Guidelines for the Development of National Networks of Cetacean Strandings Monitoring

Regional Activity Centre for Specially Protected Areas
(RAC/SPA)
Boulevard de l'Environnement
B.P.337 - 1080 Tunis CEDEX
Tel: ++(216.71) 795 760
Fax: ++(216.71) 797 349
E.mail: car-asp@rac-spa.org.tn
Website: http://www.rac-spa.org.tn

ACCOBAMS Secretariat

Les Terrasses de Fontvielle, Jardin de l'UNESCO
MC- 98000 MONACO
Tel: (+377) 93 15 80 10/ 93 15 20 78
Fax:(+377) 93 15 42 08
E - mail: mcvanklaveren@accobams.net
Website: http://www.accobams.org

SIMPACT

Novembre - 2004

Guidelines for the Development of National Networks of Cetacean Strandings Monitoring

November - 2004

CONTENT

I - INTRODUCTION

From the outset of cetology humans have studied the curious episodes of stranded cetaceans appearing on beaches, by gathering their skeletons and parts of their bodies (teeth, baleen plates, etc) for examination. In more recent times these studies have been seen extended thanks to the employment of modern technologies, e.g. molecular tools that allow small parts of these animals to be used for genetic studies. In addition, monitoring cetacean stranding over an area can, on occasions, provide information on the health status of populations and identify important problems, such as epizootics resulting in mass mortality.

In a number of countries, where the concern for the protection of cetaceans is more apparent, stranding networks have been developed over the last decades of the 20th century to gain more knowledge on the biology and the conservation of these animals.

One of the countries where there are better historical records about the ancient interest for cetacean strandings is Denmark. Since 1241, as stated in the Jutish Law, stranded cetaceans were considered 'Royal Fish' and hence property of the Danish king. The duty of the finder was to report the find entitling him to take a share of it. In 1885, upon an inquiry by the Zoological Museum, the Danish Ministry of Interior Affairs set up a notification procedure for their rescue service officers, receivers of wrecks and other local representatives who by telegraph were to report strandings of "unusual sea animals" to the museum.

Although the museum received frequent reports, the prime scope of this network was to obtain rare specimens, not to record all strandings, nor to provide the basis for faunistic analyses and management procedures. The more common species therefore remained unattended. In essence, this procedure lasted until about 1980, when the Zoological Museum of Copenhagen initiated a stranding network, aiming to collect as much information and as many specimens as possible. Since then, the network has been intensified several times, most recently with the launching of a contingency plan in 1993, involving the forest districts of the National Forest and Nature Agency. At present the handling of stranded cetaceans in Denmark is the responsibility of the Forest and Nature Agency and institutions authorised by the Agency (Carl Kinze, Comm. Pers.).

Currently one of the more highly developed stranding networks is "The Marine Mammal Health and Stranding Response Program - Marine Mammal Stranding Network" created in 1980 in the United States of America. This stranding network is formed by governmental agencies and counts on the assistance of duly authorised volunteers. Its objectives are to (1) facilitate collection and dissemination of data, (2) assess health trends in marine mammal populations, (3) correlate health with available data on physical, chemical, environmental, and biological parameters, and (4) coordinate effective responses to unusual mortality events (Becker et al. 1994).

A Working Group on Unusual Marine Mammal Mortality Events was established in 1988 to (1) establish criteria for determining when an unusual mortality event is underway and (2) provide guidance for responding to such events (Wilkinson 1996). In support of the "The Marine Mammal Health and Stranding Response Program - Marine Mammal Stranding Network", the "National Marine Mammals Tissue Bank and Quality Assurance Program" was set up to establish and maintain a resource of selected marine mammal tissues for the purpose of providing (1) samples for future retrospective analyses or new analyses of interest, (2) samples for future analyses using improved analytical techniques, and (3) a resource of

samples that have been collected and stored in a systematic and well-documented manner to compare results over time and to identify whether environmental trends exist (Becker et al., 1999).

It is obvious that the socio-economic, scientific and technological conditions in most European and Mediterranean countries are far from those in the USA. However, some European countries, in addition to Denmark, have established similar networks. stranding networks are currently on operation in Atlantic countries, such as Belgium, France, Germany, Portugal, The Netherlands, United Kingdom, and countries in North-western Mediterranean, like France, Italy,Spain. Only in the last decade of the 20th century, strandings have been monitored in counteries from the South and East Mediterranean, e.g., Algeria, Morocco and Israel. However, there are still countries where cetacean strandings remain unattended (RAC/SPA, 1998).

The present document was prepared by the UNEP/ Mediterranean Action Plan through its Regional Activity Centre for Specially Protected Areas, which is synchronously the Mediterranean Sub-regional Coordinating Unit of ACCOBAMS The document has been further improved through a review implemented by ACCOBAMS experts.

