

MARINE MAMMALS

PROTOCOLS AND TECHNIQUES FOR RESPONDING TO STRANDINGS

January 2007

I. Background

1. This document was produced in response to recommendation III, Article IV, of the III Meeting of the Scientific and Technical Advisory Committee (STAC) to the Protocol Concerning Specially Protected Areas and Wildlife (SPA) in the Wider Caribbean Region, held in Caracas, Venezuela, 4-8 October 2005.

2. Having reviewed the recommendations of the “Report of the Regional Workshop of Experts on the Development of the Marine Mammal Action Plan (MMAP) for the Wider Caribbean Region”, Bridgetown, Barbados, 18-21 July 2005 (UNEP(DEC)/CAR WG.27/3), STAC recommended that the secretariat and the SPAW/RAC work toward implementing Recommendation No. 3 of the Annex IV of the Report of the Workshop of Experts as a priority action, which states:

“...a. The SPAW/RAC in collaboration with Governments and relevant organizations compile and make available the following:

iv. Protocols and techniques for responding to strandings;

...noting that this process is ever-evolving.”

3. It is clear that in the Wider Caribbean Region, there is a pressing need for capacity building in the area of response programmes to strandings. The *first* Eastern Caribbean Marine Mammal Stranding Response Training Workshop (MMSW) was held at the University of West Indies Veterinary School of Medicine at the Eric Williams Medical Sciences Complex, Champs Fleurs, Trinidad from November 15 to 18, 2005. The purpose of the workshop was to provide stranding response and necropsy training—a core of marine mammal stranding expertise and tools—in the Eastern Caribbean region.

4. Seeking to take advantage of the accumulated expertise of colleagues, the *University of the West Indies (UWI) School of Veterinary Medicine* collaborated with the U.S. National Marine Fisheries Service (NMFS), UNEP/Caribbean Environment Programme (CEP), the Eastern Caribbean Cetacean Network (ECCN), MARVET (Grenada), and the Smithsonian Marine Mammal Laboratory (Washington, D.C) to convene the workshop. The recommendations contained in the Final Report of the Workshop are transcribed in Annex I.

5. The present document is organized in two parts: (1) general summary of issues, procedures and considerations pertaining to strandings, with excerpts and text taken from key literature (listed in Section III) and (2) compilation of protocols and techniques for responding to strandings, based on better known examples, particularly from the USA, as well as outlining relevant sources of information and organizations, from within and outside the Wider Caribbean Region. This document is not a comprehensive review nor should it be considered as Guidelines. Its goal is to provide an overview of protocols and practices for responding to strandings.

6. Submissions of errors, omissions and new publications for inclusion can kindly be made directly to SPAW/RAC.

II. General summary of issues and procedures

1. Definitions and Decisions on When to Intervene

Stranding: occurrence of a marine mammal (either dead, ill or alive) immobilised ashore.

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

Mass die-off: mortality on a large scale (without inference on the cause of death or species involved).

The U.S. Working Group on Marine Mammal Unusual Mortality Events has developed a set of criteria to determine the occurrence of an unusual mortality event. The criteria are:

1. A marked increase in the magnitude or a marked change in the nature of morbidity, mortality or strandings when compared with prior records.
2. A temporal change in morbidity, mortality or strandings is occurring.
3. A spatial change in morbidity, mortality or strandings is occurring.
4. The species, age, or sex composition of the affected animals is different than that of animals that are normally affected.
5. Affected animals exhibit similar or unusual pathologic findings, behavior patterns, clinical signs, or general physical condition (e.g., blubber thickness).
6. Potentially significant morbidity, mortality or stranding is observed in species, stocks or populations that are particularly vulnerable (e.g., listed as depleted, threatened or endangered or declining). For example, stranding of three or four right whales may be cause for great concern whereas stranding of a similar number of fin whales may not.
7. Morbidity is observed concurrent with or as part of an unexplained continual decline of a marine mammal population, stock, or species.

Stranding Network: human and institutional coordination for the monitoring of cetacean strandings. Its objective include:

- Provide welfare of live stranded animals
- Allow the wider community to report strandings in a efficient and rapid way
- Minimize risk to public health and safety
- Support scientific research and assist in determining causes of mortality
- Advance awareness and education on marine mammals

When to Intervene:

Not every animal on the beach needs help. Recognizing normal animal behaviours, specially from coastal species will avoid unnecessary action. Deciding what course to take requires an understanding of the animal's natural history, social organization, and species specific considerations, and should bear in mind that a rescue effort generates interest from the public.

Criteria for deciding when to intervene include consideration of the following questions:

- How many animals are involved? Attempting to give equal attention to more animals than resources allow may compromise adequate care for any one.
- Is logistical support available?

- Are local weather and sea conditions favorable?
- Can animal condition be assessed?
- What is the time elapsed since stranding?
- Can it be easily handled?
- Are care facilities available?

2. The Response Team

Institutional mandate

A stranding network must function within the legal framework established by various relevant authorities and organizations at local, national and regional levels to ensure effective coordination, avoid duplication of efforts and actions, and achieve action its long-term goals.

Efforts in the Wider Caribbean

National stranding networks require consideration of their own particular institutional capacities, mandates and resources both human and logistical.

A *Caribbean Stranding Network* (CSN- <http://rcv.caribe.net/>) has been established in Puerto Rico for almost a decade, which includes the U. S. Virgin Islands, the British Virgin Islands, the Dominican Republic, Venezuela, and Colombia. The CSN reports cases of stranded marine mammals, sea turtles, and sea birds. In addition, the CSN also attempts to rescue and rehabilitate sick or injured animals.

The *Eastern Caribbean Cetacean Network* (ECCN- www.eccnwhale.org) is a regional, volunteer network that records sightings and strandings of marine mammals in the Eastern Caribbean. It operates out of Bequia, St. Vincent and the Grenadines, and of the Woods Hole Oceanographic Institute, Massachusetts USA, being directed by Dr. Nathalie Ward.

Stranding network efforts are also under way in Turks & Caicos and more recently in Trinidad and Tobago.

Elements of an ideal network include:

- A mechanism for allowing quick reporting of live stranded, ill, injured or dead animals (a "24 hours" hotline telephone service)
- An emergency response team, with a veterinary component to attend the reports of strandings, particularly live animals.

