



United States Department of the Interior

FISH AND WILDLIFE SERVICE

U.S. FISH AND WILDLIFE SERVICES' STANDARD CONDITIONS FOR CARE AND MAINTENANCE OF CAPTIVE SEA TURTLES

November 13, 2019

INTRODUCTION:

Jurisdiction of sea turtles is shared between the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) and the United States Fish and Wildlife Service (USFWS) under 50 CFR 17.21, 50 CFR 17.31(a), 50 CFR 17.42(b), 50 CFR 222.309 & 50 CFR 223.206, and our shared responsibilities are addressed in a Memorandum of Understanding (2015).

- NMFS has jurisdiction in the marine environment (*i.e.*, oceans and seas, bays, estuaries, brackish or riparian water areas, and any other marine waters adjacent to the terrestrial environment) and for activities affecting sea turtles and their habitats in the marine environment.
- USFWS has jurisdiction in the terrestrial environment. USFWS shall also have jurisdiction for all imports and exports of sea turtles, including parts and products.
- NOAA Fisheries is the lead for stranding response including placement at rehabilitation facilities that meet our Standard Conditions for the Care and Maintenance of Captive Sea Turtles, USFWS shall provide assistance within its capacity.
- USFWS is the lead for and coordinator of rehabilitation and captive holding facilities.

Roles and Responsibilities:

In accordance with the Endangered Species Act of 1973, as amended (ESA), and regulations promulgated thereto, specifically 50 CFR 17.21(c)(3) and 50 CFR 17.31(a), the USFWS may authorize, via an ESA Section 10(a)(1)(A) permit or a designated agent letter, the removal of sick or injured individuals from the wild and transport to facilities for appropriate veterinary care and rehabilitation. The primary role for USFWS in stranded sea turtle response on land relates to coordinating with the NMFS to provide the authorization to transfer the turtle for rehabilitation through a Designated Agent Letter issued by the USFWS and in some cases through a recovery permit issued by the USFWS Regional Office. All rehabilitation and captive care facilities must follow the Standard Conditions for Care and Maintenance of Captive Sea Turtles.

Facilities that care for sick or injured sea turtles must comply with these Standard Conditions for Care and Maintenance of Captive Sea Turtles. To develop these Standard Conditions, the USFWS coordinated with Sea Turtle Stranding and Salvage (STSSN) Coordinators, the National Marine Fisheries Service (NMFS), and facilities that currently rehabilitate sick or injured turtles and/or hold

non-releasable sea turtles. Sick or injured sea turtles taken to these facilities must remain under their care for rehabilitation until release unless specific approval is provided in writing by the USFWS for transfer to another authorized facility (i.e., in a letter of transfer).

TYPES OF CAPTIVE MAINTENANCE:

Releasable and non-releasable sea turtles

Any sea turtle that is physically and behaviorally able to swim, dive, and successfully forage is considered releasable unless determined otherwise by the USFWS. Non-releasable turtles are defined as turtles that have been rehabilitated, but which have permanent disabilities that are determined by the attending veterinarian and the USFWS to preclude their potential survival in the wild.

Education:

Depending upon the display capabilities of a facility and justification (benefit to the conservation of the species in the wild with no additional stress to the turtle), non-releasable sea turtles and turtles undergoing non-critical extended care (longer than 6 months) may be displayed for educational purposes by a facility that includes a conservation message that benefits sea turtles in the wild. Public encounters (e.g., feeding, touching, swimming, etc.) with turtles are not considered a conservation benefit and are not allowed.

