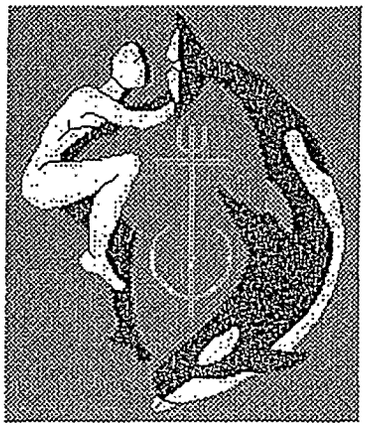
26 - Lunghezza massima dello sfiatatoio _____

27 - Ombelico - centro apertura genitale _____

ANNEX 2

Red Caribeña de Varamientos

Caribbean Stranding Network



Una organizacion ambiental sin fines de lucro dedicada a la investigacion, rescate, rehabilitacion, educacion y conservacion de las ballenas, delfines y manaties en Puerto Rico y el Caribe.

A non-profit environmental organization dedicated to the research, rescue, rehabilitation, education and conservation of whales, dolphins and manatees in Puerto Rico and the Caribbean.

English Visitante desde 13 abril 1997.

Contenido

Ultima revisión: 31 mayo 1997

Con qué animales trabaja casos de varamiento la Red?

Ballenas

Delfines

Manatíes

Focas y Lobos Marinos

La Red trabajo casos de varamientos de tortugas y aves marinas entre el 1989 y el 1996. A partir del enero del 1997, estas especies son atendidas en Puerto Rico por el Departamento de Recursos Naturales y Ambientales (787-724-5700).

Cómo informo un caso de varamiento o mortandad?

Utilice, de primera instancia, el sistema de "beeper". En segunda instancia, utilice los números celulares. Comience su mensaje con la clave "Alerta Neptuno" para indicar que es una llamada de emergencia (si no es una emergencia, no use esta clave). Prosiga con el tipo de animal o animales que han varado o necesitan auxilio, si están vivos o muertos, el tipo de evento y la localización del mismo. Termine el mensaje con su nombre y el número de teléfono donde se le pueda conseguir. Los siguientes mensajes pueden servir de ejemplo:

Alerta Neptuno, manatí vivo varado en Puerto Chico, PR. Llama a Pinto al 743-8025

Alerta Neptuno, ballena muerta en Buck Island, USVI. Llama a Hillis al 773-1460

Qué puntos son importantes para documentar el historial de un caso al informalo?

- Qué tipo de animal es (nombre común, genero, especie)?
- Dónde se encontró el animal (país, municipalidad, localización geográfica exacta, detalles del sitio)?
- Cuando se encontró el animal inicialmente (fecha y hora)?
- Quién encontró al animal inicialmente (indique nombre y teléfono)?
- Cuál era la condición del animal cuando se encontró inicialmente (vivo, muerto fresco, muerto moderadamente descompuesto, muerto en avanzado estado, momificado o en huesos)?
- Si el animal se encontraba vivo, cuál era su condición específica (tenía dificultad al respirar, debil, golpeado o herido, falta de control de movimiento, etc.)?
- Se le alimentó con algo al animal o se le dió algo de tomar? Por cuanto tiempo?
- Cuánto tiempo tuvo la persona al animal antes de usted intervenir?
- Se observó al animal vomitando, estornudando, con diarrea, con parásitos, etc.?
- Dónde fue alojado o mantenido el animal antes de usted intervenir?
- Se asoció el encontrar al animal con algún trauma (por ejemplo, impacto con un bote, caza accidental o directa, trauma debido a causas humanas, etc.)?
- Quién examinó al animal para tomar los datos iniciales (indique nombre y teléfono)?
- Tiene o tenía el animal bandas, marcas (detalle color y número)?
- Cuál es el sexo del animal, su longitud máxima y el peso estimado?
- Se tomaron fotos (dónde se encuentran)?
- Qué se hizo con el animal (si vivo: se soltó en el sitio, se transportó al centro de rehabilitación, se murió, se puso a dormir, no se sabe, etc.; si muerto: se dejó en el lugar, se enterró, se llevó mar afuera, se transportó al centro de necropsia, no se sabe, etc.)?
- Detalle su participación en el caso (fecha y hora en que lo recogió, nombre y teléfono de quién se lo entregó, como lo transportó, fecha y hora de entrega del animal a un oficial de la Red, etc.).