Responsibilities

The composition of a response team depends on the type and frequency of animals coming ashore. Common to all situations, however, is the basic need for the team to:

- respond rapidly
- contact local authorities upon arrival
- evaluate the situation
- provide emergency care
- arrange to take action (release, transport, necropsy, specimen and data collection, and photographic documentation)
- enlist local assistance
- provide information to the public and media
- protect public health and ensure safety

- maintain communications with stakeholders

- 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

To be of real value data have to be collected in a consistent manner, from the largest possible number of animals and over a long time period.

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.

3. Rescue and Release

Immediate release, returning the animal to sea would require consideration of the following :

- The animal is manageable and logistic support adequate
- Beach and environmental conditions are favorable
- The animal is healthy and able to function normally
- Maternal care for young can be met
- The area of release is within natural or suitable habitat

Logistical capabilities and support are determining to decide whether or not to release an animal.

Rehabilitation

Rehabilitation would require consideration of the following:

- There is a good chance the animal can be restored to health
- Facilities are available and equiped for the species and number of animals involved
- Arrangements can be made for safe and expeditious transport
- The animal is manageable and poses no major risk to others or to facility staff
- There are sufficient funds and staff to provide care for a reasonable period

The purpose of rehabilitation would be to provide humane care for stranded marine mammals and to optimize the success of releasing into the wild. Care facilities should meet design and operational criteria so as to optimize rehabilitation success rate. A detailed evaluation process is required to determine if, following rehabilitation, an animal is suitable for release.

General Procedures, Data and Sample Collection

The summary information below on General Procedures, Basic Information, and Collection and Storage of Samples for Life History and Health Studies was primarily taken from the *Guidelines for the Development of National Networks of Cetacean Strandings Monitoring* prepared by the UNEP-Mediterranean Action Plan through its Regional Activity Centre for Specially Protected Areas (RAC/SPA).

General Procedures

Stranding responses will differ according to each case and characteristics of a region and country.. Mass strandings will also need additional human resources, although not necessarily skilled or trained at the same level of expertise. Tasks and actions should be clearly defined, communicated and supervised, and can generally 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 those 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. Experts 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.

Data Collection

Scientific data collection requires a detailed, carefully planned protocol implemented by qualified personnel. Given that the level of response and capacities to respond to strandings differ among most countries and situations, there is a tendency to collect data at two levels: basic information pertaining to the stranding and more complex data which may vary as a function of the logistic and technical possibilities of each country.

Examples of data collection forms from the Mediterranean (Basic and Advanced Forms from the Mediterranean Database of Cetacean Strandings -MEDACES) and the USA (Marine Mammal Level A Stranding Data Report) are available in Annex II.

A summary of Basic Information required for each stranding include:

- 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 not recognisable)
 - 4) mummified or skeletal remains only

STUDY	CARCASS CONDITION
Histopathology	a) & b 1)
Microbiology	a) & b 1)
Parasitology	a) to b 2)
Toxicology	a) to b 2)
Reproduction	a) to b 2)
Genetics	a) to b 4)
Other life history studies (age, prey)	a) to b 4)

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

Supplementary on-site information include:

- Weather and tide conditions
- Human/predator activity
- Presence of prey species
- Behaviour
- Samples collected for life history (e.g. teeth, ear plugs, reproductive tracts, stomach contents) and for blood studies, toxicology, microbiology, histopathology, parasites collected.

Collection and Storage of Samples

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.

Life History Studies

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 or kept in 70 % ethanol. They should not be kept at room temperature as they may crack hampering age determination.

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.

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.

Reproductive status

Collection: In females both ovaries must be collected and weighted making the distinction between the left and right ovary. Ovarian scars should also be noted, and to which side they correspond. 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.

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. The skull is crucial for the confirmation of species identification and every effort should be made to collect and save it. Particular attention must also be paid to preserve the pelvic bones, as well as the tympanic bullae and hyoid bones.

Health Studies

Toxicology

Collection: Although 10 g are enough to perform the analyses, large tissue samples (\pm 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 aluminum 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 weighed 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 weighed before freezing, its weight being reported on the label, because of liquid losses associated to freezing.

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, approx.) 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).

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 ligation of its two ends.

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.

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 nonbuffered solution can be used instead and has the advantage that it 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.

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 mm³), 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.

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 baleen whales are difficult to deal with. Likewise, there are differences depending on whether the body is fresh or in advanced state of decomposition 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, such as vehicles, excavators, boats, etc., is also important. For that reason, it is recommended that a brief report containing basic findings and acknowledgement to local support be prepared and displayed, as appropriate, at local facilities (city hall, port police office, etc).

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.

Basic field equipment

The minimum material necessary to perform a necropsy of a stranded animal would include:

- Latex gloves (not plastic)
- Data sheets
- Waterproof markers
- Measuring equipment
- Knives, scissors, scalpel, string, plastic knives
- Sample containers, vials and labels
- Aluminum foil and new plastic bags and sacs
- Kitchen paper roles
- Scales or dinamometres
- Cooler with ice packs
- Preservatives (70% ethanol, 10% formalin, others)
- First-Aid kit
- Photographic camera

III. Key References for Protocols and Techniques for Responding to Strandings

Protocols and Techniques

Guidelines for the Development of National Networks of Cetacean Strandings Monitoring. 2004. 21pp.

Prepared by the UNEP/ Mediterranean Action Plan through its Regional Activity Centre for Specially Protected Areas (RAC/SPA), which is synchronously the Mediterranean Sub-regional Coordinating Unit of the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS). The RAC/SPA is the depository for the Mediterranean Database of Cetacean Strandings (MEDACES-www.medaces.uv.es/home_eng.htm). This database, whose management and implementation is entrusted to the University of Valencia's Cavanilles Biodiversity Institute (ICBIBE), has been set-up to co-ordinate all national and regional efforts for riparian countries. This database project was created under the Barcelona Convention and extended to the area covered by ACCOBAMS. It is currently supported by the Spanish Ministry of Environment. Cetacean stranding data are expected to be organized into a spatially referenced database of public access.

Geraci, J. R. and V.J.Lounsbury. 2005. Marine Mammals Ashore. A Field Guide for Strandings. National Aquarium. Baltimore, MD. 380 pp. 2nd. Edition.

This comprehensive manual describes rescue operations, how to organize a response team, and how to deal with the media and the public. It includes basic information on marine mammal biology, life history, and health, and an extensive bibliography. It also provides stranding network participants with practical guidelines for collecting data and specimens. The 2005 edition includes topics such as : recognizing, responding to, and investigating unusual mortality events ; new or updated protocols for specimen and data collection (e.g., samples for PCR analysis; basic guidelines for investigating possible noise-related strandings; collecting environmental data and samples; and a detailed protocol for examining marine mammals for signs of human interactions).