Educational Display of Captive Turtles:

1. Any facility holding non-releasable sea turtles for educational display must follow all standard conditions listed herein and maintain documentation that the sea turtles were legally removed from the wild.
2. Turtles on display must be accompanied by interpretive signage or other interactive methods of communication such as live lectures, displays, and self-guided audio tours. These displays must include the following: species identification, protection status under the Endangered Species Act, general life history, and current conservation issues (e.g., incidental capture in fisheries, boat strikes, ingestion of human-made debris, loss of nesting beaches, loss of developmental habitats and adult foraging grounds, beachfront lighting, etc.).
3. It is the responsibility of the individual/institution to ensure that their facility has the necessary tank space to accommodate the sea turtles for permanent care or until they are ready for release (see Tank Size Requirements).
4. Mortality of any captive sea turtles must be reported to the USFWS within 24 hours.
5. For any long-term rehabilitating turtle proposed for public display, the following are required:

- a. the veterinarian responsible for the care of the animal must deem that the turtle is stable and the additional stress associated with public display will not affect the turtle's health;
- b. release of the turtle must not be delayed or expedited to facilitate the public display;
- c. Annual reporting as outlined in a Section 10(a)(1)(A) permit; otherwise quarterly reporting (by email to the USFWS and/or State agency as appropriate) of current weight, straight carapace length, rehabilitation status, and disposition (death, euthanasia, transfer or release) and date of any turtles that are no longer at the facility (Appendix A: https://www.fws.gov/northflorida/SeaTurtles/Captive_Forms/Appendix%20A_Quarterly_Report_Form_V4.pdf). Quarterly reporting may be waived by the USFWS on a case-by-case basis.

Educational Tours of Captive Turtles:

The following measures are required for educational tours involving live sea turtles:

1. Tours must be conducted only during hours when the turtles would normally be exposed to light. The light exposure should be modified for seasonal photoperiods but must have consecutive hours of darkness as found in the natural environment during that period.
2. Educational topics must include species identification, protection status under the Endangered Species Act, general life history, and current conservation issues (e.g., incidental capture in fisheries, boat strikes, ingestion of debris, ocean dumping, loss of nesting beaches, loss of developmental habitats and adult foraging grounds, beachfront lighting, etc.).
3. For facilities with open tanks, each tour must have at least one staff/volunteer present at the time of the tour for every 15 guests. More staff/volunteers may be needed as appropriate to ensure guests are not in contact with the tank or medical equipment.
4. Visitors must be given clear instructions to minimize disturbance and stress to turtles, including no touching of turtles or their tanks, minimal noise, and no flash photography.
5. Tanks must be half covered or have a hiding spot for turtles to decrease stress from tours.
6. The following information must be included in the annual report – number of tours; number of people, dates, and times of the tours; medical condition of each turtle involved in the tours; turtle behavior (before, during, and after tours), and the release date of the turtles.

Additional Requirements for Educational Tours of Rehabilitating Turtles:

Educational tours and the display of rehabilitating animals are not authorized for turtles in critical condition. The veterinarian responsible for the care of a turtle must deem that the turtle is

stable and that the tours will not affect the turtle's health. The release of the turtle must not be delayed to facilitate the tours. To conduct tours, facilities must meet the following conditions:

1. The timing of the tour must not interfere with the treatment or care of the turtle.
2. Tours may be conducted while a turtle is in treatment if the veterinarian responsible for the care of the turtle approves, and guests are kept at a far enough distance from the turtle and staff working with the turtle so as to minimize the potential for additional stress and not interfere with treatment.

Research

The following is required for any use of turtles for research that have been brought into captivity for rehabilitation:

1. A USFWS section 10(a)(1)(A) recovery permit is required for any research activities that will result in take of sea turtles, as defined in Section 3 of the ESA and at 50 CFR 17.3. For example, if the research activity will require the taking of tissue samples, blood samples, and or the attachment of an animal-borne electronic device (e.g., dataloggers, transmitters, electronic tags, cameras), a section 10(a)(1)(A) recovery permit must be issued prior to carrying out any of these activities. The application form is available at: <https://www.fws.gov/forms/3-200-55.pdf>.
2. The release of rehabilitated turtles may not be delayed to obtain recovery permits or to facilitate a research project unless authorized in the permit.
3. Unless a specific exception is granted because of research conditions, anyone holding turtles for scientific research must follow these Standard Conditions for Care and Maintenance of Captive Sea Turtles.

