Small Cetacean Intervention Best Practices

Statement of Inclusivity

The Best Practices principles and guidelines outlined in this document are primarily meant for use by authorized and trained responders and managers, as well as, members of federal and state agencies, NGOs, researchers, industries (fisheries, tour), and others from the on-water and coastal communities that might provide authorized small cetacean intervention support under NOAA's MMHSRP. The MMHSRP is committed to building a safe and inclusive environment in which we leverage diversity (including, but not limited to, the representation of all ages, races, national, cultural, religious, and socio-economic backgrounds, genders, gender identities, sexual orientations, and physical and mental abilities) to achieve our mission goals and objectives, and maximize the potential of the U.S. Marine Mammal Stranding Response Network as a whole for the conservation of marine mammals. The MMHSRP values the unique capabilities, experiences, and perspectives of all our partners, and nothing should preclude people from becoming involved in the U.S Marine Mammal Stranding Response Network to the best of their abilities. Diversity, equity, and inclusion improves creativity, productivity, and the vitality of the marine mammal community in which the MMHSRP engages.

Table of Contents

1. Introduction

1.1 Background

In 1992, the Marine Mammal Health and Stranding Response Program (MMHSRP), under the National Marine Fisheries Service (NMFS), was established by Congress under Title IV of the Marine Mammal Protection Act (MMPA). The MMHSRP serves to coordinate marine mammal stranding response efforts in the United States by working to standardize regional network operations and define national stranding response policy. NMFS published the guidance document "Standards for Release" in 2009 as part of the broader Policies and Best Practices: Marine Mammal Stranding Response, Rehabilitation, and Release. The Standards for Release provides detailed protocols for making determinations about when a rehabilitated marine mammal can be released back to the wild, but there are no detailed guidelines for free-swimming distressed small cetacean interventions prior to onsite release, translocation, or admission to rehabilitation. The MMHSRP also holds a MMPA/Endangered Species Act (ESA) research and enhancement permit that allows the program to authorize qualified individuals to conduct interventions on small cetaceans for which there are health concerns.

1.2 Legislation Pertinent to Small Cetaceans

There are two key pieces of legislation that govern interactions with marine mammals in the United States.

Marine Mammal Protection Act (MMPA): The MMPA, signed into law in 1972, prohibits the "take" of marine mammals in U.S. waters and by U.S. citizens on the high seas, which includes harassing or disturbing these animals, as well as harming or killing, unless such take is specifically exempted in the statute or authorized. The MMPA divides responsibility for marine mammal species between the Secretary of Commerce, who oversees NMFS, and the Secretary of the Interior, who oversees the U.S. Fish and Wildlife Service (USFWS). NMFS has jurisdiction over cetacean and pinniped species (with the exception of walrus), and USFWS has jurisdiction over walrus, polar bear, sea otters, and manatees. The 1992 amendments to the MMPA included Title IV of the MMPA, which established the MMHSRP under NMFS to collect and disseminate information about the health trends in marine mammal populations through the collection of data from strandings, bycatch, subsistence harvest, and research. These Best Practices focus on data collection from small cetacean interventions using the Stranding Network personnel.

Endangered Species Act (ESA): The ESA, enacted in 1973, provides for the conservation of species listed as endangered (in danger of extinction) or threatened (at risk of becoming

endangered in the foreseeable future). The ESA also contains a prohibition on "take" including harassment and disturbance as well as injuring and killing.

1.3 Intended Uses of Best Practices

These best practices have been developed to serve as guidance and recommendations. This document is not intended for independent use as a training manual, and does not by itself qualify the reader for any actions or authorizations. These best practices balance the need for standardized procedures while allowing flexibility to address specific needs of different situations for diverse species and habitats, as well as unforeseen circumstances. In some situations, responders may choose a course of action not outlined in these documents, but consultation with NMFS is encouraged if the course of action will vary greatly from the best practices outlined in this document. These best practices are a "living document," and as such, we plan to periodically review and update them as new information becomes available. Responders should never stop striving for innovative and new methods and training to increase safety and success, and nothing in these best practices should prevent or limit advances in technology, techniques, and training.

NMFS and the Marine Mammal Stranding Network (the Stranding Network) have developed protocols and procedures for responding to live marine mammals that are stranded or otherwise in distress to ensure the health, welfare, and safety of the human responders, animals, and the public. For more information on general stranded marine mammal rescue and rehabilitation, the reader should consult references such as *Marine Mammals Ashore* (Geraci *et al.* 2005) and the *CRC Handbook of Marine Mammal Medicine* (Gulland *et al.* 2018). Human and animal safety are the top priorities for NMFS and the Stranding Network, and these two entities evaluate many factors before making a decision to intervene. Each event is unique and requires the consideration of multiple aspects, which are addressed below.

These Small Cetacean Intervention Best Practices (Best Practices) highlight general procedures specific to small cetacean intervention for free-swimming but distressed animals. As pinnipeds and large whale species are significantly different in their anatomy and biology from small cetacean species, these protocols and procedures should only be used for small cetacean species, which are defined for the purposes of this document as all odontocetes excluding sperm whales (*Physeter macrocephalus*). These Best Practices also do not specifically address mass strandings of small cetaceans although some aspects in these Best Practices may be applicable in a mass stranding event. Protocols and procedures for use with large whales (all mysticetes and sperm whales) and mass stranding can be found in the NMFS Best Practice Guide for Large Whale Emergency Response and for Cetacean Mass Strandings. Additionally, these Best Practices are designed to be paired with more specific Regional Annexes to address significant

issues that may exist including species-specific considerations (*i.e.*, Southern Resident killer whales (*Orcinus orca*), etc.) that are more appropriate to address at regional or state levels.

1.4 Funding

The John H. Prescott Marine Mammal Rescue Assistance Grant Program provides funding for a subset of Stranding Network members through an annual competitive grant process. These grants support the rescue and rehabilitation of stranded marine mammals (including small cetacean interventions), data collection from living or dead stranded marine mammals for health research, and facility operation costs. However, as these grants are competitive and many members do not receive these funds, individual Stranding Network members often also support many of the costs for normal operations. Determining whether funding is available for an intervention is an important first consideration, as lack of funds or available in-kind donations (*e.g.*, boat use) may limit available response options.

2. Planning for Small Cetacean Interventions

Under the MMPA a cetacean is considered stranded when it is on the beach (dead or alive) or free-swimming in U.S. waters, and unable to return to its natural habitat on its own volition. Free-swimming cetaceans that are ill, out of habitat, entangled, or injured, may also warrant intervention but those decisions are made on a case-by-case basis. All decisions regarding the health status and disposition of free-swimming small cetaceans of concern are made in consultation with a Stranding Network veterinarian and the NMFS Regional Stranding Coordinator (RSC). Every small cetacean of concern is evaluated on a case-by-case basis weighing all of the factors of the situation. Note that certain species (*e.g.*, Cook Inlet beluga whales, southern resident killer whales) may have specific criteria used to determine if an animal is of concern and in need of medical attention. If a free-swimming small cetacean is determined to be either in need of medical attention or unable to return to its natural habitat on its own, it can be considered "stranded" and falls under the MMHSRP's MMPA/ESA authorization.

2.1 Authorization and Training

Most free-swimming small cetacean interventions are conducted under the MMHSRP's MMPA/ESA permit. In certain circumstances, an intervention may be conducted under a Stranding Agreement (by the Stranding Agreement holder) or by a government employee acting under MMPA Section 109(h) which authorizes federal, state, local, and tribal government employees working as part of their duties to take a non-listed small cetacean. **As most of the intervention activities discussed in this document can only be conducted under the MMHSRP's MMPA/ESA permit, ALL small cetacean interventions should be discussed with the RSC and MMHSRP headquarters (HQ) staff prior to conducting any**

activities. Additionally, only responders who have been authorized by NMFS to conduct that specific intervention and who have the training, experience, equipment, and necessary support should attempt small cetacean interventions. Authorized response efforts may also rely on partners such as tribal, local, state, and federal agencies (including law enforcement agencies and the U.S. Coast Guard), non-governmental organizations, fishermen, and other groups to assist with some interventions.

Stranding Network members who are trained or have experience in proper techniques for safe capture, restraint, and removal of gear from various marine mammal species must be authorized to respond. Periodic training workshops have been offered to members of the Stranding Network. Additionally, opportunities for apprenticeships or assistant roles to gain the necessary hands-on expertise may be available. Specific training issues or requirements may exist for certain activities (*e.g.*, in-water captures) and are more appropriate to address at local, regional, or state levels by working with the RSC in your response region.

2.2 Logistics

When planning for a potential intervention, in addition to assembling the appropriate team members with the correct expertise, several other logistical considerations need to be addressed. Below are some typical questions to consider when planning logistics.