The U.S. NOAA Fisheries' Marine Mammal Health and Stranding Response Program (MMHSRP) is currently developing national protocols that will help standardize the marine mammal stranding and disentanglement network across the US while maintaining regional flexibility. These protocols are proposed to be issued in one consolidated manual, *Policies and Best Practices for Marine Mammal Stranding Response, Rehabilitation and Release*. Interim documents available from their site (<http://www.nmfs.noaa.gov/pr/health/eis.htm>) are listed below.

Final Forms & Reports

- [Marine Mammal Stranding Report: Level A Data Form](#) [pdf] [2.3 MB] (OMB No. 0648-0178, NOAA Form 89-864) Rev 2004 (Annex
- [Marine Mammal Rehabilitation Disposition Report](#) [pdf] [295 KB] (OMB No. 0648-0178, NOAA Form 89-878) Rev 2004
- [Federal Register Notice - Proposed Information Collection; Comment Request: Marine Mammal Stranding Report/Marine Mammal Rehabilitation Disposition Report](#) [pdf] [43 KB] (68FR-66817, 2003)

Draft/Interim Forms & Reports

- [Interim Stranding Agreement Template](#) [pdf] [110 KB]
- [Interim Minimum Eligibility Criteria for a Stranding Agreement](#) [pdf] [52 KB]
- [--Stranding Network Comments to Minimum Eligibility, Dec 2004](#) [pdf] [253 KB]

- [Interim Rehabilitation Facility Standards \[pdf\]](#) [264 KB]
- [DRAFT Examiner's Guide to the Marine Mammal Stranding Report: Level A Data \[pdf\]](#) [1.7 MB]
- [DRAFT Examiner's Guide to the Marine Mammal Rehabilitation Disposition Report \[pdf\]](#) [153 KB]

Health and Stranding Response Program Plans

- Becker, Paul R., Dean Wilkinson, and Ted I. Lillestolen. 1994. [Marine Mammal Health and Stranding Response Program Development Plan \[pdf\]](#) [3.3 MB], NOAA Tech Memo, NMFS-OPR-94-2, 35 p.
- Wilkinson, Dean. 1996. [National Contingency Plan for Response to Unusual Marine Mammal Mortality Events \[pdf\]](#) [12.6 MB], NOAA Tech Memo, NMFS-OPR-9, 118 p.

1997. [DRAFT Release of Stranded Marine Mammals to the Wild: Background, Preparation, and Release Criteria \[pdf\]](#) [8.7 MB], 76p.

St. Aubin, D.J., J.R. Geraci. and V.J. Lounsbury, editors. 1996. [Rescue, Rehabilitation, and Release of Marine Mammals: an Analysis of Current Views and Practices \[pdf\]](#) [1.9 MB] Proceedings of a Workshop Held in Des Plaines, IL, 3-5 December 1991. NOAA Tech Memo, NMFS-OPR-8, 65p

Sampling

Becker, P.R., S.A. Wise, B.J. Koster, R. Zeisler. 1991. [Alaska Marine Mammal Tissue Archival Project: Revised Collection Protocol \[pdf\]](#) [1.5 MB], U.S. Dep. Commer., National Institute of Standards and Technology, NISTIR 4529, 33p.

Bonde, R.K., T.J. O'Shea and C.A.Beck.1983. *Manual of procedures for the salvage and necropsy of carcasses of the West Indian Manatee (Trichechus manatus)*. Sirenia Project, U.S. Fish and Wildlife Service, Gainesville, Florida.

Dierauf, L.A. 1994. [Pinniped Forensic, Necropsy, and Tissue Collection Guide \[pdf\]](#) [2.9 MB], U.S. Dept. of Commer., NOAA Tech Memo. NMFS-OPR-94-3, 80p

Federal Register Notice - [Protocol for Access to Tissue Specimen Samples from the National Marine Mammal Tissue Bank \[pdf\]](#) [51 KB] (67FR-68553, 2002)

Jauniaux T., Garcia Hartmann M., Haelters J., Tavernier J., Coignoul. 2002. Echouage de mammifères marins:guide d'intervention et procédures d'autopsie. F. Ann. Méd. Vét. 146 : 261-216.

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.

Stranding Events

[Bahamas Beaked Whale Report \(2000\) \[pdf\] \[1.5 MB\]](#)

[--Bahamas Beaked Whale Report 1-Page Summary](#)

Gulland, F. 2000. [Domoic Acid Toxicity in California Sea Lions \(*Zalophus californianus*\) Stranded Along the Central California Coast, May-October 1998 \[pdf\] \[15.4 MB\]](#) Report to the National Marine Fisheries Service Working Group on Unusual Marine Mammal Mortality Events. U.S. Dep. Commer., NOAA Tech Memo, NMFS-OPR-17a, 45 p.

Gulland, F.M.D., H. Pérez-Cortés M., J. Urbán R., L. Rojas-Bracho, G. Ylitalo, J. Weir, S.A. Norman, M.M. Muto, D.J. Rugh, C. Kreuder, and T. Rowles. 2005. [Eastern North Pacific Gray Whale \(*Eschrichtius robustus*\) Unusual Mortality Event, 1999-2000 \[pdf\] \[372 KB\]](#) U.S. Dep. Commer., NOAA Tech. Memo., NMFS-AFSC-150, 33 p.

Hohn, A.A., D.S. Rotstein, C.A. Harms, and B.L. Southall. 2006. [Report on marine mammal unusual mortality event UMESE0501Sp: Multispecies mass stranding of pilot whales \(*Globicephala macrorhynchus*\), minke whale \(*Balaenoptera acutorostrata*\), and dwarf sperm whales \(*Kogia sima*\) in North Carolina on 15-16 January 2005 \[pdf\] \[13.0 MB\]](#). NOAA Technical Memorandum NMFS-SEFSC-537, 222 p.