According to the decision of the First Meeting of the Parties to ACCOBAMS (Monaco, March 2002) this document is aimed to develop a Regional stranding networks including all the signatory countries of the «Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area». Furthermore The Barcelona Convention recommended to its Contracting Parties to take note of these guidelines at its 13th Ordinary Meeting (Catania, November 2003)

© A. Komnenou & A. Dougas-Arion

Quite frequently, stranded cetaceans do not show any external sign suggesting their cause of death. (*Delphinus delphis*)

II - SOME BASIC CONCEPTS

Cetacean Stranding: occurrence of a cetacean (either dead, ill or healthy) immobilised on the beach.

Cetacean Mass Stranding: stranding of two (except mother with calf) or more cetaceans near in time and space.

Cetacean Stranding Network: human and institutional coordination for the monitoring of cetacean strandings.

Cetacean Rehabilitation Facility: Facility furnished with both human and material resources to recover cetaceans for further release in the sea.

III - GENERAL GUIDELINES

The gathering of appropriate information from a live stranding or carcass incident requires an organised systematic response including early detection and reporting followed by rapid and effective action.
An ideal stranding network should include:

- A mechanism for allowing quick reporting of live stranded, ill, injured or dead animals (a "24 hours" telephone service)

- An emergency response team to attend the reports of stranded animals

Stranded cetaceans are sometimes the only source of biological information on a given species. (*Phocoena phocoena*)

- Organised and standardised data collection and reporting procedures

- Logistic support and equipment for retrieval and transport of animals (when required)

- A facility for medical treatment and rehabilitation in the case of live animals

- A facility for the effective necropsy of dead animals by trained personnel

The general objectives of a stranding network should be:

- To allow the wider community to report strandings in a efficient and rapid way

- To warrant that an opportune response is made to all notified cetacean strandings

- To maximise the number of strandings recorded, in order to identify the causes of mortality, strandings and lesions

- To secure timely reporting of strandings and mortalities to all relevant parties, including the public

- To enable long-term scientific studies which provide information to improve their conservation, management and biological knowledge

- To increase public awareness of cetaceans

Stranding networks allow us to quantify the mortality causes for the different cetacean species, like this dolphin with rests of nets and entanglement marks on the skin. (*Tursiops truncatus*)

© A. Komnenou & A. Dougas-Arion

Mediterranean and Black Sea countries should set up national stranding networks that take advantage of their human and material resources appropriate to consider their own particular circumstances. Although the socio-economic conditions of each country are crucial, the establishment and maintenance of a national cetacean stranding network do not require elevated expenditure nor sophisticated infrastructures, at least for the collection of basic-level data.

What is crucial, however, is to achieve good co-ordination between the different authorities, experts, NGO`s and the civil society in general. A stranding network should be formed at the initiative of each state. It is highly recommended to seek the collaboration of security forces (local and national police, navy, coastguard, etc.) and civil protection services. NGO`s can play an important role in stranding networks by mobilising volunteers to cover as much of the national coastline as possible, increasing public awareness on cetacean conservation, and seeking the co-operation of local fishermen.

The actions undertaken by a stranding network are summarised on Figure 1. Due to the differences in the current development of national stranding networks, special efforts are recommended to realise and consolidate such networks in countries of the Eastern Mediterranean, Black Sea and North Africa. Annex 1 lists some of the institutions and experienced personnel that may be of assistance in this task.