- Personnel: How many people are available? Are there experienced personnel available?
- Vessels: How many (at least two for safety after the initial observations)? What type of vessel (motor, kayak, paddleboard)? Do vessels have running lights if the return trip is after dark? Is the vessel operator experienced with approaching cetaceans?
- Equipment: What type of communication equipment (marine radios, cell phones, satellite phones, etc.)? Is equipment available on-hand, such as personal protective equipment, stretchers, transport vehicles, and triage and treatment options, including sedation and analgesic drugs for treatment and/or euthanasia capabilities? In some cases such as immediate post-hurricane or other disaster, some equipment may be impossible to obtain. Also, while a particular course of action may be deemed the most likely based upon the assessment and planning, it is important to be as prepared as possible for any eventuality, to ensure maximum flexibility.
- Environmental conditions: Consider conditions that increase likelihood of success and decrease risk to responders and the animal. What is the tide cycle for the response day and the intervening day? What are the depths in the area? What is the forecasted weather and sea state? Is the animal in immediate risk or is there time to stage a response with improved environmental conditions? If the free-swimming animal stays at that location, is it likely to strand at low tide? Is it a gently sloping beach or is there a steep drop-off? Are the substrate and weather (*e.g.*, thunderstorms, etc.) in the area conducive to safely capturing the animal? What time of day will the response occur (*i.e.*, close to sunset)?
- Accessibility: Are there boat launches or other access available for the vessels that will be used? How far away?

- Rehabilitation/holding options: Is there rehabilitation/holding availability if needed? (refer to the Rehabilitation Facility Guidelines Best Practices)

2.3 Decision Making to Intervene

Small cetaceans are observed in distress in myriad ways and due to various causes. Animals in distress due to human activities are prime candidates for rescue or intervention, including small cetaceans entangled in fishing gear or marine debris (refer to the Small Cetacean Entanglement Best Practices), injured from a vessel collision, trapped in an area resulting from human activities (*e.g.*, physical or perceived barriers, reconstruction of breached levees, construction noise, etc.), or impacted by an oil spill. However, interventions can occur for non-anthropogenic causes as well. Hurricanes, floods, wildfires, or atypical weather, as well as prey distribution, disease, and other causes not directly attributed to humans, may also may cause distress in a small cetacean, and intervention may be considered for these cases.

For marine mammals that are live, free-swimming and entangled, out of habitat, or trapped due to natural disasters or human activities, the Stranding Network should only intervene (*e.g.*, catch and disentangle, relocate, and/or rehabilitate) under the following conditions:

1) The animal is suffering from a life-threatening physical condition; or

2) Evidence suggests the animal is unlikely to survive in its immediate surroundings and is prevented from returning to its natural habitat by a physical or perceived barrier (*e.g.*, unable to feed or forage appropriately, a completely freshwater habitat, animals displaced to inland waters due to hurricanes, trapped behind a lock, etc.).

These conditions are not mutually exclusive. The cost and benefits of responding in specific situations and scenarios are outlined below. (Note: animals exposed to an oil spill have separate considerations outlined in the NMFS Marine Mammal Oil Spill Guidelines (Ziccardi *et al.* 2015)).

The decision of whether (or not) to intervene is made by NMFS, after discussions between multiple parties – the local Stranding Network organizations that have "boots on the ground" responsibility for response, the NMFS RSC, and the MMHSRP at the Office of Protected Resources (OPR) Headquarters. Consultations will include marine mammal veterinarian(s), experts in the biology and life history of the affected species, and personnel familiar with the local area. The decision to intervene is made by NMFS after taking into consideration the following questions that can help determine whether the intervention is warranted and feasible, while also potentially including others that may be developed based upon the specific situation:

- What field observations have been made and how recently have they been reported?

- What is the health status of the individual?
- Is there a medical prognosis?
- What are the potential causes of the animals' observed condition?
- What is the estimated or known life history (*e.g.*, sex, age, size)? Is it a known individual?
- What is the conservation status/reproductive potential?
- What are the specific safety and logistical concerns for intervention (for the responders and for the animal(s))?
- What resources are available and is an intervention logistically feasible?
- What potential risks are there for conspecifics or other species?
- Is there a contingency plan in place if intervention is not successful (*i.e.*, if the animal dies in the course of intervention, if the intervention is unsuccessful, or if the animal requires rehabilitation)?

3. Pre-Intervention Monitoring

Before performing an intervention, it is best practice to assess and monitor the animal/s of concern. In some cases, such as storm surge translocations during hurricanes, pre-intervention monitoring may not be possible and the response may depend on local input or authorized responders prior to the arrival of responders from the Stranding Network. If pre-intervention monitoring is possible, additional photos and/or video can be taken or gathered to increase our understanding of the physical and biological aspects of the situation, including assessing the surrounding environment. The responder can also perform additional targeted evaluation of the health, behavior, movements, and the environmental surroundings of the animal. For these visual assessments, data to be collected would include: respiration rates, swim speed and capacity, diving ability, social parameters (*i.e.*, with a calf or a social group), habitat use (*i.e.*, preferred depth of water), prey availability, and physical animal observations (skin lesions, lacerations, etc.). To help with evaluating the environmental surroundings, a responder may want to test water salinity, water depth, assess best access points in case of intervention, and address other environmental concerns. These concerns include sensitive/protected habitats that should be avoided (*i.e.*, coral and oyster reefs, seagrass beds, etc.), subsurface obstacles, substrate consistency, predators in the area, and lack of cell phone reception.

4. Methods of Intervention

4.1 Overview

As already described, there are many considerations that go into the decision of when and how to respond to free-swimming small cetaceans in distress. Based upon past interventions, the following are a general

progression of possible intervention actions – listed from least to most intensive.

4.2 Behavioral and Health Assessment Observations (Remote)

In each case/event, every animal should be assessed through physical, behavioral, and environmental observations. Observations will enable better decision-making for the appropriate course of action for that particular individual (refer to the Mass Stranding Best Practices for information on groups of animals), but will also provide important information that can be used as a reference for future cases.

A standardized health form ***may*** be available, depending on region and taxa. If so, it should capture as much pertinent information as possible. If no form is available, then when assessing an animal, the questions below should be determined (Cape Cod Stranding Network 2008). These are examples of a few main questions but not a complete list. In the future, regional health assessment forms for small cetaceans may be developed.

- Determine the species and specific individual by noting the size, coloration, rostrum, and dorsal fin. Is this a known individual?
- Estimate the total length, estimate the age class.
- Note body condition; is there a peanut head, are ribs visible, are scapula visible? Are there any visible wounds?
- If possible, count respirations (number of respirations per minute), note respiratory effort, is there any respiratory exudate or odor?
- What are the swimming and diving behaviors?
- Are there any other animals in the area? How many? Is the animal frequently in close association with any of them (*e.g.*, mom/calf, male pair, etc.)?
- Observe the site and environmental conditions.
- Do the animal/s react to surrounding disturbances?
- Take photos and/or video to document injuries, disease or behavioral changes.

Following remote observations, it is beneficial to share the information and elicit expert opinion (*e.g.*, marine mammal veterinarians, biologists with experience with a given species, etc.). This is possible when the case is not immediately life threatening (*e.g.*, animal in a golf course pond or drainage ditch) and the animal's behavior/sighting history is predictable to the extent that the animal can likely be relocated for future observation and potential intervention. In an emergency case (*e.g.*, an animal is in imminent danger of death, such as an anchored animal), immediate intervention (following approval from NMFS) may be necessary.

4.3 Sample Collection (Remote)

Depending upon the species and situation, several remote samples may be collected to provide more data about the health of an individual and to aid in the decision of whether or not to intervene. All remote sampling needs/plans should be discussed with the RSC and/or MMHSRP HQ staff to ensure that sample collection is properly authorized under the MMPA/ESA permit. Samples that may be remotely collected can include but are not limited to:

- Remote collection of floating feces for parasite identification, hormones, etc.
- Remote collection of breath via pole or UAS for microbiology, etc.
- Remote collection of skin and blubber via biopsy dart for genetics, sex, hormones, pathogen screening, etc.

4.4 Herding/hazing/deterrence

While more commonly used to prevent mass strandings of small cetaceans, herding or deterrence actions may be appropriate for single or small groups of out of habitat animals. Various methods of deterrence or hazing can be used by experienced individuals, including: vessel action, close approaches, and percussive slaps on the water which can be attempted from non-motorized watercraft such as stand up paddleboards and kayaks, as well as motorized vessels (*e.g.*, boats, Jet Ski). Other equipment used for deterrence or hazing may include:

- Pingers or other acoustic devices (*e.g.*, diver recall sirens)
- *Hukilau* (*i.e.*, a floating line with vertical streamers tied off to serve as a visual barrier)
- Oikomi pipes, streamers, non-entangling nets, bubble curtains

For a more in-depth discussion of various non-lethal deterrence options, see NMFS' Proposed Rule: Guidelines for Safely Deterring Marine Mammals; 85 FR 53763.

4.5 Remote Intervention Options

Some interventions may allow for a remote option, such as remote disentanglements. Remote disentanglement is defined as using cutting tools on poles or grapples while the animal remains free-swimming. Some situations where this might be a preferred option is if the entanglement is relatively loose (such that a knife can fit between the line and the skin) and where the cetacean is minimally responsive to the presence of vessels or actively seeks out vessels, such that a close approach is possible. Additionally, if a small cetacean is anchored by a crab trap or other type of anchor, remote tools or close approach by a vessel by bringing the anchored dolphin along-side the vessel may also be possible using remote disentanglement tools to cut the line. Again, only authorized, trained personnel should attempt remote disentanglement activities and only after consultation with the RSC. More details on remote

disentanglement procedures can be found in the Small Cetacean Entanglement Response Best Practices.