[Interim Report on the Bottlenose Dolphin \(*Tursiops truncatus*\) Unusual Mortality Event, March-April 2004 \[pdf\] \[1.7 MB\]](#)

[Mass Stranding of Beaked Whales in the Galapagos Islands, April 2000 \[pdf\] \[66 KB\]](#)

Norman, S.A., Raverty, S., McLellan, B., Pabst, A., Ketten, D., Fleetwood, M., Gaydos, J.K., Norberg, B., Barre, L., Cox, T., Hanson, B., and Jeffries, S. 2004. [Multidisciplinary investigation of stranded harbor porpoises \(*Phocoena phocoena*\) in Washington State with an assessment of acoustic trauma as a contributory factor \(2 May-2 June 2003\) \[pdf\] \[4.5 MB\]](#) U.S. Dep. Commerce, NOAA Tech. Memo. NMFS-NWR-34, 120 p.

Southall, B. L., R. Braun, F. M. D. Gulland, A. D. Heard, R. W. Baird, S. M. Wilkin and T. K. Rowles. 2006. [Hawaiian melon-headed whale \(*Peponocephala electra*\) mass stranding event of July 3-4, 2004 \[pdf\] \[4.4 MB\]](#). NOAA Technical Memorandum NMFS-OPR-31. 73 pp.

Additional References

Angliss, R.P. and D.P. DeMaster. 1998. Differentiating serious and non-serious injury of marine mammals taken incidental to commercial fishing operations: report of the serious injury workshop, 1-2 April 1997, Silver Spring, Maryland. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-OPR-13. 48 p.

Bannister, J.L., C.M. Kemper and R. Warneke. 1996. The Action plan for Australian cetaceans. Australian Conservation Agency, Canberra. 242 p.

Becker, P., D. Wilkinson and T. Lillestolen. 1994. Marine Mammal Health and Stranding Response Program: program development plan. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-OPR-94-2. 35 p.

Becker, P., Porter, B.J., Mackey, E.A., Schantz, M.M., Demiralp, R. and Wise, S.A. 1999. National Marine Mammals Tissue Bank and Quality Assurance Program: Protocols, Inventory, and Analytical Results. U.S. Department of Commerce, NISTJR Technical Memorandum, NISTIR - 6279, 183 pp.

Blaylock, R.A., B.G. Mase and C.P. Driscoll [eds.]. 1995. Final report on the workshop to coordinate large whale stranding response in the southeast U.S. U.S. Dept. Commerce, NOAA, National Marine Fisheries Service, Southeast Fisheries Science Center, Charleston Laboratory, Charleston, South Carolina. SEFSC Contributions MIA-96/97-43. 38p.

Dailey, M.D., 2001, Parasitic Diseases, in *CRC Handbook of Marine Mammal Medicine*, Dierauf, L.A. and Gulland, F.M.D. (Eds), CRC Press, Boca Raton, FL, 357-379

Dailey, M. D. 2005. Parasites of Marine Mammals. In *Marine Parasitology*. Ed. K. Rohde. Victoria, Australia, CSIRO Publishing: 408- 414.

Dierauf, L.A. 1994. Pinniped forensic, necropsy and tissue collection guide. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-OPR-94-3. 80 p.

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Stranding Networks and Organizations that address strandings

Stranding Networks

- **North America**
 - **Marine Mammal Hotline** - National Oceanic and Atmospheric Administration
 - **California** - [Marine Mammal & Sea Turtle Stranding Network](#)
 - **Florida** - [Marine Animal Rescue Society](#) works jointly with the Florida University and other stranding networks. The society participates in the rescue and release of injured marine mammals.
 - **Louisiana** - [The Louisiana Marine Mammal Stranding Network](#)
 - **Maine** - [Maine State Whale Hotline](#) tracks whale sightings, including live, stranded, entangled, or dead whales.
 - **Massachusetts** - [Cape Cod Stranding Network](#) responds to stranded seals, whales, dolphins, and porpoises from the Cape Cod Canal south to the Rhode Island border, covering approximately 700 miles of coastline.
 - **New Jersey** - [The Marine Mammal Stranding Center](#) is a private non-profit organization founded in 1978. It has responded to thousands of calls about stranded whales, dolphins, seals, and sea turtles that have washed ashore on New Jersey beaches.
 - **Nova Scotia** - [The Marine Mammal Response Society](#) monitors and responds to strandings and incidental catches of marine mammals. Dead or live-stranded animals, animals seen floating, or animals caught in fishing gear (whether killed, released alive, or trailing gear) are recorded through the Society.
 - **Texas** - [Texas Marine Mammal Stranding Network](#) Founded in 1980, the group is a nonprofit volunteer-based organization dedicated to the understanding and conservation of marine mammals. The Network rescues and rehabilitates marine mammals that strand along the Texas Coast, providing food, medical treatment and 24-hour-a-day observation.

- **South America**
 - **Peru** - Organization for Research and Conservation of Animals ORCCAMM - RESCUE is a group of specialists and well trained volunteers ready to assist any kind of emergency with stranded marine mammals: first aid, emergency rescues and medical attention are provided in order to help injured or marine mammals in distress. Our current operations are done along the Peruvian coast, covering 1000km in more than 50 stations.
 - **Brazil** – Rede de Encalhes de Mamíferos Aquáticos do Nordeste (REMANE) – Covers over 2.500km of the Brazilian coast concentrating in the Northeast states with the aims of responding to strandings; developing protocols for stranding responses (Protocolo de Conduta para Encalhes de Mamíferos Aquáticos-available in Portuguese), maintaining a stranding database and promoting technical training for stranding responses.
- **United Kingdom**
 - **UK National Whale Strandings Scheme** 0207 942-5155
 - **Cornwall Wildlife Trust** 0845 201-2626
 - **Devon Wildlife Trust** 0139 227-9244

Primary source : Whales on the net - <http://www.whales.org.au>

Organizations that address strandings

Our Corpus Christi Regional office. - Texas Marine Mammal Stranding Networks' regional office in Corpus Christi.

South Padre Island Region Contact Information - Texas Marine Mammal Stranding Networks' regional office on South Padre Island.

Louisiana Marine Mammal Stranding Network - The marine mammal stranding network covering the Louisiana Coast.

The Marine Mammal Center, California. Northern California's marine mammal rescue, rehabilitation, and release resource.

Marine Mammal Stranding Center of New Jersey. For the past 18yrs, the MMSC has been operating as a non-profit corporation in the state of New Jersey. Respond to strandings of whales, dolphins, seals and sea turtles on a 24 hour, 7day a week basis.

Mote Marine Lab - Florida - Mote Marine Laboratory (MML) is an independent, nonprofit research organization dedicated to excellence in marine and environmental sciences. Since its inception in 1955, the laboratory's primary missions have been the pursuit of excellence in scientific research and the dissemination of information to the scientific community as well as to the general public.