Cómo informo electrónicamente un varamiento?

Por favor, devuelveme al índice

Ultima revisión: 25 Mayo 1997

Informe técnico para documentar un varamiento

(Technical form to document a stranding)

Complete el formulario a continuación para proporcionar los datos técnicos de un varamiento en su area. Una vez lleno, pulse el botón que dice "enviar datos" al final del mismo y los datos nos llegaran via correo electrónico.

Fill the following form to provide the technical data for a stranding in your area. Once completed, click on the "send data" button at the end of the form, and the information will be forwarded to us via e-mail.

Número de campo (field number)

Especimen (ejemplar)

Orden (order) Suborden (suborder)

Familia (family)

Genero (genus) Especie (species)

Nombre común (common name)

Informante inicial (initial informer)

Nombre (name)

Agencia afiliada (agency of affiliation)

Correo electrónico (e-mail) Telefono (phone)

Dirección (address)

Examinador del ejemplar (specimen examiner)

Nombre (name)

Agencia afiliada (agency of affiliation)

Correo electrónico (e-mail) Telefono (phone)

Dirección (address)

Localización (location)

País (country)

Municipalidad, estado o departamento (municipality, state or department)

Ciudad (city)

Localidad específica (Specific locality)

Detalles de localidad (details of locality)

Latitud (latitude) Longitud (longitude)

Observación inicial (initial observation)

Fecha (date) Hora (time)

Condición del animal durante la observación inicial (condition of animal during initial obsrvation)

Exámen (examination)

Fecha (date) Hora (time)

Condición del animal durante la observación inicial (condition of animal during initial obsrvation)

Se llevó a cabo una necropsia? (was a necropsy performed?) Sí (yes) No

Ejecutor de la necropsia (necropsy prosector)

Datos morfológicos y de historial de vida (morphological and life history data)

Sexo (sex)

Longitud recta (straight length) en centtimetros (in cm) Peso (weight)en kilogramos (in kg)

Edad relativa (relative age)

Se examinó el tracto digestivo? (was the digestive tract examined?) Sí (yes) No

Tenía contenido estomacal? (contents present?) Sí (yes) No

Fueron estos muestreados? (where contents sampled) Sí (yes) No

Había plástico en el tracto digestivo? (was there plastic in the stomach?) Sí (yes) No

Se encontraron parásitos en el ejemplar? (where parasites found in the specimen?) Sí (yes) No

Tipo de evento (type of occurrence)

Varamiento en manada? (herd stranding?) Sí (yes) No

Número de animales (number of animals)

Interacción humana? (human interaction?) No determinado (undetermined) Sí (yes) No

Tipo de interacción humana (type of human interaction)

Como se determinó? (how was it determined?)

Otras causas (other causes)

Causa predominante de muerte o del varamiento (predominant cause of death/stranding)

Animal vivo (live animal)

Condición (condition) [seleccione uno o más (check one or more)]

Liberado en localidad (released on site) Enfermo (sick) Herido (injured) Murió (died)

Eutanizado (euthanized) Rehabilitación y liberación (rehabilitation and released)

No determinado (undetermined) Otro (other)

Transportado a (transported to)

Fecha de recepción (date received)

Murió (died) Liberado (released) Cautiverio (captive) Fecha (date)

Marcas (tags)

Presentes? (present?) Sí (yes) No

Se le aplicaron? (applied?) Sí (yes) No

Indique el número, el color, el tipo y la localización en el animal de cada marca (detail the number, color, type and placement in the animal of each tag)

Destino del cadaver (carcass disposition)

Seleccione uno (select one) Dejado en localidad (left at site) Enterrado (burried) Llevado a alta mar (towed to sea) Colección científica (scientific collection) Colección educativa (education collection)

Otro (other)

Destino del material osteológico y muestras de tejido (disposition of skeletal material and tissue samples)

Evidencias (vouchers)

Fue el especimen fotografiado? (was the specimen photographed?) Sí (yes) No

Donde residen las fotos? (where do the photos reside?)

Observaciones y comentarios (remarks)

Técnico que envia este informe (technician who sends this form)

Nombre (name)

Agencia afiliada (agency of affiliation)

Correo electrónico (e-mail)