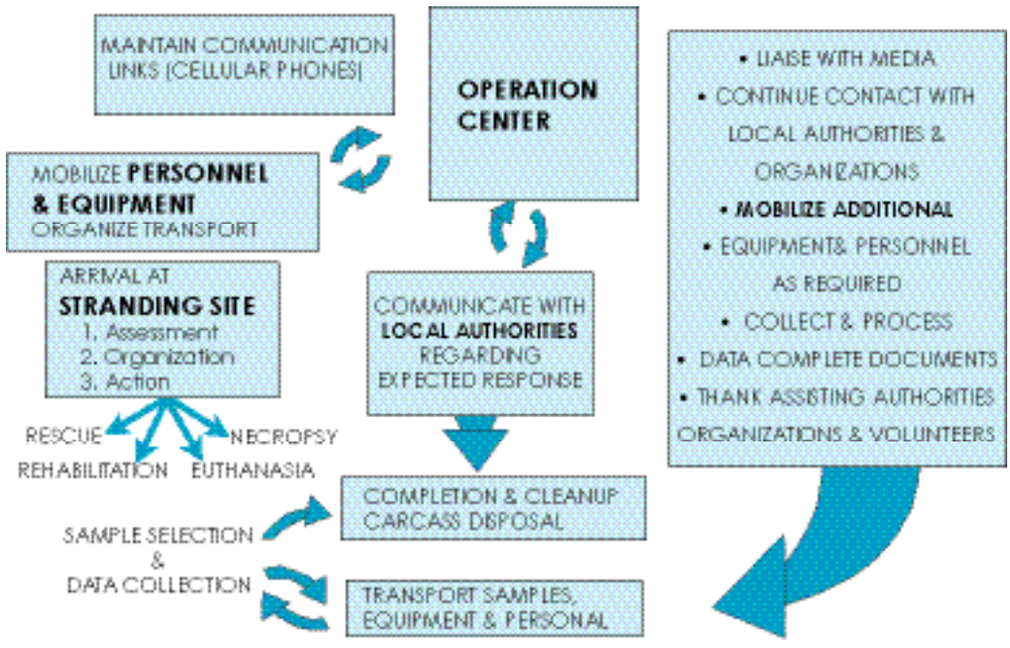

Figure 1. Stranding networks actions (based on Geraci & Lounsbury, 1993 with the authors' permission).

IV. SPECIFIC GUIDELINES

Scientific data collection requires a detailed, carefully planned protocol implemented by qualified personnel. Given the differences in the level of coverage of cetacean strandings between the ACCOBAMS countries, two levels of data collection are proposed. At the first level basic information will be collected and this will be common to all the stranding networks. The second level concerns more complex data and may vary as a function of the logistic and technical possibilities of each country.

1. Basic data for Cetacean Strandings

The basic information that should be collected from each stranded animal is listed below:

Measuring dolphins' bodies is a basic step before proceeding to the necropsies. (*Stenella coeruleoalba*)

- Details of both the informant and the scientific reporter: name and address (institution)
- Field number
- Number of animals including this one
- Date (dd/mm/yyyy), time of first discovery
- Location: latitude and longitude (to 0.1 minute, if possible), locality, region, country
- Species identification (by qualified personnel)
- Sex of animal (by qualified personnel)
- Total body length
- Weight (if possible)
- Animal condition.
  a) alive
  b) dead
    1) freshly dead
    2) decomposed but organs basically intact
    3) advanced decomposition (organs notrecognizable)
    4) mummified or skeletal remains only

- Report marks or external wounds
- Pictures should always be taken, including: Whole body, head, jaws, dorsal fin, tail, genital area, and old scars.

STUDY	CARCASS CONDITIONS
Histopathology	a) & b1)
Microbiology	a) & b1)
Parasitology	a) to b2)
Toxicology	a) to b2)
Reproduction	a) to b2)
Genetics	a) to b4)
Other life history studies (age, preys,…)	a) to b4)

Table 1: Biological and health studies related to carcass conditions

2. Basic field equipment

The minimum material necessary to perform a necropsy of a stranded animal should be the following:

- Latex gloves (sanitary conditions, not plastic ones)
- Data sheets
- Waterproof markers
- Measuring equipment
- Knives, scissors, scalpel, plastic knives, string
- Sample containers
- Aluminium foil and new plastic bags and sacs
- Kitchen paper roles
- Roman balance or dinamometres
- Camping cooler box with cold accumulators
- Preservatives (70% ethanol, 10% formalin, others)
- First-Aid kit
- Photographic camera and film

3. Experts in situ interventions

© A.Komnenou & A.Dougos/ Arion

From the moment that a stranding is reported, experts must come to the site as soon as possible with the necessary equipment, particularly if the animal is still alive. (*Stenella coeruleoalba*)

Planning of expert interventions should take into account the geographical and social peculiarities of each region or country. The actions to be taken can be summarised as follows:

- To have all the equipment ready for use before a stranding occurs.
- To react quickly. It is important to respond to the person notifying a stranding and to inform persons at the stranding site that operations are already under way.
- To evaluate the situation. Once on the beach it is necessary to obtain all possible information about the stranding and surrounding conditions to take appropriate decisions.
- To contact the relevant authorities. It is important to consider the local, regional or national organisations involved and that can assist to both control the public and the animal.
- To coordinate the action of authorities and volunteers. Those involved either officially or as volunteers require the assistance of a person experienced in strandings. The expert must give them instructions and remember to eventually acknowledge the help received.
- To care for public health and safety. Potential public health problems and distress to the animal, persons involved and the public in general, as well as eventual risks to the security of people or animals should be considered.
- To provide information to the public and the media. This information must be clear and appropriate explaining the action taken.
- To take relevant scientific decisions. This aspect depends on the scientific competence of the official in charge and has to do with decisions concerning animal transportation, euthanasia (if required), necropsy, and data and photography collection.

An excellent handbook covering these aspects has been written by Geraci and Lounsbury (1993) and it is available both as book and as CD ROM. Figure 2 shows the main options to follow when a cetacean strands, both alive and dead.