Clearwater Marine Aquarium - The Clearwater Marine Aquarium is a 501(c)(3) not-for-profit organization dedicated to the rescue, rehabilitation, and release of sick and injured marine animals.

Okeanos- New York - The Riverhead Foundation for Marine Research & Preservation was established and incorporated in 1996. The Foundation conducts research and education programs about the region's marine habitats.

Italian Stranding Network - The Italian marine mammal rescue and rehabilitation website.

Irish Seal Sanctuary Helps establish and co-ordinate a marine mammal rescue network throughout the country.

Other

IWC – International Whaling Commission

A Ship Strikes Working Group (SSWG) was established under the Conservation Committee of the International Whaling Commission-IWC. Recognising that ship strikes may be one of the reasons for cetacean strandings, the SSWG recommended that a review of the geographical distribution of stranding networks be undertaken to identify gaps in coverage.

A draft table has been compiled on cetacean stranding networks worldwide. The intention is to obtain as comprehensive a list as possible of known strandings networks and contact persons. The SSWG will then discuss the most appropriate way to gather more information including the spatial and temporal coverage of any networks and the type of information collected when a stranding is reported.

Information Sources for Marine Mammals

Texas A&M University at Galveston

Department of Marine Biology at Texas A&M University at Galveston

Current Advances in Marine Mammal Science - (CAMMS) was developed to help keep researchers informed of current marine mammal publications. CAMMS is a truly searchable database. Users can now import references into a Reference Manager or ProCite database in one step and import references into EndNote or other reference managers from a text file. CAMMS is a cooperative project with the Marine Mammal Research Program (Texas A&M University).

Wesley R. Elsberry's Protected Marine Species Online information about Protected Marine Species.

The National Marine Mammal Laboratory is responsible for conducting research on marine mammals important to the mission of the National Marine Fisheries Service (NMFS) and the National Oceanic & Atmospheric Administration (NOAA), with particular attention to issues related to marine mammals off the coasts of Oregon, Washington and Alaska.

New England Aquarium - Conservation and research projects worldwide. Exhibits, public forums, and outreach programs for aquatic conservation.

Primary source : Texas Marine Mammal Stranding Network, Galveston, TX

ANNEX I

Extract- APPENDIX IV Recommendations – Trinidad Workshop

Training on Stranding Response in the Wider Caribbean

Eastern Caribbean Marine Mammal Stranding Response Training Workshop. Final Report. School of Veterinary Medicine. University of West Indies. Champ Fleurs, Trinidad and Tobago. 15-18 november 2005. 19 pp. Prepared by Dr. Nathalie Ward, 15 January 2006.

APPENDIX IV: WORKSHOP RECOMMENDATIONS

I. Immediate Country Commitment

- Commit to prioritize establishment of a stranding network in their country
- Frame marine mammal strandings as indicators of marine ecosystem health—identifying emerging diseases, anthropogenic influences, etc.
- Establish improved relationship with respective Department of Fisheries
- Hold stakeholder meetings to get NGO's, Fisheries, Agriculture, fishermen, etc. on same page with regards to stranding response

II. Further Training Needs

- Training of frontline responders (e.g., fishermen, park rangers, life guards)
 - o *Do's and Don'ts of Strandings*
 - o Species ID basics
 - o "Who" to call and "What: information technical response team will need
 - o What help the responders can provide (e.g. stabilizing the animal)
 - o Participants should work with national Departments of Fisheries to incorporate marine mammal stranding training into pre-existing training for fishermen

Technical Response Team (i.e., group that goes to the beach to respond to the animal: unique specific training sessions for each island)

- o Beach protocol: incident command, stabilizing live animals, recovering dead animals, etc.
- o Necropsy training
- o Sample collection needs and protocols
- o Combination of lecture and hands-on sessions: theoretical lectures followed by practical hands-on sessions worked well at this meeting and should continue

Repeat of this workshop on other Eastern Caribbean islands

Training sessions at other workshops as applicable (e.g. Commonwealth Veterinary Congress meeting in Barbados 2007)

A second workshop of these participants (in a different location or a virtual meeting) to review progress to date

III. Education programs

- School programs: grade school and advanced
- University/Veterinary students
- Public outreach: posters, television programs/PSA's

IV. Data collection/standardization

- Creation of a common data form and entry protocol (software program)

- Clearinghouse/central database for stranding data and voucher (reference) materials
 - Identification of advanced analysis capabilities for collected samples (incorporating feedback for the collectors)
- V. Further communication: Mailing Listserve/website/FTP site creation
 - Sharing of files, photos news, etc.
 - Know “who” to contact for further information, to answer questions, etc.
- VI. Further funding needs
 - Sample analysis
 - Creation of pooled funds to allow for opportunistic hands-on inter-island exchange of stranding response team members (in case of a major stranding event on one island, personnel from a different island can respond to assist)
- VII. Legislative needs
 - Development and circulation of a template for legislation to protect marine mammals for those countries that do not currently have a specific law
- VIII. Stranding equipment kits
 - Personnel from each island will be identifying stranding response equipment needs, which NOAA Fisheries will provide within the next few months
- IX. Overall Benefits of MMS Workshop
 - New exposure to the world of marine mammal strandings—seeing relevance to other disciplines, importance of data from stranded animals, identifying data that can be collected, hands-on pathology experience
 - Interdisciplinary, ecosystem-wide research questions and identification of potential collaborators
 - Fostering international cooperation: networking and commonality of research goals
 - Identification of what can be prepared prior to a stranding event
- X. Products Resulting from the Workshop
 - CD-ROM with Power Point presentations by all lecturers
 - Books, reprints, brochures, and other reference materials as requested by participants
 - Updated participant list and contact information
 - Dichotomous key for Caribbean marine mammal species identification
 - Suggested priority sample collection list
 - Final Conference Report, including data collected during internal and external examination of necropsied animals
 - Summary of available resources of workshop participants (e.g., professional expertise, institutional logistics)

ANNEX II

US Level A Stranding Form and MEDACES Stranding Forms

MARINE MAMMAL STRANDING REPORT - LEVEL A DATA

FIELD #: _____ NMFS REGIONAL #: _____ NATIONAL DATABASE#: _____
(NMFS USE) (NMFS USE)