Additional information can be found in "The U.S. Fish and Wildlife Service's Process for Telemetry Attachment on Nesting Sea Turtles and Sea Turtles Housed in Rehabilitation Facilities":

https://www.fws.gov/northflorida/SeaTurtles/Docs/20161230_FWS%20process%20and%20conditions%20for%20telemetry%20attachments_Sea_Turtles_final.pdf.

Rehabilitation

Any facility holding sea turtles for rehabilitation must meet all conditions listed below under Care and Maintenance Requirements

Transport:

1. Sea turtles must be transported in a climate-controlled environment, protected from extremes of heat and cold, and kept moist. In general, the best range of temperatures for transport is between 21°C and 27°C (70°F and 80°F; see additional conditions for cold-stunned turtles

below). If a turtle is transported at temperatures greater than or equal to 23.9°C (75°F), it must be cooled by keeping a wet towel on the carapace and by periodically applying water. Water and wet towels must not be used when transporting turtles at temperatures less than 23.9°C (75°F) or at any time they are exposed to an air-conditioned environment (exception: open wounds must be kept moist with clean water regardless of temperature). At temperatures less than 23.9°C (75°F), juvenile turtles (less than 30 centimeter (cm) straight carapace length) may be kept from drying out during transport by applying a thin layer of a water-based, water soluble, non-petroleum lubricant (e.g., K-Y Jelly) to the carapace and all the soft tissues (except the eyes and any open wounds). Larger turtles (≥ 30 cm straight carapace length) do not need a lubricant because they are less likely to dry out due to their low surface to volume ratio; therefore, use of a lubricant should be avoided to minimize risking of accidental slippage and injury during handling. If transport is longer than 45 minutes, ophthalmic lubricant should be used to protect the eyes.

2. For cold-stunned sea turtles, rapid rises in temperature ($>3^{\circ}\text{C}/5^{\circ}\text{F}$ per hour) during transport, housing, and/or subsequent treatment should be avoided to the maximum extent practicable. Gradually warming by $3^{\circ}\text{C}/5^{\circ}\text{F}$ per day is the preferred regimen.
3. Turtles must be placed in sturdy containers with sufficient holes for adequate ventilation during transport. Turtles must not be transported in water. Hatchlings (sea turtles with a straight carapace length ≤ 4 cm) must be transported in a container with moist sand. Post-hatchlings (sea turtles with a straight carapace length > 4 cm and ≤ 10 cm for all species except leatherbacks) must be transported in a container with a damp towel or cloth at the bottom of the container. The containers housing turtles (for all other sizes) during transport must be padded but must not contain any material that could be accidentally ingested. The containers must be secured during transport so they do not slide around or tip over.
4. For long-distance transports to a release site lasting 24 hours or more, sea turtles should be placed in a saltwater pool for at least 6 hours before being released. This measure may reduce transport-related stress by normalizing physiological parameters and allowing the turtles to recover from fatigue, thereby improving their readiness for release back into the wild (Hunt *et al.* 2016; Hunt *et al.* 2019). If there are logistical constraints, the facility must contact the USFWS or Sea Turtle Stranding Coordinator for that State on a case-by-case basis to determine the appropriate course of action for the release.

Transport by flight:

- The cabin temperature must be kept between 21°C and 27°C (70°F and 80°F).
- Rapid temperature changes must be avoided.
- Turtles must be accompanied by an animal care specialist at both transporting and receiving locations.
- Turtles must be transported in containers as approved by the USFWS or the State Sea Turtle Stranding Coordinator (e.g., wooden crate, banana box, plastic container, or other appropriate container) for transport. Additional foam padding or blankets may be used during transport.

- Containers must be handled and secured during transport in an upright position. The top of the container must be clearly marked. Containers must be ventilated, padded if necessary, and be free of material that could be accidentally ingested.