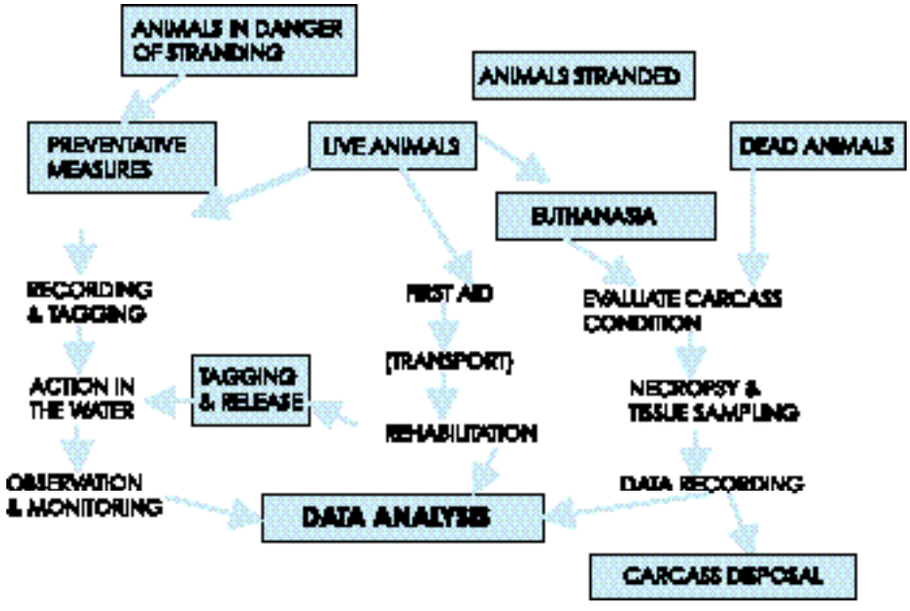

Figure 2. Options for responding to stranded cetaceans (based on Geraci & Lounsbury, 1993 with the authors' permission).

When the necropsy is going to be performed in the field it is useful to situate the animal on a wide plastic sheet. (*Grampus griseus*)

4. Necropsy

For each analysis samples should be taken systematically according to the decomposition stage of the animal (freshly dead, decomposed but organs basically intact, advanced decomposition -organs not recognizable- and mummified or skeletal remains only- see Table 1). For histopathology, microbiology, parasitology, toxicology and reproduction, the animals should be preferably alive or recently dead. In fact, samples from organs apparently normal at macroscopical level should be also taken.

© Daniel Cebrian –RAC/SPA

Disposable cloths are strongly recommended to perform the necropsy with the maximum sanitary conditions.

5. Collection and storage of samples (based on Kuiken and Garcia-Hartman 1991 and Jauniaux et al., 2002)

Labelling

Great care should be exercised labelling the samples. Two labels, one inside and another outside the container, should accompany each sample.
This is because external labels are easily detached at high humidity or at freezing temperatures. Each label should include the following data:

- Reference no. designating the individual animal.
- Type of tissue.
- Purpose of the sample (histopathology, virology, etc.).

Labels should be written legibly in permanent ink, using adequate terminology and preferably in English.

© Toni Raga -Univ .Valencia

Labelling of individuals before placing them together is basic when implementing necropsies during mass stranding events. (*Stenella coeruleoalba*)

V - LIFE HISTORY STUDIES

1 - Age determination

Collection : in odontocetes, take 4-5 teeth from the middle of the lower jaw. Choose teeth that appear intact and little curved. If the jaw does not need to be preserved for preparation of the skeleton, it can be sawed to collect the teeth more easily.

Fixation and storage: Teeth can be frozen at 20°C, kept in 70 % ethanol. They should not be kept at room temperature as they may crack hampering age determination.

2 - Digestive contents

Collection: The contents of each stomach compartment should be collected separately and kept frozen at 20°C. Alternatively, 70 % ethanol can be used to preserve the stomach contents, but formaldehyde solutions should be avoided as they can dissolve small fish bones.

3 - Genetic studies

A piece of skin (2 x 2 cm) should be collected and kept frozen (20°C) or fixed in either 70 % ethanol or 20% dimethyl sulfoxide (DMSO) solution saturated with NaCl.

© Toni Raga -Univ .Valencia

4 - Reproductive status

Collection: In females both ovaries must me collected and weighted making the distinction between the left and right ovary. In males only one testis needs to be collected and weighted.

Fixation and storage: part of the gonads must be fixed in a buffered solution of 10 % formaldehyde.

Samples should be submerged as soon as possible within appropriate preservatives. (*Globicephala melas*)

5 - Skeleton

It is necessary to know beforehand whether the skeleton is to be kept intact for collection purposes.

In this case the necropsy is more complex as the integrity of the bones should be sought. For instance, all ribs must be dissected individually at the level of the vertebra and sternum joints. Particular attention must be paid to preserve the pelvic bones, situated in the caudal musculature close to the anal opening, as well as the tympanic bullae and hyoid bones. These bone elements should be packed individually and catalogued. The remaining bones should be collected and preserved at 4°C or 20°C.