COMMON NAME: _____ GENUS: _____ SPECIES: _____

EXAMINER Letterholder: _____

Name: _____ Affiliation: _____

Address: _____ Phone: _____

LOCATION OF INITIAL OBSERVATION State: _____ County: _____ City: _____ Body of Water: _____ Locality Details: _____ _____ Latitude: _____ N <input type="checkbox"/> actual Longitude: _____ W <input type="checkbox"/> estimated How lat/long determined (Check ONE): <input type="checkbox"/> GPS <input type="checkbox"/> Map <input type="checkbox"/> Internet/Software	OCCURRENCE DETAILS <input type="checkbox"/> Restrand GE#: _____ <small>(NMFS USE)</small> Group Event: <input type="checkbox"/> YES <input type="checkbox"/> NO If Yes, Type: <input type="checkbox"/> Cow/Calf Pair <input type="checkbox"/> Mass Stranding # Animals: _____ <input type="checkbox"/> actual <input type="checkbox"/> estimated Findings of Human Interaction: <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Could not Be Determined (CBD) If Yes, Check one or more: <input type="checkbox"/> 1. Boat Collision <input type="checkbox"/> 2. Shot <input type="checkbox"/> 3. Fishery Interaction <input type="checkbox"/> 4. Other Human Interaction: _____ Describe How Determined: _____ Gear Collected? <input type="checkbox"/> YES <input type="checkbox"/> NO Gear Disposition: _____ Other Findings upon Level A: <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> CBD If Yes, Check one or more: <input type="checkbox"/> 1. Illness <input type="checkbox"/> 2. Injury <input type="checkbox"/> 3. Other Findings: _____ Describe How Determined: _____																								
INITIAL OBSERVATION Date: Year: _____ Month: _____ Day: _____ First Observed: <input type="checkbox"/> Beach or Land <input type="checkbox"/> Floating <input type="checkbox"/> Swimming CONDITION AT INITIAL OBSERVATION (Check ONE) <input type="checkbox"/> 1. Alive <input type="checkbox"/> 4. Advanced decomposition <input type="checkbox"/> 2. Fresh dead <input type="checkbox"/> 5. Mummified/Skeletal <input type="checkbox"/> 3. Moderate decomposition <input type="checkbox"/> 6. Unknown	LEVEL A EXAMINATION <input type="checkbox"/> Not Able to Examine Date: Year: _____ Month: _____ Day: _____ CONDITION AT EXAMINATION (Check ONE) <input type="checkbox"/> 1. Alive <input type="checkbox"/> 4. Advanced decomposition <input type="checkbox"/> 2. Fresh dead <input type="checkbox"/> 5. Mummified/Skeletal <input type="checkbox"/> 3. Moderate decomposition																								
INITIAL LIVE ANIMAL DISPOSITION (Check one or more) <input type="checkbox"/> 1. Left at Site <input type="checkbox"/> 7. Transferred to Rehabilitation: <input type="checkbox"/> 2. Immediate Release at Site Date: _____ Facility: _____ <input type="checkbox"/> 3. Relocated <input type="checkbox"/> 4. Disentangled <input type="checkbox"/> 8. Died during Transport <input type="checkbox"/> 5. Died at Site <input type="checkbox"/> 9. Euthanized during Transport <input type="checkbox"/> 6. Euthanized at Site <input type="checkbox"/> 10. Other: _____ CONDITION/DETERMINATION (Check one or more) <input type="checkbox"/> 1. Sick <input type="checkbox"/> 4. Deemed Healthy <input type="checkbox"/> 7. Location Hazardous: <input type="checkbox"/> 2. Injured <input type="checkbox"/> 5. Abandoned/Orphaned <input type="checkbox"/> a. To animal <input type="checkbox"/> 3. Out of Habitat <input type="checkbox"/> 6. Inaccessible <input type="checkbox"/> b. To public <input type="checkbox"/> 8. Unknown/CBD <input type="checkbox"/> 9. Other: _____ Comments: _____	MORPHOLOGICAL DATA SEX (Check ONE) AGE CLASS (Check ONE) <input type="checkbox"/> 1. Male <input type="checkbox"/> 1. Adult <input type="checkbox"/> 4. Pup/Calf <input type="checkbox"/> 2. Female <input type="checkbox"/> 2. Subadult <input type="checkbox"/> 5. Unknown <input type="checkbox"/> 3. Unknown <input type="checkbox"/> 3. Yearling Straight Length: _____ <input type="checkbox"/> cm <input type="checkbox"/> in <input type="checkbox"/> actual <input type="checkbox"/> estimated Weight: _____ <input type="checkbox"/> kg <input type="checkbox"/> lb <input type="checkbox"/> actual <input type="checkbox"/> estimated PHOTOS/VIDEOS TAKEN: <input type="checkbox"/> YES <input type="checkbox"/> NO Photo/Video Disposition: _____																								
TAG DATA Tags Were: Present at Time of Stranding (pre-existing): <input type="checkbox"/> YES <input type="checkbox"/> NO Applied during Stranding Response: <input type="checkbox"/> YES <input type="checkbox"/> NO <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">ID #</th> <th style="text-align: left;">Color</th> <th style="text-align: left;">Type</th> <th style="text-align: left;">Placement* <small>(Check ONE)</small></th> <th style="text-align: left;">Applied</th> <th style="text-align: left;">Present</th> </tr> </thead> <tbody> <tr> <td>_____</td> <td>_____</td> <td>_____</td> <td>D DF L LF LR RF RR</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>_____</td> <td>_____</td> <td>_____</td> <td>D DF L LF LR RF RR</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>_____</td> <td>_____</td> <td>_____</td> <td>D DF L LF LR RF RR</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </tbody> </table> <p><small>* D = Dorsal; DF = Dorsal Fin; L = Lateral Body LF = Left Front; LR = Left Rear; RF = Right Front; RR = Right Rear</small></p>	ID #	Color	Type	Placement* <small>(Check ONE)</small>	Applied	Present	_____	_____	_____	D DF L LF LR RF RR	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____	_____	D DF L LF LR RF RR	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____	_____	D DF L LF LR RF RR	<input type="checkbox"/>	<input type="checkbox"/>	WHOLE CARCASS STATUS (Check one or more) <input type="checkbox"/> 1. Left at site <input type="checkbox"/> 4. Towed: Lat _____ Long _____ <input type="checkbox"/> 7. Landfill <input type="checkbox"/> 2. Buried <input type="checkbox"/> 5. Sunk: Lat _____ Long _____ <input type="checkbox"/> 8. Unknown <input type="checkbox"/> 3. Rendered <input type="checkbox"/> 6. Frozen for Later Examination <input type="checkbox"/> 9. Other: _____ SPECIMEN DISPOSITION (Check one or more) <input type="checkbox"/> 1. Scientific collection <input type="checkbox"/> 2. Educational collection <input type="checkbox"/> 3. Other: _____ Comments: _____ NECROPSIED <input type="checkbox"/> YES <input type="checkbox"/> NO Date: _____ NECROPSIED BY: _____
ID #	Color	Type	Placement* <small>(Check ONE)</small>	Applied	Present																				
_____	_____	_____	D DF L LF LR RF RR	<input type="checkbox"/>	<input type="checkbox"/>																				
_____	_____	_____	D DF L LF LR RF RR	<input type="checkbox"/>	<input type="checkbox"/>																				
_____	_____	_____	D DF L LF LR RF RR	<input type="checkbox"/>	<input type="checkbox"/>																				