4.6 In-Water Capture

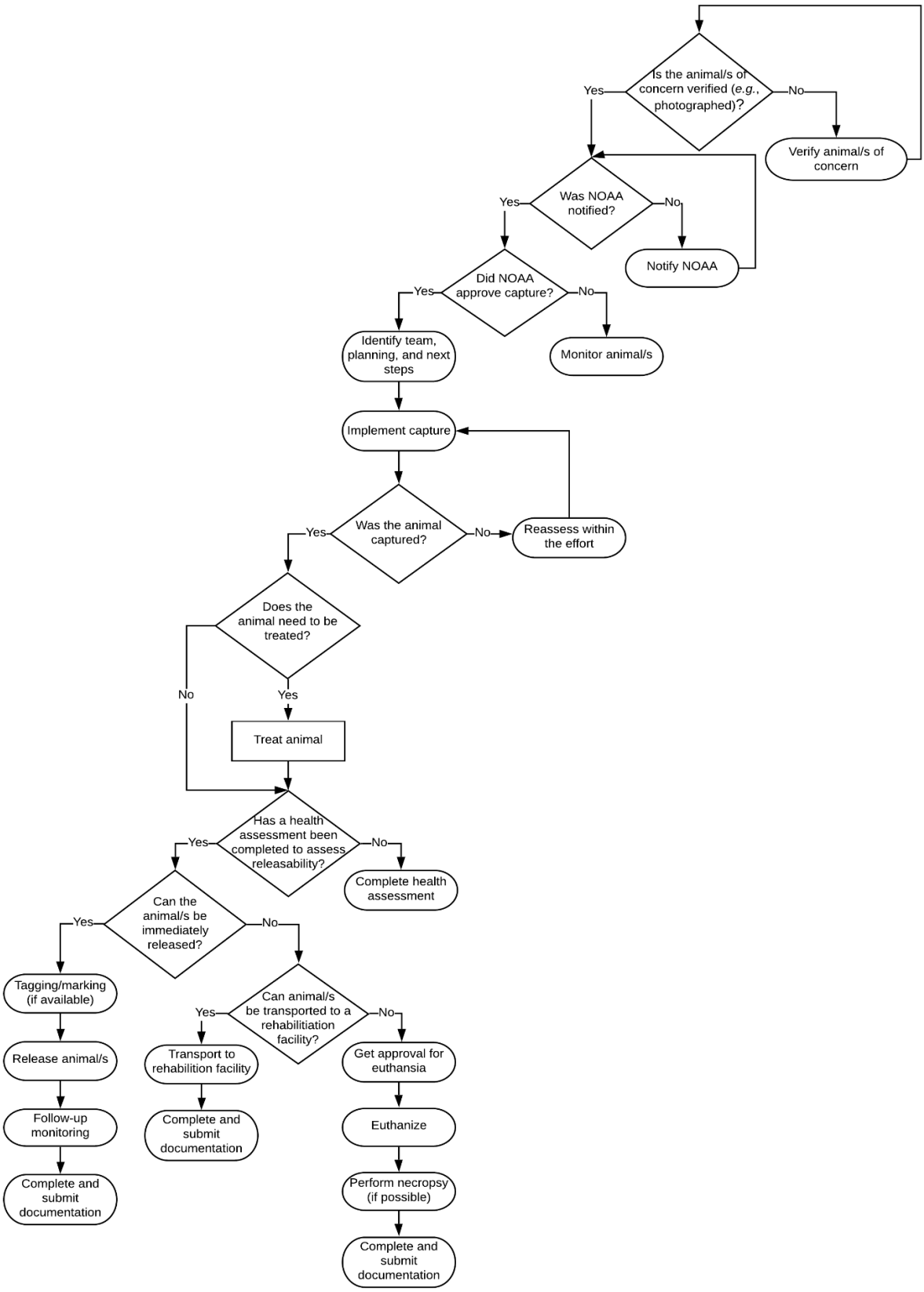
If the distressed cetacean is determined to have a life-threatening condition, or the animal cannot return to its own habitat without human intervention, the next decision is whether to attempt a capture (refer Section 4.7). Again, this decision needs to take into account the availability of trained personnel, necessary resources, and safety considerations for both responders and the animal. The decision on when, where, and how to intervene needs to be approved by the RSC and/or MMHSRP HQ staff, to ensure that all intervention activities are properly authorized under the MMPA/ESA permit or another authority. There are four potential methods for capture of small cetaceans: soft tail line, hoop net, encircling net, or hand set nets. A *hukilau* or acoustic deterrents may be used to assist the capture by herding the animals, refer to section 4.4. Herding Methods.

- Soft tail line: potential to use for slow-moving individuals (logging at surface) that allow close approaches from vessels. This method was successfully used to capture A73, a northern resident killer whale calf, as described in the case example below (NMFS Fisheries West Coast).
- Hoop net: good for bow-riding individuals or animals that are debilitated, moving slowly and staying at the surface.
- Encircling net: The most commonly used capture method in the United States is the encircling net, which is also used for small cetacean research captures. This method requires very specialized authorization (permit, or, conducted under MMPA Section 109(h)), equipment, and highly trained/experienced personnel, particularly the capture lead, net boat operator, and lead veterinarian. This method employs a long, large mesh net used to encircle the target animal. The distressed animal may quickly become entangled in the net, or the responders may need to shrink the diameter of the net ‘compass’ to cause the animal to become wrapped in the net.
- Hand set nets: good for narrow, shallow locations or where the net can touch the bottom, use with small-sized cetaceans, or to block off an area, such as to block canals.

After the animal is captured, a thorough examination should be performed by an experienced marine mammal veterinarian or authorized responder. The animal should be monitored throughout the examination and procedures (*e.g.*, respiration rate, heart rate, responsiveness, etc.) while providing supportive care to minimize the stress and impacts to the animal. Appropriate samples should be collected as time and the condition of the animal allow, including measurements, photographs, a skin biopsy, blood samples (see Appendix C) and other priority samples identified for that specific case. The authority under which the intervention is conducted will also determine the type of samples taken, as activities conducted under a research/enhancement permit may allow for sampling beyond routine diagnostics. The animal may also receive appropriate treatment, such as removal of entangling gear, administration of medications and fluids, and marking/tagging, if release is imminent. Following the examination, the appropriate course of action should be determined by the attending veterinarian and capture lead, in consultation with other

experienced personnel and NMFS as appropriate.

4.7 Decision/Process Matrix for In-Water Capture



5. Animal Disposition Options

5.1 Immediate In Situ Release or Translocation and Release

Intervening to assist small cetaceans involves many different factors. Generally, the capture process involves initial observations, decisions from NMFS whether to intervene, and identifying the most appropriate capture methods along with the necessary sample collection needed. Once the animal is in hand, there are three options for the animal disposition: 1) immediate release (in situ or after translocation), 2) rehabilitation, and 3) euthanasia.

Immediate release is an option if the following factors are met:

- The animal is healthy or medically stable, and able to function normally as determined by the NMFS, capture lead, and the Stranding Network veterinarian (on-site or via phone consultation). Certain situations (*e.g.*, thunderstorms, hurricanes, stressed animal due to capture event) may have time constraints and the only option may be transport/immediate release;
- Social requirements can be met (*e.g.*, maternal care for young)
- It is highly recommended the animal be marked or tagged in some manner prior to release, using case by case pre-approved or NMFS-approved methods such as:
    - Marking – paint stick/crayon marking;
    - Notching or freeze-branding of the dorsal fin; or
    - Tagging - a roto tag or livestock ear tag or a single-pin radio or satellite tag (if available). Marking and tagging should only be conducted by trained individuals.

The animal may be released in situ if:

- Environmental conditions are favorable;
- The animal is unlikely to strand/re-strand; and
- The capture location is near the animal's natural habitat.

The animal may be translocated to a different site and released immediately if:

- A different beach site is a more suitable site for release;
- The animal is manageable and adequate logistical support is available, including transport vehicles; and
- The new site is believed to improve the chances of a successful release for the captured cetacean, and reduce the likelihood of re-stranding.

5.2 Rehabilitation

Rehabilitation, per 50 CFR § 216.3, is defined as treatment of beached and stranded marine mammals taken under section 109(h)(1) or 112(c) or imported under section 109(h)(2) of the MMPA, with the intent of restoring the marine mammal's health and, if necessary, behavioral patterns. An authorized animal care facility is to provide treatment with a goal of releasing the animal back to the wild.

Rehabilitation is an appropriate option when:

- The onsite examination by the veterinarian determines that the animal needs more medical treatment than can be provided in a short handling session;
- NMFS-approved facilities are available and equipped for the species and number of animals involved;
- Arrangements can be made for a safe and expeditious transport;
- There are sufficient funds and staff to provide care for a reasonable amount of time; and
- There is a good chance the animal can be restored to health and released back to the wild.