© Daniel Cebrian –RAC/SPA

A dolphin carcase is normally opened from one flank,by doing a wide square incision .The ribs are also removed allowing access to all the internal organs. (*Stenella coeruleoalba*)

VI - HEALTH STUDIES

1 - Toxicology

Collection: Although 10 g are enough to perform the analyses, large tissue samples (± 250 g) should be collected. For the analyses of persistent organic pollutants (POPs), samples of blubber, dorsal muscle, liver, kidney and brain should be wrapped in aluminium foil and then stored in a plastic bag. A sample comprising the whole depth of the blubber (free of skin and muscle) should be collected at the posterior level of the fin. For heavy-metal analyses, samples of blubber, dorsal muscle, bone (5th rib), liver, kidney and brain should be cut when possible with plastic knives (since contact with any metal should be avoided) and stored in new plastic bags; and if not, the fact must be reported. The liver and kidney should be weighted before any sample is taken.

In lactating females, collect milk samples in glass vials. Foetuses should be surveyed in the same fashion as adults.

Fixation and storage: samples should be preserved at 20°C if analyses are not carried out immediately. Ideally samples should be weighted before freezing, its weight being reported on the label, because of liquid losses associated to freezing.

2 - Microbiology

Samples from lesions that are suspected to have an infectious origin must be taken in an aseptic fashion with a sterile scalpel blade. The surface of the sample must be disinfected in 70 % ethanol. Then the sample (2 x 2 x 2 cm for virology or 6 x 6 x 6 cm for bacteriology, aprox.) should be placed in a suitable container. Commercial kits for the collection and storage of such samples are available.

a) Virology

Collection: Sampling of parenchyma and lesions of potential infectious origin should be taken in an aseptic fashion.
Fixation and storage: samples should be placed as soon as possible at 4°C. If they cannot be transported to a specialised laboratory within 24 h, they should be frozen (ideally at -80°C).

© A.Komnenou & A.Dougas –Arion

Plastic cloths can be useful to perform necropsies, when disposable clothes are not available

b) Bacteriology

Collection: the collection of liquids (blood, pus, urine, etc.) should be done with a syringe or a sterile Pasteur pipette after disinfection (alcohol, cauterisation) of the organ surface (heart, bladder, etc.). An intestinal loop, with adjacent mesenteric ganglion, must be collected after ligature of its two ends.

3 - Parasitology

Collection: parasites should be collected and fixed in a solution of 70 % ethanol with 5 % glycerine. If such a solution is not available, they can be stored in a 10 % formaldehyde solution. If all individuals are not collected, the whole number should be estimated. When surveying for parasites, special attention should be paid to the ear sinuses, the air passages and pulmonary blood vessels, liver and hepatic ducts, pancreas, the different stomach compartments and the intestine. If the skull is to be kept intact, caution should be exercised when dissecting the ear sinuses to avoid damage to the tympanic bulla. If lesions associated to parasites are detected, fix the ensemble in 10 % formaldehyde.

Fixation and storage: fixed specimens can be stored at room temperature. Fresh tissues or organs for parasite examination should be refrigerated at 4°C. Freeze (-20°C) if they cannot be examined within 24 h.

4 - Histopathology

Collection: samples should be collected to include a zone of juxtaposition of normal tissue and the lesion. Avoid manipulating the sample excessively to avoid damaging its microstructure. For large organs, it is preferable to collect several small samples rather than a large one.

Fixation and storage: The best fixative is a buffered solution of 10 % formaldehyde. A non-buffered solution can be used instead and has the advantage that can be readily prepared on the field, but this will preclude ulterior immunohistochemical analyses.
Since the penetration of the fixative is slow, it is advisable to

- make small slices thinner than 1 cm thick
- slice large samples at regular intervals
- inject fixative in hollow organs (bladder, eye, etc.) and lesions (e.g. cysts).

The ratio between the volume of fixative and that of the tissue should be around 10:1 and even 20:1 for brain samples. Since tissues tend to stiffen in formaldehyde, it is advisable using vials with large openings. Do not freeze samples for histopathology either before or after fixation.

5 - Other related studies

Immunohistochemistry
Fix all samples with a buffered solution of 10 % formaldehyde. Fixation should be as short as possible, ideally analyses should be carried out within 24 h.

Electron microscopy
Samples should be collected as fast as possible, cut in small cubes (1 mm^3), fixed in glutaraldehyde and stored in glass vials.

Molecular Biology (PCR)
Samples for molecular studies (2 x 2 x 2 cm) must be frozen quickly and stored at -20°C.