BASIC DATA

Scientific (The scientific or administrative authority sending this form)

Surname:
 Name:
 e-mail:

Finder (The Institution notifying the stranding)

Institution:
 Telephone:
 e-mail:

Stranding

Own animal code: (*) Please fill one form per animal sampled.

If mass stranding (*), indicate number of individual:

Date (dd/mm/yyyy): Time (hrs:min) of first discovery:

Species identification by qualified personnel:

Condition of animal:

Alive Freshly dead Organs not recognizables
 Decomposed but organs basically intact Mummified or skeletal remains only

Sex: Unknown
 Male
 Female

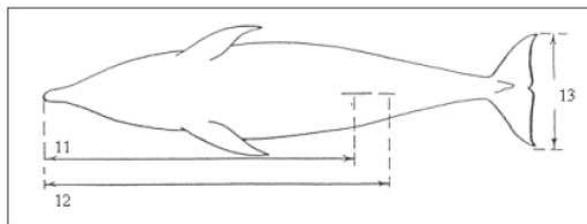
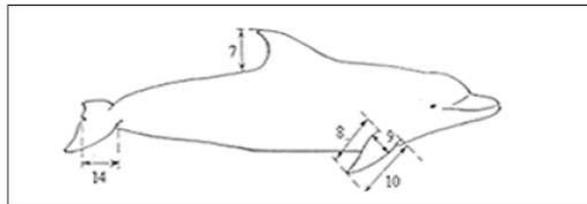
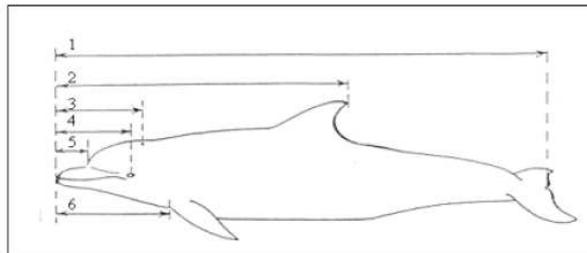
Pictures Weight in Kg (e.g. 38.4):

Female: Pregnant Pregnant (foetus kept) Lactant
 (Please, fill one form for the foetus)

Body Measurements

- | | |
|-----------------------------------------------------------------------|----------------------------------------------------------------------------------|
| <input type="checkbox"/> 1. Total length | <input type="checkbox"/> 8. Trailing edge flipper |
| <input type="checkbox"/> 2. Upper jaw to posterior edge of dorsal fin | <input type="checkbox"/> 9. Max. width flipper |
| <input type="checkbox"/> 3. To center of blow whole | <input type="checkbox"/> 10. Leading edge flipper |
| <input type="checkbox"/> 4. To center of eye | <input type="checkbox"/> 11. Anterior tip of lower jaw to center of genital slit |
| <input type="checkbox"/> 5. To anterior melon | <input type="checkbox"/> 12. To center of anal |
| <input type="checkbox"/> 6. To anterior flipper edge | <input type="checkbox"/> 13. Fluke width |
| <input type="checkbox"/> 7. Fin height | <input type="checkbox"/> 14. Mid-fluke length |

Parts missing:



Geographic location

Site of stranding: _____

Site of stranding (name of the beach, harbour, etc.):

Locality:

Province/State/County:

Country:

Coordinates: _____

Latitude: ° ' '' N

Longitude: ° ' '' E W

Datum: _____

Unknown WGS 84 European Datum (ED)

Others:

Datum is specified in the key of a map or chart

Origin of coordinates: _____

Unknown GPS Official map* Nautical chart*

Others:

*Specify in comments

Comments: _____

ADVANCED DATA

Live Animal

Status:	<input type="checkbox"/> Apparently well	<input type="checkbox"/> Wounded	<input type="checkbox"/> Sick	<input type="checkbox"/> Dying
Disposition:	<input type="checkbox"/> Refloated	<input type="checkbox"/> Died	<input type="checkbox"/> Euthanased	<input type="checkbox"/> Transferred to rehabilitation center
Rehabilitation center:	Surname: <input type="text"/>			
	Name: <input type="text"/>			
	Address: <input type="text"/>			
	Institution: <input type="text"/>			
	Telephone: <input type="text"/>		Fax: <input type="text"/>	
	e-mail: <input type="text"/>			

Dead Animal

Human interaction:	<input type="checkbox"/> None	<input type="checkbox"/> Boat collision	<input type="checkbox"/> Fishing gear	<input type="checkbox"/> Intentional	<input type="checkbox"/> Unknown
Comments:	<input type="text"/>				

Biological samples for life history studies

Age determination

Teeth:	<input type="checkbox"/> -20°C	<input type="checkbox"/> Ethanol	Other	<input type="text"/>
Ear plugs:	<input type="checkbox"/> 10% formalin		Other	<input type="text"/>
Others (type and preservation): <input type="text"/>				

Digestive contents

	Not collected	-20°C	70% ethanol	Other
Stomach:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Intestine:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Others (type and preservation): <input type="text"/>				

Genetic studies

	DMSO	-20°C	Other
Skin:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Muscle:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
Others (type and preservation): <input type="text"/>			

Reproductive status

Gonads:	<input type="checkbox"/> 10% formalin	Other	<input type="text"/>
Others (type and preservation): <input type="text"/>			

Skeleton

Skull: Dry Other
Other parts:

Other samples (Life studies)

Other parts (type and storage method):