5.3 Euthanasia

Euthanasia is an option when:

- The veterinarian determines that euthanasia is the most humane course of action to take given the animal's prognosis:
  - The animal is deemed to be critically injured or ill with little chance of recovery;
  - The animal is suffering or unlikely to survive if released; and
  - It is necessary to end the suffering of an animal.
- No rehabilitation facilities are available and immediate release is deemed inhumane or unlikely to succeed.
- Appropriate disposal options are available based on the chosen method.
- The procedure won't jeopardize human safety.

The decision to euthanize the small cetacean is made in consultation with the RSC and the procedure must be conducted by:

- a Stranding Network veterinarian;
- an experienced, trained, and authorized Stranding Network member;
- an appropriately trained local, state, tribal, or federal law enforcement, wildlife or animal control agent; or
- a non-marine mammal veterinarian in consultation with an experienced Stranding Network veterinarian.

6. Intervention Scenarios (Evidence, levels of severity, and capture method)

6.1 Entanglements

For entangled small cetaceans, NMFS, in consultation with experts and veterinarians, determines if the entanglement is a serious injury and/or considered to be life-threatening. NMFS Serious Injury Guidance may be consulted (https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-

protection-act-policies-guidance-and-regulations#distinguishing-serious-from-non-serious-injury-of-marine-mammals). This assessment or prognosis is achieved through field observations by biologists/researchers/veterinarians, analysis of photos and/or videos, the animal's behavior, and prior experience with similar entanglements.

Once an entanglement is determined to be life threatening or the animal's prognosis is poor, the next step is to determine the appropriate type of intervention. For small cetacean entanglements, it is most common to use in-water capture of the animal to ensure that the entanglement is completely removed and the animal is closely assessed. However, remote disentanglement can also be used in certain cases. See the Small Cetacean Entanglement Response Best Practices for specific guidelines.

If a capture approach is selected (*e.g.*, soft tail line, hoop net, encircling net), the responders must next ensure that the logistical and resource requirements can be met for a safe and effective intervention. These requirements include the availability of trained personnel, equipment, and the animal's behavior, sighting history, and location, including whether it is an appropriate location (avoids protected/sensitive habitats, water depth, sea state, weather, etc.) for a safe capture effort. Due to the high risk to both humans and the animal, capturing small cetaceans for disentanglement is usually considered a measure of last resort, and conducted only when the risk for people is low and the risk for the animal of not intervening is greater than the risk involved with a capture.

If intervention is not an option, the animal may be monitored, usually by local researchers or NMFS biologists, to determine whether an intervention may be possible at a later date (*e.g.*, the animal moves to a more suitable area for rescue, the animal live strands, the animal becomes lethargic and more approachable).

Case Example: C2SEAB (Blair Mase-Guthrie – NOAA Fisheries; NMFS-OPR-39)

On November 8, 2017 near New Smyrna, FL, during a survey in Mosquito Lagoon by Hubbs-SeaWorld Research Institute (Hubbs), researchers observed a known mom and calf pair of bottlenose dolphins with gear present on the calf. The calf had gear tightly wrapped behind the head. The Southeast Regional (SER) Stranding Coordinator sent a summary of the entanglement and photos to a team of expert veterinarians and biologists for review and the team concluded the entanglement was life threatening.

After reviewing the expert comments, NMFS approved intervention for the calf. The intervention was conducted under the MMHSRP's MMPA/ESA permit. A planning call was convened by the NMFS Southeast Region (SER) Stranding Coordinator, which included Stranding Network organizations, veterinarians, and NMFS SER and HQ staff. Resource lists and personnel roles were developed and

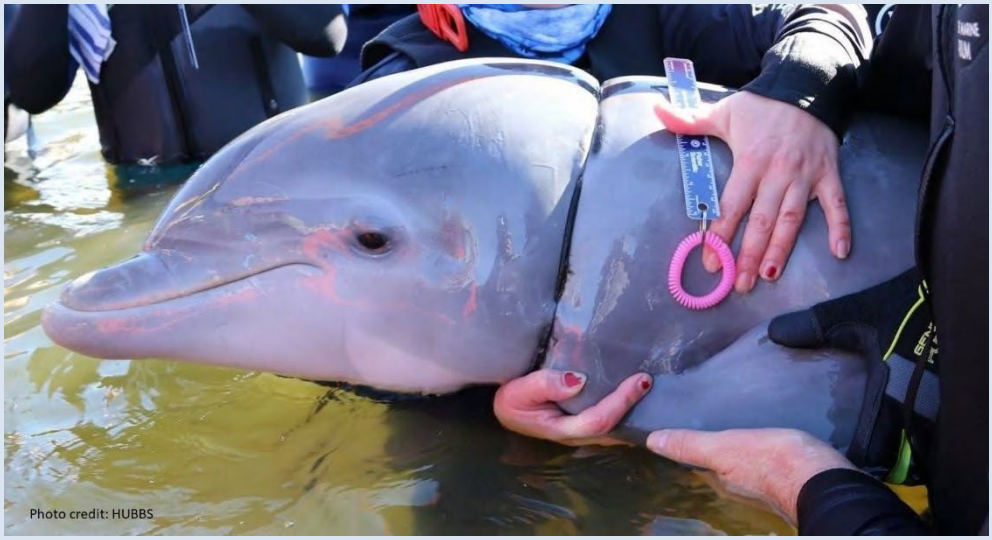
potential risk factors for the capture scenario and dolphins were identified. A decision was made not to tag the calf because of the highly identifiable dorsal fin of the mom and the frequency of sightings of the pair during photo-identification (photo-ID) studies. On December 11, 2017, Hubbs conducted a survey and found the mom/calf pair. The gear was still present and the entangled calf was showing signs of weight loss.

With this information, the SER Stranding Coordinator scheduled the intervention for December 12. The mom and calf were spotted after 1.5 hours of searching for the pair, they were followed for about 1 hour until the pair was in safe, catchable waters (of 4 foot depth and sandy bottom). Both the mom and the calf were successfully encircled by the catcher on the first attempt and were secured safely by the designated animal handlers. Photographs were taken of the gear on the animal prior to the lead veterinarian removing the gear. The gear consisted of a bungee cord with bio-fouling tightly encircling the calf's head. The gear was later identified as a Keller crab pot hook (trap closure hook) that was secured to the cord with two "hog-ties," and a yellow "zip tie" was wrapped around the cord. The entanglement corresponded with a deep laceration (up to 2 centimeters) that encircled the majority of the head to varying depths. A deep impression was present along the right lateral side that corresponded with the plastic hook and hog ties.

The wounds were extensively flushed and blood was collected from both mom and calf. The lead veterinarian administered a dose of a long acting antibiotic (Excede®) to the calf and the animals were released back into open water. After the pair was released, Hubbs conducted a focal follow for another hour or so prior to leaving the pair. Since then, the dolphin pair has been seen fairly regularly during photo ID surveys and the calf has been seen in good nutritional body condition.

Evidence	Visible entangling material present; encircling lesions with likelihood of embedded gear around mouth, body, flippers, tail flukes; animal anchored by gear. May also include lesions and abrasions from contact with trailing gear. Entangling material may include fishing gear (*e.g.*, monofilament, net, rope) or marine debris.
Level of Severity	**Conditions**
Serious Outcome (Life threatening)	Entanglement gear interfering with breathing and/or feeding; circumferential wraps around head, mouth, flippers, tail fluke, body; gear severely limiting mobility or animal is anchored; hooks in eyes or head; ingested fishing gear protruding from the mouth (https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-protection-act-policies-guidance-and-regulations#distinguishing-serious-from-non-serious-injury-of-marine-mammals)
Unlikely Serious Outcome	No restrictions of breathing and/or eating; fishing gear not embedded; gear only impacting the dorsal fin; minor superficial lesions; strength of animal exceeds that of the gear (Moore *et al.* 2013); hooks externally except for eyes or head
Intervention Method	Remote disentanglement; in-water capture for free swimming animals
Disposition Options	Released at site; translocated and released; rehabilitation; euthanasia

Case Photos: C2SEAB



6.2 Trapped/Out of Habitat

An animal is considered out of habitat if it is not in the typical range of that species, including offshore waters, coastal waters, or bays, sounds, estuaries, and rivers. Most typically for small cetaceans, an out of habitat animal is found in an inlet, creek, river, or other body of water that may only be connected with the ocean (or bay/sound/estuary) at certain tidal cycles, or under certain conditions. Out of habitat cetaceans may occur after severe weather events such as hurricanes or tropical storms, when dolphins have been reported many miles inland, presumably washed in with storm surge and then left behind in a pond or other waterway as storm waters recede. In other cases, dolphins can become trapped in harbors or up rivers with the path back to typical habitat being, but the animal has remained out of habitat due to actual or perceived barriers (*e.g.*, a pipe or culvert, or through a pass that is only accessible at certain high

tides).