6 - Carcass disposal

One of the more relevant actions from both the media and public health perspective is to develop a protocol for the disposal of stranded cetaceans after death and data collection. The decisions are constrained by the size and condition of the animal, stranding location characteristics and logistic factors

Whereas a small cetacean, such a dolphin, is easy to handle and transport, large animals like sperm or rorqual whales are difficult to deal with. Likewise, there are differences depending on whether the body is fresh or in advanced state of putrefaction, or on the geographical characteristics of the coast, e.g. sandy beaches vs. inaccessible, abrupt and steep shorelines. Finally, the support of human resources, both officials and volunteers, and the availability of equipment, like vehicles, excavators, boats, etc., is also important. For that reason (and not only) it is very recommended to prepare shortly afterwards a brief report, containing basic findings and acknowledgement to local support, to be displayed at local facilities (city hall, port police office, etc).

Disposal or relocation of whales for implementing the necropsy need of coordinated actions to make cranes and other bulky material available. (*Balaenoptera physalus*)

© A.Komnenou & A.Drougas –Arion

Incineration is the best method to dispose of the carcass of a cetacean. Logistics allowing, large animals should be cut in manageable pieces. If cremation is not possible, the body should be buried in an authorised dump.

Incineration on the beach or disposal at sea should be avoided because of the risks posed to public health and navigation.

7. Emergency procedures (mass stranding and live animals)

In most recent years the Mediterranean and Black Seas have been scene of some events which have had great repercussions to cetacean conservation and have attracted the attention of the scientific community (Aguilar and Raga, 1993; Birkun et al., 1998; Frantzis & Cebrian, 1998). Such events are related to mass strandings or mass mortalities over wide geographical areas. Consequently, the establishment of a task force of marine mammals mortality and special events, formed by international experts, is recommended.

Mass stranding of beaked whales are rare phenomena, which need much attention, given the scientific value of these scarce events.(*Ziphius cavirostris*)

© Daniel Cebrian –RAC/SPA

© A.Komnenou & A.Dougas –Arion

Cetacean strandings sometimes take the form of live animals arriving ill, wounded or disoriented to the shore, in which case recovery should be attempted. (*Stenella coeruleoalba*)

These cases often attract the public and media attention and therefore represent an excellent opportunity to convey the importance of marine biodiversity conservation. Given the existing logistic problems and the lack of specialised personnel, co-operation between stranding networks, aquaria and oceanaria, capable of assisting in cetacean rehabilitation, should be sought.

REFERENCES

Aguilar, A. and Raga, J.A. (1993). The striped dolphin epizootic in the Mediterranean Sea. Ambio, 22 (8): 524-528.

Becker, P.R., B.J. Porter, E.A. Mackey, M.M. Schantz, R. Demiralp, and S.A. Wise. (1999). National Marine Mammal Tissue Bank and Quality Assurance Program: Protocols, Inventory, and Analytical Results, NISTIR 6279, National Institute of Standards and Technology, Gaithersburg, Maryland

Becker, P. Wilkinson, D. Lillestolen, T. (1994). Marine Mammal Health and Stranding Response Program: Program Development Plan. US Department of Commerce, NOAA Technical Memorandum NMFS-OPR-94-2

Birkun, A.; Kuiken, T.; Krivokhizhin, S.; Haines, D.M.; Osterhaus, A.D.M.E.; Van de Bildt, M.W.G.; Joiris, C.R. and Siebert, U. (1998). Epizootic of morbilliviral disease in common dolphins (Delphinus delphis ponticus) from the Black Sea. Veterinary Record, 144: 85-92.

Frantzis A. and D. Cebrián (1998). A rare atypical mass stranding of Cuvier's beaked whales: cause and implications for the species' biology. European Research on Cetaceans, 12: 332-335

Geraci, J.R. and Lounsbury, V.J. (1993). Marine Mammals Ashore: a field guide for strandings. Texas A&M Sea Grant Publication, 305 pp. (electronic version in CD ROM, NOAA and National Aquarium in Baltimore).

Kuiken, T. and García-Hartmann, M. (1991). Proceedings of the first ECS workshop on Cetacean pathology: dissection techniques and tissue sampling. European Cetacean Society Special Issue.

Jauniaux, T.; Garcia-Hartmann, M.; Haelters J.; Tavernier, J. and Coignoul F. (2002). Echouage de mammifères marins: guide d'intervention et procédure d'autopsie. Les Annales de Médecine Vétérinaire.