Biological samples for health studies

Bacteriology / Histopathology / Toxicology / Virology

Adrenals:	<input type="checkbox"/> Bacteriology (Swab)	<input type="checkbox"/> Histopathology (10% formalin)
	<input type="checkbox"/> Toxicology (-20°C)	<input type="checkbox"/> Virology (-80°C)
Bladder:	<input type="checkbox"/> Bacteriology (Swab)	<input type="checkbox"/> Histopathology (10% formalin)
	<input type="checkbox"/> Toxicology (-20°C)	<input type="checkbox"/> Virology (-80°C)
Blood:	<input type="checkbox"/> Bacteriology (Swab)	<input type="checkbox"/> Histopathology (10% formalin)
	<input type="checkbox"/> Toxicology (-20°C)	<input type="checkbox"/> Virology (-80°C)
Blubber:	<input type="checkbox"/> Bacteriology (Swab)	<input type="checkbox"/> Histopathology (10% formalin)
	<input type="checkbox"/> Toxicology (-20°C)	<input type="checkbox"/> Virology (-80°C)
Brain:	<input type="checkbox"/> Bacteriology (Swab)	<input type="checkbox"/> Histopathology (10% formalin)
	<input type="checkbox"/> Toxicology (-20°C)	<input type="checkbox"/> Virology (-80°C)
Gonads:	<input type="checkbox"/> Bacteriology (Swab)	<input type="checkbox"/> Histopathology (10% formalin)
	<input type="checkbox"/> Toxicology (-20°C)	<input type="checkbox"/> Virology (-80°C)
Heart:	<input type="checkbox"/> Bacteriology (Swab)	<input type="checkbox"/> Histopathology (10% formalin)
	<input type="checkbox"/> Toxicology (-20°C)	<input type="checkbox"/> Virology (-80°C)
Intestine:	<input type="checkbox"/> Bacteriology (Swab)	<input type="checkbox"/> Histopathology (10% formalin)
	<input type="checkbox"/> Toxicology (-20°C)	<input type="checkbox"/> Virology (-80°C)
Kidney:	<input type="checkbox"/> Bacteriology (Swab)	<input type="checkbox"/> Histopathology (10% formalin)
	<input type="checkbox"/> Toxicology (-20°C)	<input type="checkbox"/> Virology (-80°C)
Liver:	<input type="checkbox"/> Bacteriology (Swab)	<input type="checkbox"/> Histopathology (10% formalin)
	<input type="checkbox"/> Toxicology (-20°C)	<input type="checkbox"/> Virology (-80°C)
Lung:	<input type="checkbox"/> Bacteriology (Swab)	<input type="checkbox"/> Histopathology (10% formalin)
	<input type="checkbox"/> Toxicology (-20°C)	<input type="checkbox"/> Virology (-80°C)

Lymph Node:	<input type="checkbox"/> Bacteriology (Swab)	<input type="checkbox"/> Histopathology (10% formalin)
	<input type="checkbox"/> Toxicology (-20°C)	<input type="checkbox"/> Virology (-80°C)
Mammary:	<input type="checkbox"/> Bacteriology (Swab)	<input type="checkbox"/> Histopathology (10% formalin)
	<input type="checkbox"/> Toxicology (-20°C)	<input type="checkbox"/> Virology (-80°C)
Milk:	<input type="checkbox"/> Bacteriology (Swab)	<input type="checkbox"/> Histopathology (10% formalin)
	<input type="checkbox"/> Toxicology (-20°C)	<input type="checkbox"/> Virology (-80°C)
Muscle:	<input type="checkbox"/> Bacteriology (Swab)	<input type="checkbox"/> Histopathology (10% formalin)
	<input type="checkbox"/> Toxicology (-20°C)	<input type="checkbox"/> Virology (-80°C)
Pancreas:	<input type="checkbox"/> Bacteriology (Swab)	<input type="checkbox"/> Histopathology (10% formalin)
	<input type="checkbox"/> Toxicology (-20°C)	<input type="checkbox"/> Virology (-80°C)
Skin:	<input type="checkbox"/> Bacteriology (Swab)	<input type="checkbox"/> Histopathology (10% formalin)
	<input type="checkbox"/> Toxicology (-20°C)	<input type="checkbox"/> Virology (-80°C)
Spleen:	<input type="checkbox"/> Bacteriology (Swab)	<input type="checkbox"/> Histopathology (10% formalin)
	<input type="checkbox"/> Toxicology (-20°C)	<input type="checkbox"/> Virology (-80°C)
Stomach:	<input type="checkbox"/> Bacteriology (Swab)	<input type="checkbox"/> Histopathology (10% formalin)
	<input type="checkbox"/> Toxicology (-20°C)	<input type="checkbox"/> Virology (-80°C)
Thymus:	<input type="checkbox"/> Bacteriology (Swab)	<input type="checkbox"/> Histopathology (10% formalin)
	<input type="checkbox"/> Toxicology (-20°C)	<input type="checkbox"/> Virology (-80°C)
Thyroid Glands:	<input type="checkbox"/> Bacteriology (Swab)	<input type="checkbox"/> Histopathology (10% formalin)
	<input type="checkbox"/> Toxicology (-20°C)	<input type="checkbox"/> Virology (-80°C)
Uterus:	<input type="checkbox"/> Bacteriology (Swab)	<input type="checkbox"/> Histopathology (10% formalin)
	<input type="checkbox"/> Toxicology (-20°C)	<input type="checkbox"/> Virology (-80°C)

Parasitology

Ectoparasites:

Natural Openings / External surface: _____
70% ethanol Other

Scars / Wounds: _____
70% ethanol Other

Endoparasites:

Blood vessels: _____
70% ethanol Other

Blubber: _____
70% ethanol Other

Brain: _____
70% ethanol Other

Cranial sinuses: _____
70% ethanol Other

Ear: _____
70% ethanol Other

Heart: _____
70% ethanol Other

Hepatic/Pancreatic ducts: _____
70% ethanol Other

Intestine: _____
70% ethanol Other

Kidney: _____
70% ethanol Other

Lung: _____
70% ethanol Other

Mammary: _____
70% ethanol Other

Mesenteries: _____
70% ethanol Other

Muscle: _____
70% ethanol Other

Stomach: _____
70% ethanol Other

Supracranial airways: _____
70% ethanol Other

Other samples (Health studies)

Other parts (type and storage method):

ADDITIONAL COMMENTS