Typically, an animal of concern has an initial assessment conducted in coordination with NMFS, the local Stranding Network, and other experts. This initial assessment will consider the animal's size, age, body condition, behavior, habitat (including environmental parameters such as salinity), social context (more than one animal or a single animal), prey availability, and the overall risk to the small cetacean. In addition, NMFS evaluates whether the animal is prevented from leaving the area, either by a physical barrier or a perceived barrier. If the animal or animals are not in imminent danger, NMFS, in coordination with the local Stranding Network, will continue to monitor the situation for any significant change to the situation.

Once an animal has been deemed out of habitat, the next step is to determine if intervention is necessary. When evaluating whether to intervene, NMFS generally considers the likelihood of the animal leaving on its own, its chances of survival if no intervention occurs, if the environment will allow for a reasonably safe capture for the response team and the animal(s), and whether it is possible to relocate or rehabilitate the animal. NMFS generally consults with marine mammal behavior experts, veterinarians, scientists, and other experts when determining the best course of action.

NOTE: For animals displaced as a result of severe weather, the timeliness of the response is essential, therefore, NMFS may intervene without an initial monitoring period as soon as it is feasible, safe for responders, and appropriate. In many cases, severe weather displaced animals are often in completely landlocked inland waterways, with no access to open ocean, gulf, or bay waters and are sometimes in areas with limited to no prey or in areas in which flood/storm surge waters are receding.

Case Example: 65IMMS04181 (Blair Mase-Guthrie—NOAA Fisheries)

On April 18th, 2016, NMFS was notified of a juvenile bottlenose dolphin that was not leaving a marina basin in Simmons Bayou, in Ocean Springs, MS. It was considered out of habitat due to the inland location of the marina, the fact the animal was not leaving the area, and the freshwater in the basin. The Stranding Network visually assessed the location for any potential barriers prohibiting the animal from leaving the area, and to monitor the dolphin's condition and behavior (noting any potential foraging). The animal appeared in good body condition, was observed foraging, and there did not appear to be any objects or construction keeping the animal from leaving the basin; however, there was a bottleneck at the entrance of the basin that may have inhibited the dolphin from leaving. The dolphin was monitored for 10 days in the area during which time skin lesions, associated with prolonged freshwater exposure, developed and a degree of weight loss was noted.

From this information NMFS SER Standing Coordinator approved intervention and started planning of logistics and resource acquisition. Subsequently, due to the limited resources available for a full-blown capture effort, a decision was made to attempt to herd the animal out of the basin using a NMFS-designed *hukilau* net and aluminum pipes to create a visual and acoustic "barrier". Personnel were spread out in the basin aboard several vessels and slowly herded the animal. The animal swam under the *hukilau* twice. A break of 30 minutes was taken and on the third attempt, the crew slowed the process down and was able to successfully herd the animal out of the basin and into an open water bay that led into the Gulf of Mexico. The animal was seen associating with two other dolphins after which the team lost sight of it; the dolphin did not reappear in the marina.

Evidence	Located in dam/water-control structure, canal or drainage ditch system; located up a bay or river system; no or limited access to open ocean; possible malnourishment; freshwater or other lesions present; sloughing skin and/or algal mat
Level of Severity	**Conditions**
Serious Outcome	Landlocked, completely out of water, in an area that is unusual for the species such as miles up a freshwater river or confined in a marsh or canal system
Less Serious Outcome	In an inlet or remote location that is connected to the ocean at least at some tidal states, and has some salinity
Capture Method	Herding methods for animals in areas with sufficient water depth and water outlets; In-water capture for free swimming animals that are landlocked, or that cannot be herded
Disposition Options	Herding to a more appropriate environment, in-water capture, translocation, and release, rehabilitation, or euthanasia

Case Photos: 65IMMS04181

6.3 Injury (including from watercraft and other injuries)

Collisions between watercraft and cetaceans can have adverse effects on the health of individual animals as well as the population status of endangered species (Kraus *et al.* 2005). For watercraft injuries, the trauma can be sharp-force, blunt-force, or a combination of both. The severity and type of this trauma depends on several factors, including vessel speed and size, which direction the animal was traveling when impacted, and where the injury occurs on the body (Rommel *et al.* 2007). In addition to vessel strikes, other commonly seen cetacean injuries include gunshot wounds, bite wounds, arrow wounds, and stab wounds.

Responders should do an initial assessment of the animal's behavior, environment, and condition of the wounds. The local Stranding Network should consult with NMFS to determine the severity of the wound(s) and how likely the injury is to impact the animal's quality of life. If the wounds are considered to be serious or life threatening, intervention to capture the animal, treat in situ or bring it to a rehabilitation center may be necessary.

Case Example: Baby Face (CMA 2018)

On June 9, 2015, a dolphin was reported with multiple, extensive lacerations to its peduncle, swimming in the John's Pass area in St. Petersburg, FL. After consulting with NMFS, Clearwater Marine Aquarium (CMA) began monitoring the dolphin to observe the animal's overall condition and examine how the injury was affecting the animal's behavior and its potential for survival. The 9-year-old female dolphin, "Babyface", was a known resident of the John's Pass area. After several days of monitoring by CMA, NMFS officials determined it was best for the dolphin to heal in her natural environment. The dolphin was observed traveling with ease, as well as foraging. Observations were discontinued in mid-August because of the dolphin's healing wounds and improved behavior. Babyface was sighted 3 years later fully healed and with a calf.

Evidence	Abrasions, lacerations, incisions, chop wounds, hemorrhaging, torn muscle, listing, inability to submerge, impaired locomotion, lethargy, skin discoloration, shock, unresponsiveness, fractures
Level of Severity	**Conditions**
Serious Outcome	Body cavity penetration or exposure, pneumothorax, vertebral transection, amputation (whole or in part), impaired locomotion, high floating, head wounds, difficulty breathing, abnormal discharge from eyes, mouth or blowhole
Unlikely Serious Outcome	Shallow wounds (excluding head wounds)
Capture Method	In-water capture for free swimming animals
Disposition	Rehabilitation, euthanasia; immediate release if the veterinary assessment deems the wounds are less severe than believed

Case Photos: Baby Face

6.4 Oil Spill

During oil spills, efforts to capture and move cetaceans pose significant challenges. With these challenges, herding methods may be used initially to deter small cetaceans away from oil prior to considering intervening via translocation efforts. Identifying areas that are safer requires significant interaction with the Scientific Support Coordinators and the Unified Command to identify surface and subsurface oil trajectories. Some programs, such as southern resident killer whales, have pre-identified hazing techniques and best practice documents. Further, the NMFS Cook Inlet and Kodiak Marine Mammal Disaster Response Guidelines (NMFS 2019 — Appendix 6) includes a Deterrence Method Practicality Analysis to be used as a decision-making tool for Cook Inlet beluga whale deterrence during oil spill response. Moving or relocating healthy small cetaceans to areas that are not oiled poses significant health

and safety concerns for the animals, and is not guaranteed to provide a greater chance of survival than leaving them in their natural habitat, especially with unsecured spills. Relocating a small cetacean involves capturing a free-swimming animal, which should only be attempted as a measure of last resort due to the risks to the safety of the rescue personnel and animal. Other issues that would need to be considered before moving small cetaceans away from an oiled area are:

- Translocation could overcrowd areas with more dolphins than the habitat can support;
- Translocations could alter the infectious disease ecology of the population or individuals; and
- Translocations might subject dolphins to poor-quality habitats with insufficient resources.

Rescuing healthy animals to place them in rehabilitation facilities to prevent potential impacts from oil is not desirable because it causes stress to the animal and may introduce health problems that could cause the animal's condition to deteriorate. Thus, proactively catching healthy animals could do more harm than good. However, in specific cases, including for threatened and endangered species, in very specific locations, or for particular types of hazardous material spills, capture and translocation or capture and temporary holding may still be implemented. In-depth and specific information regarding small cetaceans and oil spills, including Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements, can be found in the NMFS Marine Mammal Oil Spill Guidelines.

Case example: refer to the NMFS Marine Mammal Oil Spill Guidelines

6.5 Orphaned Calf

Orphaned calves may require intervention, as they are unlikely to survive for an extended period of time without maternal care and investment. In general, free-swimming orphaned calves would only be considered for intervention if they are from a threatened or endangered species (*e.g.*, Southern Resident killer whale (SRKW)) or if the calf was orphaned due to direct human activities. For non-threatened or endangered species, intervention should be considered on a case by case basis; however, euthanasia may be the best option, as rehabilitating a non-releasable animal is not necessarily feasible or the best welfare option.

If a calf is suspected to be orphaned, NMFS, in coordination with the local Stranding Network, will monitor the animal to estimate its age/size, determine whether it is alone and isolated from any social group, and discover whether it may or may not be successfully feeding on its own. NMFS and the local Stranding Network will consult with experts and veterinarians, to determine if the animal is unlikely to survive on its own, based upon field observations of the calf by biologists/researchers, analysis of photos and videos of the animal's behavior, and prior experience with similar situations. If evidence suggests

that the animal is too young to feed and thrive on its own and is isolated from an appropriate social group, NMFS may intervene with a capture effort, in which the calf will be transferred to a rehabilitation center. Due to the risky nature of capturing a small calf, and that young animals are unlikely to be a release candidate for return to wild populations except in certain populations with known individuals and social groupings (*e.g.*, SRKW), capturing an orphaned calf is considered only when it is deemed the most appropriate measure available. If the dependent calf cannot be released back into the wild, euthanasia should be considered over rehabilitation due to the best interest and welfare of the animal. If it is determined to be releasable, the calf should be marked for post-release (if possible). Refer to section 5.1 for marking options.