RAC/SPA (1998). L´étude des échouages des cétacés en Méditerranée. UNEP(OCA) / MED WG. 146/Inf.5

Wilkinson, Dean M. (1996). National Contingency Plan for Response to Unusual Marine Mammal Mortality Events. U.S. Dept. of Commerce, NOAA Tech. Memo, NMFS-OPR-9

ANNEX 1

Some of the organisations within ACCOBAMS riparian countries involved in stranding procedures

ALBANIA
University of Shkodra,
Faculty of Natural science
Department of Biology -chemistry
Contact person: Denik Ulqini
E-mail: denik_ul@yahoo.co.uk

ALGERIA
Réseau de Surveillance
Envirnnementale-RSE
Département de Biologie, Faculté des Sciences,
University d'Oran Es-Sénia,
31000,Oran Algérie
Tél/Fax: 0021341513174-416021
Contact Person: Zitouni Boutiba,
E-mail: zitouniboutiba@yahoo.fr
Mohammed Zoheïr Taleb,
E-mail: z_taleb@yahoo.fr

BULGARIA
Institute for Fisheries and Aquaculture
4 Primorski Blvd.
PO BOX 72 - Varna 9000
Tel./fax: +35952632066
E-mail: stanev_tz@yahoo.com
Contact Person: Tzvetan T. Stanev

CYPRUS
Department of Fisheries
and Marine Research
13 oeolou Str. 1416 - NICOSIA CHYPRE
Tel.: +3572 30 38 64
Fax : +357 2 77 59 55
E-mail: margyou@cytonet.com.cy

CROATIA
Croatian Natural History Museum
Demetrova 1 - 10000 ZAGREB CROATIE
Tel.: +385 1 4851 700
Fax: +385 1 4851 644
E-mail: Drasko.Holcer@hpm.hr
Contact person: Drasko Holcer

FRANCE
Centre de Recherche sur
les Mammifères Marins
Institut de la Mer et du Littoral
Avenue du Lazaret
17000 La Rochelle
Tel.: +33 546 44 99 10
Fax: +33 546 44 99 45
E-mail: crmm@univ-lr.fr
Contact Person: Olivier Van Canneyt

Groupe d'Etude des Cétacés de Méditerranée
Maison de l'Environnement
16, rue Ferdinand Fabre 34000 Montpellier
Tel.: +33 4 68 66 20 87
E-mail: jean-michel.bompar@wanadoo.fr
Contact Person: Jean Michel Bompar

GREECE
Aristotle University of Thessaloniki, (AUTH),
School of Veterinary Medicine,
Department of Clinical Sciences,
St. Voutyra 11, 546-27,
Thessaloniki, Greece
Phone +30 -2310-994443, 994402
Fax +30-2310-994403
Contact person: Prof Anastasia Komnenou, DVM,
(Veterinary Surgeon),PhD
E-mail : natakomn@vet.auth.gr
Live and Dead Strandings

ARION-Cetacean Rescue and Rehabilitation Center
Bizaniou 9, 546-40, Thessaloniki, Greece
Phone/ Fax :+302310-889404
Website : www.arion.org.gr
E-mail: arion@arion.org.gr
Contact persons :
Prof Anastasia Komnenou, DVM,PhD, Arion Vice President:natakomn@vet.auth.gr
Prof Drougas Aimilia , Oceanographer, PhD, Gen. Secretary: drougas@in.teipir.gr
Live and Dead Strandings

ISRAEL
Israel Marine Mammal Research & Assistance Centre. The Recanati Institute for Maritime Studies, University of Haifa Mount Carmel Haifa 31905 Tel: + 972 4 8240600 Fax: + 972 4 8240493 E-mail: goffman@research.haifa.ac.il Contact Person: Oz Goffman

ITALY
Centro Studi Cetacei, Museo Civico di Storia Naturale, Corso Venezia 55, 20121 Milano Tel.:+39.02.88463324 Fax:+39.02.88463281 E-mail: michela.podesta@comune.milano.it Contact Person: Michela Podestà

LIBYA
Environment General Autority
L.A.J. TRIPOLI
PO BOX 83618
Fax: +218 21 48 30 001

MALTA
Department of Biology
University of Malta
Msida
Tel.: + 356 32902790
Fax: +356 32903049
E-mail: avel@cis.um.edu.mt
Contact Person: Adriana Vella

Nature Protection Unit
Environment Protection Directorate
Malta Environment & Planing Authorithy
Po Box 200
Floriana MALTE
Tel.: +356 22 90 6008/6005
Fax: +356 22 90 1585
Contact Persons: Carmen Mifsud
Alfred Baldachino
E-mail: carmen .mifsud@mepa.org.mt
alfred.e.baldacchino@mepa.org.mt

MOROCCO
Institut National de Recherche Halieutique
2, Rue de Tiznit
Casablanca
Tel.: +22.22.02.49
Fax: +22.26.88.57
E-mail : mesfioui@inrh.org.ma
Contact Person: Amina Moumni

Institut Scientifique
Département de Zoologie et Ecologie Animale
Avenue Ibn Battota B.P. 703, Agdal
10106 Rabat-Morocco
Tel.: +212.37.774548/49
Fax: +212.37.774540
E-mail: bayed@israbat.ac.ma
Contact Person: Abdellatif Bayed