Case Example: A73 (Barre *et al.* 2016)

A female killer whale (*Orcinus orca*) calf, A73, part of the Northern Resident killer whale population was separated from her natal pod and living in Puget Sound, WA, far from her home range. Initial field observations of behavior and general health were made from January through June 2002. During this period, a NMFS/Canadian Department of Fisheries and Oceans (DFO) advisory panel (Panel) met four times to review and discuss the case and species. The Panel advice included that an observational plan be implemented by local researchers and advocates. The whale occupied limited territory, displayed extensive foraging behavior with few observations of successfully feeding, readily approached vessels, showed aberrant behavior (seeking tactile stimulation from humans), and often was observed rubbing on floating debris. Some physical observations consisted of poor body condition (underweight), abnormal skin appearance, and ketone-like odor in exhaled breath. Samples (fecal, skin biopsy, bacterial cultures of the blowhole, fungal cultures) were also collected during this time period. In May 2002, after considering the observation and medical information collected, NMFS approved intervention, capture, and temporary holding of A73 for medical treatment and rehabilitation with the intent to reintroduce her back to her natal group in British Columbia. This decision was based on concerns about the whale's nutritional condition, high site fidelity that would likely lead to interactions in the summer with boaters, and a lack of any discernible medical conditions that would preclude her reintroduction in Canada.

NMFS and DFO gathered a team and appropriate resources to rescue A73 using a tail rope to bring her alongside a small vessel and into a sling. She was hoisted with a crane, placed aboard a transport barge, and moved to a temporary holding and rehabilitation net pen enclosure in a protected cove at Manchester, WA, a few kilometers from A73's adopted territory. During transportation, the whale was supported on a water-soaked foam pad where the veterinary team collected measurements and diagnostic samples.

Throughout rehabilitation, the veterinary team conducted several medical examinations to monitor for any clinical or subclinical infections or medical conditions that could preclude a successful reintroduction

back into the wild. For A73's reintroduction into the wild, a strategy was developed during intervention planning to release the whale in the presence of conspecifics, preferably closely related individuals.

NMFS and DFO identified a suitable holding and release site in Canada, as well as a means of transportation to the site. In consultation with experts, a protocol was developed to evaluate important factors for release, such as timing, environmental conditions, and proximity to other whales as well as a post-release monitoring plan. Once export/import permits were issued and she met all the release criteria, A73 was transported, fitted with suction cup tags to aid in post-release monitoring, and then released at the designated site. A73 made acoustic contact with members of her pod and was reintroduced to them 18 hours after arrival in July 2002. She has since been sighted with new calves in 2013 and 2017, respectively.

Evidence	Lone, out of habitat, stranded small cetacean calf or neonate (generally from ESA species)
Level of Severity	**Conditions**
Serious Outcome	Length of time separated, emaciated, abnormal skin color, foul blow breath
Less Serious Outcome	Response to vessel approaches, logging, erratic behavior
Capture Method	Herding methods for animals in areas with sufficient water depth and water outlets; in-water capture for free swimming animals that cannot be herded or don't respond to herding
Disposition Options	Rehabilitation, euthanasia

Case Photos: A73

7. Conclusion

Deciding when a free-swimming small cetacean with health concerns is in need of intervention is complex and requires consideration of a variety of different factors. When an animal of concern has been identified, NMFS works with the local Stranding Network as well as outside experts to determine the best course of action based upon variables specific to each case. Once NMFS has made the decision to intervene, an authorized, experienced, and trained team of responders should be deployed based upon

requirements of the specific situation. There will be regional and state differences in response methods employed based upon the species present (*e.g.*, threatened and endangered) in that region.

8. Acknowledgements

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9. Literature Cited

Andersen, M. S., K. A. Forney, T. V. N. Cole, T. Eagle, R. Angliss, K. Long, L. Barre, L. Van Atta, D. Borggaard, T. Rowles, B. Norberg, J. Whaley, and L. Engleby. Differentiating Serious and Non-Serious Injury of Marine Mammals: Report of the Serious Injury Technical Workshop, 10-13 September 2007, Seattle, Washington. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-OPR-39. 94 p.

Cape Cod Stranding Network. (2008). Cetacean Health Assessment Guidelines. A Project of the International Fund for Animal Welfare.

Gulland, F.M.D., L.A. Dierauf, and K.L Whitman. (2018). CRC Handbook of Marine Mammal Medicine, 3rd Edition. CRC Press, Boca Raton, FL.

Geraci, J.R. and V.J. Lounsbury. (2005). Marine mammals ashore: a field guide for strandings 2nd Edition. National Aquarium in Baltimore, Baltimore, MD.

CMA. (2018). "Injured Dolphin, Babyface Spotted with Her Own Calf." *Clearwater Marine Aquarium,* 30 July 2018, www.seewinter.com/injured-dolphin-babyface-calf/.

Kraus S.D., M.W. Brown, H. Caswell, C.W. Clark *et al*. (2005). North Atlantic right whales in crisis. Science 309:561-562

NMFS. (2009). Release of NMFS Decision Process for Responding to Live Marine Mammals that are Stranded or Otherwise in Distress.

NMFS. (2019). NMFS Cook Inlet & Kodiak Marine Mammal Disaster Response Guidelines. NOAA Fisheries Guidance Document. pp 79 + appendices.

NOAA Fisheries West Coast. (2002). Orphan Killer Whale A73 (Springer). https://www.fisheries.noaa.gov/west-coast/endangered-species-conservation/orphan-killer-whale-a73-springer

NOAA Fisheries West Coast, October 2018. Guidance for Southern Resident Killer Whale Intervention. Available Intervention Options & Response Plan Template.

Rommel S.A., A.M. Costidis, T.D. Pitchford, J.D. Lightsey, R.H. Snyder, and E.M. Haubold. (2007). Forensic methods for characterizing watercraft from watercraft-induced wounds on the Florida manatee (*Trichechus manatus latirostris*). Mar Mamm Sci 23:110–132

Ziccardi, M., S. Wilkins,T. Rowles, and S. Johnson. (2015). Pinniped and Cetacean Oil Spill Response Guidelines. NOAA Tech. Memo. NMFS-OPR-52. 138pp.

Appendix A: Example Response Plan Template

1) Evaluate the scene (*i.e.*, environmental conditions, location) - record salinity, other parameters, not any protected/sensitive habitats that need to be avoided
2) Evaluate the animal(s) - written observations, photographs, video (Appendix B, Part A, below)
    a. Number of animals
    b. Social grouping - Mom/calf? Single?
    c. Size of animals
    d. Body condition
    e. Respiration Rate - Breaths/minute
    f. Locomotion - ability to swim normally
3) Contact NMFS with observations
4) Determine the team (*e.g.*, the Stranding Network members, researchers, local assistance)
5) Determine method of intervention: hazing/herding/deterrence, remote, shore, or in-water
6) Assess the gear needed
7) NMFS decision to move forward or not
8) Assign roles to Team
    a. Team Lead
    b. Catcher (if in-water capture is planned)
    c. Communications Lead
    d. Handlers
    e. Veterinarian
    f. Safety officer
    g. Law enforcement support (*e.g.*, NOAA OLE, Fish & Wildlife officer, police, sheriff)
9) Once rescued, perform health assessment (see examples in Appendix B)
    a. Determine sex and size class
    b. Obtain morphometrics
    c. Photographs
    d. Weight, if applicable
    e. Samples (*i.e.*, blood, genetics, pathogen testing, etc.)
10) Report assessment to NMFS for determination of next steps
11) Contingencies:
    1. In case rehabilitation proves necessary, prior to intervention
        a. Make sure a facility is available
        b. Organize transportation
        c. Ensure that the necessary equipment is on hand (*e.g.*, closed cell foam mat, stretcher, buckets/sponges/sprayers, etc.)

d. Monitor vitals en route

2. If can be released, prior to intervention
    a. Plan for post-release monitoring
    b. Does the animal need to be marked or tagged?
    c. Organize handlers for release
    d. Monitor visually post-release, if feasible
    e. Follow-up surveys if warranted over next several days/weeks
3. In case the animal is best euthanized, prior to intervention
    a. Determine with NMFS the best euthanasia method
    b. Perform a pre-capture briefing with the assembled team for preparation
    c. Communicate and organize handlers with handling the animal
    d. Communicate to the public (if present) with appropriate educational information
    e. Transport the carcass for necropsy and disposal (refer to Carcass Disposal Best Practices)
    f. Submit preliminary necropsy report to NMFS

12) Complete documentation and final report and submit to NMFS the Level A and intervention report
13) Afterward debrief and re-evaluate with the Team what worked well, what can be improved, lessons learned for future responses

Appendix B: Examples of Standardized Health Assessment Forms

A. Example of a Standardized Health Assessment Form for Captured Animal

Date:

Capture Start Time:

Capture End Time:

GPS Coordinates:

Responders:

Species:

Number of animals:

Sex:

Age Class:

Environmental conditions:

- Cloudy, Sunny, Rain (circle one)
- Visibility
- Sea state
- Water temperature
- Salinity
- Tide
- Location description (note protected/sensitive habitats to avoid):

Morphometrics (with total length as a priority, minimum):

- Total Length:_____cm/in
- See Cetacean Data Record for more detailed measurements collected

Photographs (circle pictures taken):

- Whole animal - left lateral and right lateral
- Close up on the head
- Lesions, abrasions, net marks
- Flukes/Flippers
- Dorsal fin, left lateral and right lateral (best to use a board or some kind of contrasting background)
- Lesions, scars, skin disorders, anything else of note

Body Condition:

- Emaciated, Robust, Normal
- Lesion/abrasion description:
- Entanglement description:
- Human interaction description:
- Injury description:

Vitals:

- Respiration rate - breaths/minute
- Heart Rate - heart beats/minute (pre and post breath)

Samples Collected:

- Skin - Genetics
- Blood - Clinical (hematology and chemistry)
- Serum - Serology (if applicable)
- Swabs - Pathogen testing (if applicable)
- Feces - free catch
- Other, such as special cases (suspected human interaction protocol; large whale protocol; suspected ship strike)
- Retain gear if entangled

Release:

- Roto Tag:
- Dorsal Fin Notching:
- Radio or Satellite Tag:
- Freeze Brand:
- Time of release:

B. Example of a Boat Based Routine Baseline Health Assessment Parameters (specifically Killer whale)

Observation quality

- Good
    - Up-close – naked eye
    - Up-close – binoculars
- Poor

Social grouping

- Mixed in with normal pod or individuals
- Isolating
- Not assessed

Body condition:

- Robust
- Good
- Possibly thin
    - Nuchal depression visible
    - Ribs or spinal processes visible
    - Scapula visible
- Not assessed

Size at age:

- Appropriate
- Small
- Not assessed

Buoyancy

- Normal
- Sits low in water, “plowing”
- Sits high in water, buoyant
- Listing when stationary
- Listing while swimming
- Not assessed

Speed of movement

- Travels with pod
- Trails intermittently
- Trails consistently
- Not assessed

Character of movement

- Appears normal
- Fluking is synchronized during pod swims
- Normal full range fluking movement
- Limited range fluking movement; fluking appears hesitant
- Not assessed

Skin

- Appears normal
- Abnormal
- Wound/trauma: describe

- Rakes/lacerations: describe
- Patchy or generalized discoloration or pigmentation change: describe
- Not assessed

Feeding

- Not observed
- Foraging observed: # events/# minutes observed time
- Feeding observed: # events/# minutes observed time
- Participant in food sharing
- Not assessed

Defecation

- Not observed
- Defecation observed from pod: # events/# minutes observed time
- Defecation observed from subject: # events/# minutes observed time
- Not assessed

Defecation character

- Not observed
- Disperses rapidly
- Floating feces
- Gas bubbles
- Not assessed

Respiratory rate while <u>not</u> travelling

- Respiratory rate: # breaths/# minutes observed time

- Whale breathes more frequently than pod mates
- Whale breathes less frequently than pod mates
- Not assessed

Respiratory rate while travelling

- Respiratory rate: # breaths/# minutes observed time
- Whale breathes more frequently than pod mates
- Whale breathes less frequently than pod mates
- Not assessed

Respiratory character

- Normal
- Breath appears prolonged (slow breath)
- Abnormal or possibly abnormal respiratory sound
- Sputum or phlegm present: describe
- Unusual odor: describe
- Not assessed

Appendix C: Example Sample Collection List

Samples collected are dependent on which authority (*i.e.*, permit, 109h, etc.) the intervention is conducted. The types of samples collected can vary due to being regionally taxa specific or situationally specific.[1]

Behavioral observations or samples collected remotely:

- Breath count
- Nutritional Condition
- Skin lesions, injuries, wounds
- Identifying characteristics
- Number of animals, including total and sub-groups (if applicable)
- Pre-stranding (*e.g.*, milling, directional swimming)
- Stranding (*e.g.*, determined effort to strand, passive, thrashing)
- Biopsy sample
- Floating fecal sample
- Breath sample
- Samples collected during a field capture.
- Location information
- Photographs
- Morphometrics
- Weight, if possible
- Blood sample, if possible
- Skin biopsy, if possible
- Sex (if female, lactating?)
- Gear retention (if entangled)

[1] Geraci, J.R. and V.J. Lounsbury. 2005. Marine mammals ashore: a field guide for strandings 2nd Edition. National Aquarium in Baltimore, Baltimore, MD.

Appendix D: Photos

Using a *Hukilau* to haze a bottlenose dolphin out of a canal.

Responders use a human chain to haze a dolphin away from a canal.

Deploying a seine net around a group of bottlenose dolphins. The outside boats are creating an acoustic barrier to ensure the dolphins do not escape the area before the net is fully deployed. Photo credit: MMHSRP

Responders hold up a seine net to contain a captured dolphin.

Responders work to shrink down a seine net to capture a bottlenose dolphin. Photo Credit: MMHSRP

Appendix E: Small Cetacean Intervention Questions and Answers

Q: What are small cetaceans?

A: Small cetaceans include the toothed species of whales, dolphins, and porpoises, excluding sperm whales. Small cetaceans live their entire lives in the water and use sound both for communication and to hunt for food. All small cetaceans are protected under the Marine Mammal Protection Act (MMPA) while some are also listed under the Endangered Species Act. Under the MMPA, NOAA Fisheries has jurisdiction over all small cetaceans.

Q: What do marine mammals get entangled in?

A: Marine animals, like whales, dolphins, seals, and sea lions, can become entangled in fishing gear that is being used to fish either commercially or recreationally, lost or abandoned gear, and other types of rope/line and trash, including plastic bags, that find their way into their natural environment.

Q: What is a small cetacean entanglement?

A: Common examples of items that may entangle small cetaceans include fishing gear, including recreational and commercial gear, rope, and other types of debris. Small cetaceans commonly become entangled around their tail flukes, flippers, dorsal fin, or head. Small cetaceans can also ingest fishing line, hooks, and lures. Entanglement in and ingestion of marine debris and fishing gear can cause decreased swimming ability, disruption in feeding, life-threatening injuries, infection, and death.

Q: Can small cetaceans become seriously injured when entangled?

A: Entanglements have been identified as a significant cause of injury or mortality to small cetaceans throughout the world. Entangling materials may cause lacerations, amputation of appendages, infection, may impact the ability to catch their food, and may result in death (*e.g.*, drowning, strangulation, etc.) and/or death of dependent calves. Common examples of entangling gear that harm small cetaceans include active or derelict fishing gear, rope, and other debris (Wells *et al.* 2008[1], Barco *et al.* 2010[2], Stolen *et al.* 2013[3], Adimey *et al.* 2014[4]). Small cetaceans can also ingest fishing line, hooks, and lures leading to injury and death (Barros *et al.* 1990, Gorzelany 1998, Baulch and Perry 2014, McLellan *et al.* 2015).

Q: What is a life-threatening entanglement?

A: The threat of entanglement to small cetaceans is typically not immediately life-threatening, and there is time for qualified experts to respond to and assess an entangled small cetacean and possibly cut the animal free. However, a life-threatening entanglement includes any material that impacts the ability of the small cetacean to swim, breath, or feed, or that may cause severe internal injury (*e.g.*, swallowed hooks still connected to line and/or lure protruding from the mouth). See Report of the Serious Injury Technical Workshop (NMFS-OPR-39) for further details.

Q: How does NOAA Fisheries respond to small cetaceans entanglements?

A: NOAA Fisheries works with highly skilled experts nationally to establish a Stranding

[1] Wells, R.S., Allen, J.B., Hofmann, S., Bassos-Hull, K., Fauquier, D.A., Barros, N.B., DeLynn, R.E., Sutton, G., Socha, V. and Scott, M.D., 2008. Consequences of injuries on survival and reproduction of common bottlenose dolphins (Tursiops truncatus) along the west coast of Florida. *Marine Mammal Science*, *24*(4), pp.774-794.

[2] Barco, S.G., D'Eri, L.R., Woodward, B.L., Winn, J.P. and Rotstein, D.S., 2010. Spectra® fishing twine entanglement of a bottlenose dolphin: a case study and experimental modeling. *Marine pollution bulletin*, *60*(9), pp.1477-1481.

[3] Stolen, M., St. Leger, J., Durden, W.N., Mazza, T. and Nilson, E., 2013. Fatal asphyxiation in bottlenose dolphins (Tursiops truncatus) from the Indian River Lagoon. *PloS one*, *8*(6), p.e66828.