PORTUGAL
Instituto de Conservaçáo de Natureza
Rua de Santa Marta 551150-294 LISBOA
Portugal
Tel : 351 21 350 79 00
Fax : 351 21 350 79 86
E-mail: sequeiram@icn.pt
Contact Person: Marina Sequeira

ROMANIA
National Institute for Ma-rine Research and Development "Grigore Antipa" Bd. Mamaia 300, Constanta 8700;
Tel.: +40 241 543 288 / 40 241 540 870
Fax: +40 241 831 274;
E-mail: rmri@alpha.rmri.ro;
Contact person: Maria MOLDEVEANU, Responsible Focal Point ACCOBAMS;
Gheorghe RADU, LIFE6NATURE Project Manager; e-mail: gpr@alpha.rmri.ro
DOLPHINARIUM Bvd. Mamaia No: 255 8700 Constanta ROMANIA
Tel: (40) 241 647055
Fax: (40) 241 647055; e-mail: delfinariu@cjc.ro Contact person: Gabriela PLOTOAGA, Director.

SPAIN
ANDALUCÍA
CENTRO DE RECUPERACIÓN DE ESPECIES MARINAS AMENAZADAS, C.R.E.M.A, (Málaga)
Contact persons: José Luis Mons y Juan José Castillo (aulamar@vnet.es, crema@auladelmar.info)

PROMAR - CENTRO VETERINARIO Y DE ATENCIÓN DE ESPECIES EQUINAC, (Almería)
Contact persons: Eva Mª Morón Manchado (equinac73@yahoo.es), Paco Toledano (almeria@ecologistasenaccion.org)
GRAMPUS, (P.N. Doñana, Huelva)
Contact person: Juan Carlos Rivilla (grampus@terra.es)

CEUTA
INSTITUTO DE ESTUDIOS CEUTÍES, (Ceuta)
Contact person: Dr. Oscar Ocaña
(lebruni@telefonica.net)

MURCIA
CENTRO DE RECUPERACIÓN DE FAUNA SALVAJE DEL PARQUE NATURAL "EL VALLE", (Murcia)
Contact person: Alejandro Bayón
(abayon@um.es)

COMUNITAT VALENCIANA
UNIVERSIDAD DE VALENCIA, (Valencia)
Contact person: Dr. Juan Antonio Raga
(toni.raga@uv.es)

CENTRO DE RECUPERACIÓN Y ESTUDIO DEL MEDIO NATURAL, EL SALER , (Valencia)
Contact person: Juan Antonio Gómez, Cati Gerique, (centro.granja@cma.m400.gva.es)

MUNDOMAR, (Benidorm, Alicante)
Contact persons: Camino Herreros París y Kees de Groot
CATALUNYA
CENTRE DE RECUPERACIÓ D'ANIMALS MARINS DE Catalunya, (Premià de Mar, Barcelona)
Contact persons: Josep Maria Gaya
(cram@lix.intercom.es)

ILLES BALEARS
FUNDACIÓN MARINELAND PALMITOS, (Calvià, Mallorca)
Contact persons: Debora Morrison y Gloria Fernandez (DMORRISON@aspro-ocio.es;gfernandez@aspro-ocio.es)

TUNISIA
Institut National des Sciences et Technologies de la Mer
B.P 1035 Sfax 3018
Tel.: +216 74 497 117
Fax: +216 74 497 989
Contact Person: Mohamed Nejmedine Bradai
E-mail:mednejmeddine.bradai@instm.rnrt.tn
mohamednejmeddine@yahoo.fr

TURKEY
Istanbul University
Faculty of Fisheries
Ordu Cad. No. 200
34480 Laleli- Istanbul
Tel: + 90 212 5190484
Fax: + 90 216 3239050
E-mail: Ozturkb@istanbul.edu.tr
Contact Person: Bayram Öztürk

Turkish Marine Research Foundation
PK 10 81650 Beykoz
Istanbul
Tel: + 90 216 4240772
Fax: + 90 216 4240771
E-mail: tudav@superonline.com
Contact Person: Bayram Öztürk

Underwater Research Society
PK420
Yenisehir 06444 ANKARA
Tel.: +90 312 231 6501
Fax: +90 312 231 6820
Email : sadafag@yahoo.com

Karadeniz Technical University
Rize Faculty of Fisheries
53600 Saraykoy
Iyidere rize
Tel.: +90464 321 37 64
Fax: +90464 321 38 92

UKRAINE
Brema Laboratory
Gagarin Str. 9a-18, Simferopol, 95026.
Tel./Fax: + 380 652 253503
E-mail: AlexeiBirkun@home.cris.net
Contact Person: Alexei Birkun;
brema@poluostrov.net
Contact Person: Sergey Krivokhizhin