[4] Adimey, N.M., Hudak, C.A., Powell, J.R., Bassos-Hull, K., Foley, A., Farmer, N.A., White, L. and Minch, K., 2014. Fishery gear interactions from stranded bottlenose dolphins, Florida manatees and sea turtles in Florida, USA. *Marine Pollution Bulletin*, *81*(1), pp.103-115.

Network of trained response teams. NOAA Fisheries also maintains regional marine mammal stranding reporting hotlines that allow reports of entangled and injured free-swimming small cetaceans to quickly be relayed to the appropriate responders. Responding (as appropriate, feasible, and safe) to entanglements is extremely difficult, dangerous, and should only be attempted by professionally trained teams. Availability of teams for response to free-swimming small cetaceans may be limited in some geographic areas.

Q: Who should people contact if they encounter an entangled small cetacean and what can they do? Who is responsible for disentangling the small cetacean?

A: Immediately contact your local Stranding Network, local authorities, or the NOAA Fisheries 24-hour Stranding Hotline to report an entangled free-swimming small cetacean:

- For the Southeast Region, call 877-WHALE HELP (877-942-5343).
- For the Northeast Region, call (866) 755-6622
- For the West Coast Region, call (866) 767-6114
- For the Alaska Region, call (877) 925-7773
- For the Pacific Islands Region, call (888) 256-9840

Members of the public should NOT attempt to disentangle small cetaceans themselves and should instead immediately call authorized professional responders. Only responders who have been authorized by NOAA Fisheries and who have the training, experience, equipment, and support needed should attempt to disentangle marine mammals. Entanglement response efforts also rely on the support of many state and federal agencies (including law enforcement agencies and the United States Coast Guard), non-governmental organizations, and others working together to respond to, and ultimately prevent, entanglements.

The NOAA Fisheries Office of Protected Resources coordinates marine mammal entanglement response efforts around the country through the National Marine Mammal Health and Stranding Response Program.

Regardless of the species, disentangling marine mammals is dangerous, and should only be performed by trained professionals. Only trained and authorized responders should attempt to disentangle or closely approach an entangled small cetacean. Small cetaceans are unpredictable and attempting to remove an entanglement can be dangerous.

Here are the steps to follow:

- Stay in the boat—never get in the water to attempt to help an entangled small cetacean.
- Note the GPS coordinates of the location of the entangled animal and direction of travel.
- Call your local responder via the national entanglement response and Stranding Network.
- Wait for trained, authorized personnel—do not attempt to free an animal on your own.
- Monitor the situation—if a response is possible, authorities may ask that you stand by and watch the animal from a safe and legal distance (*e.g.*, greater than 100 yards and not directly behind the animal).
- Document the entanglement—if possible take photos and video of the animal from a safe and legal distance (*e.g.*, 100 yards). This can provide valuable information to Stranding Network responders. Note presence, color and markings on any buoys or other gear on the small cetacean.
- Do not touch the marine mammal.
- Don't allow pets to approach the cetacean.

Q: When and how does the Stranding Network disentangle small cetaceans?

A: Disentanglement attempts are reserved for situations that are determined to be life-threatening to the animal, in areas that are safe for the Stranding Network to work, areas where there are trained and experienced responders, and situations where animals are individually identifiable and likely to be re-sighted. For entangled small cetaceans, NOAA Fisheries, in consultation with experts and veterinarians, will determine if an entanglement is considered life-threatening. This is achieved through field observations by responders, biologists, researchers, and veterinarians, analysis of photos and/or videos, the animal's behavior and appearance, and prior experience with similar entanglements (*e.g.*, Wells et al. 2013).

If the entanglement is determined to be life-threatening, the next step is to determine the most

appropriate method of intervention. For example, in some cases Stranding Network members can capture an animal in the water and remove the entanglement. However, in-water captures are difficult, complicated, and can lead to both injury and death of the small cetacean as well as injury to responders. Therefore, in-water captures are not always possible or the best course of action. Additionally, depending on the species, severity of the injury, and circumstances, the animal may need to be evaluated and treated at a permitted rehabilitation facility. If intervention is not an option or the entanglement is not considered life-threatening, the animal may be monitored, usually by local researchers, Stranding Network partners, or trained biologists, to determine whether an intervention may be possible at a later date (*e.g.*, the animal moves to a more suitable area for rescue, the animal live strands, the animal becomes lethargic and more approachable, the weather improves, the animal's condition deteriorates (if the entanglement was not originally considered life-threatening).

Q: How to respond to an entangled, free-swimming small cetacean using remote disentanglement techniques?

A: Only trained and authorized responders should respond to an entangled, free-swimming small cetacean. Remote disentanglement techniques usually involve one to two vessels and several close approaches to the entangled small cetacean using remote disentanglement tools (*e.g.*, cutting pole, cutting grapples) to cut the entangling gear/debris while still being at some distance from the animal. The animal is not captured during a remote disentanglement. For remote responses, factors that should be considered include environmental conditions, team selection and training, condition of the animal, type of entanglement and location on the body, resources, and mission complexity. Whenever possible, entangling gear should be retained, documented, archived, or sent to a gear repository for analysis. Please consult with the Regional Stranding Coordinator on appropriate repositories by region.

Q: How to respond to an entangled, anchored small cetacean using remote disentanglement techniques?

A: Only trained authorized responders should respond to an entangled, anchored small cetacean. Remote disentanglement response techniques for anchored small cetaceans usually involve one to two vessels and close approaches to the entangled and anchored small cetacean, either using remote disentanglement tools to cut the entangling line or by briefly restraining the small cetacean alongside the vessel and disentangling by hand. Occasionally anchored animals may be in shallow water, and an in-water response may be possible if handlers are able to stand and disentangle the small cetacean safely. The remote disentanglement of small cetaceans that are anchored has inherent risk for both the responders and the animals. Anchored animals generally need to be responded to within 24 hours; consequently, there will be less time for planning and preparation and increased risks to the animal of drowning and death.

Q: How to respond to an entangled, free-swimming small cetacean with an in-water capture and restraint response?

A: Only trained and authorized responders should respond to an entangled, free-swimming small cetacean. In-water captures are difficult, complicated, and can lead to both injury and death of the small cetacean as well as injury to responders. For an in-water physical capture and restraint response, factors that should be considered include environmental, team selection and training, condition of the animal, type of entanglement and location on the body, resources, and mission complexity. The location of the animal will help determine which capture equipment to use, which can include purse seines, hand nets or net panels, breakaway hoop nets, or soft lines.

Q: What are the risks to the Stranding Network members during a disentanglement?

A: Small cetaceans are powerful wild animals that can pose risks to human health and safety. Stranding Network members may be exposed to diseases that can be transmitted from small cetaceans to humans, may sustain injuries or bite wounds, and usually conduct work in small vessels in variable weather conditions. There are different techniques to disentangle small

cetaceans to reduce these risks including using remote tools to cut away the entanglement and catching individuals using nets so that they can be more safely approached and disentangled.

Q: Do the marine animals know that you are trying to help them?

A: Certainly, they are aware of a rescue team's presence but just what they think of response activities is unclear. As with any wild animal, they may be very dangerous when injured and under stress. While working closely with a marine mammal, rescue teams make every effort to keep themselves safe. Animals may react with fight or flight responses and may use their heads, flukes, or flippers to defend themselves.

Q: What is NOAA Fisheries doing to prevent future entanglements?

A: NOAA Fisheries continues to work with numerous partners to reduce marine debris and to minimize or prevent entanglements. Each successful disentanglement provides information to guide gear modifications and management strategies to further reduce threats.

Q: What can people do to help prevent the entanglement of marine animals?

A: When fishing or boating, do not leave fishing gear or trash behind. Also, consider participating in community clean-up efforts. Whether at the beach, river, or local park, trash can often find its way into the ocean and present an entanglement risk. And always remember to "lose the loop" - cut any loop before properly discarding it in the trash so that it does not become an entanglement hazard.

Q: Why is documentation of small cetacean entanglements important?

A: Without documentation, little can be learned about entanglements and how to prevent them.

By understanding how, where, when, and which small cetaceans get entangled, we may be able to make better decisions regarding prevention, which is the ultimate solution to the problem. The primary focus of entanglements should be in prevention and it is difficult to prevent the problem if we do not fully understand it. Documentation helps quantify entanglement incidence and prevalence, which helps us understand the overall impact on small cetacean populations. When we know the main sources of entanglement, we can prioritize the best methods to solve the problem. For small cetaceans entangled in active fishing gear, we need to find effective deterrents to reduce interactions. For small cetaceans entangled in marine debris and lost and abandoned fishing gear, we need to provide more outreach and education while encouraging prevention. Documentation also can help show if the disentanglement has been successful or not and creates an understanding of the healing process.

Q: Do you analyze the gear collected from a disentanglement?

A: When disentangling a small cetacean, a secondary goal is to document and recover the entangling gear. Any entangling gear recovered is sent to NOAA gear experts on the East Coast to evaluate the type of material, including a specific fishery, the origin (source of the entanglement), and the configuration (the part of the gear). If the gear is considered to be non-compliant with regional or seasonal fishery restrictions, the gear may be provided to the NOAA Office of Law Enforcement for further investigation.