CARE AND MAINTENANCE REQUIREMENTS

Facility Construction

Tank Size Requirements:

Holding tank sizes for turtles must be based upon the size of the largest specimen in the tank as described below. Use straight carapace measurements to determine the appropriate tank size.

Note: For a long-term, non-releasable turtle, the facility must have a tank or tanks of sufficient size to accommodate the turtle through all life stages. If a facility cannot hold the non-releasable turtle as it grows, it must provide the following information to the USFWS: (a) a letter from another facility that has agreed to permanently hold the turtle once it reaches a size that the facility can no longer accommodate, (b) a description of how the turtle will be transported to the other facility, and (c) tank size(s) of the facility to which the turtle will be transported and where it will remain.

1. Hatchlings and post-hatchlings (up to 10 cm straight carapace length) – for one hatchling, a tank or sub-section of a tank with a surface area of at least five times the shell straight carapace length by two times the shell straight carapace width of the turtle plus a minimum water depth of 0.3 meters (m) (1 foot). The minimum tank width must be no less than two times the shell width. Hatchlings must be housed separately if aggression is observed.
2. Turtles greater than 10 cm and up to 50 cm straight carapace length – for one turtle, a tank with a surface area of at least seven times the straight length carapace length by two times the shell straight carapace width of the turtle plus a minimum water depth of 0.8 m (2½ feet). For each additional turtle, increase the original surface area by 50%. The minimum tank width must be no less than two times the shell(s) width (e.g., for multiple turtles, the sum of the shell straight carapace widths must be multiplied by two to determine the minimum tank width).
3. Turtles greater than 50 cm and up to 65 cm straight carapace length – for one turtle, a tank with a surface area of at least seven times the shell length by two times the shell width of the turtle plus a minimum water depth of 0.9 m (3 feet)*. For each additional turtle, increase the original surface area by 50%. The minimum tank width must be no less than two times the shell(s) straight carapace width (e.g., for multiple turtles, the sum of the shell straight carapace widths must be multiplied by two to determine the minimum tank width).
4. Turtles with a straight carapace length greater than 65 cm – for one turtle, a tank with a surface area of at least nine times the shell length by two times the straight carapace width of the turtle plus a minimum water depth of 1.2m (4 feet)*. For each additional turtle, increase the original

surface area by 100%. The minimum tank width must be no less than two times the shell(s) width (*e.g.*, for multiple turtles, the sum of the shell straight carapace widths must be multiplied by two to determine the minimum tank width).

* NOTE: some conventional stock tanks are too shallow to meet these criteria, depending on turtle size. The sizes of turtles that a facility plans to accommodate should be considered when selecting or designing tanks.

Exceptions:

1. Sick or injured turtles may be held in a smaller isolation tank in an emergency situation as determined by the USFWS. The USFWS will coordinate with the National Marine Fisheries Service's Stranding Coordinators (<https://www.fisheries.noaa.gov/contact-directory/sea-turtle-stranding-and-salvage-network-coordinators>) or the State Sea Turtle Stranding Coordinators for the Sea Turtle Stranding and Salvage Network (<https://www.fisheries.noaa.gov/state-coordinators-sea-turtle-stranding-and-salvage-network>) to make this determination and to define the beginning and end of the emergency.
2. Sick or injured turtles may be held in a smaller isolation tank if determined by a veterinarian to facilitate treatments. Any turtles held for this purpose must be protected from desiccation and moved to an appropriate tank as soon as health allows. If necessary, hatchlings or post-hatchlings being held short term (to allow time to arrange safe release to the wild) may be held in a tank with dimensions less than those required above. Turtles must be closely monitored for aggression and separated as necessary.

Tank Condition Requirements:

1. The inside surfaces of any holding tank must be non-abrasive, free of burrs or projections that could cause harm to turtles, and free of toxic heavy metals and organics, such as lead or copper paints. Any tank with painted surfaces must be free of biological hazardous material and must not be actively chipping or flaking. Use of non-finished concrete tanks must be avoided.
2. A holding tank must not contain any non-food items that may be ingested by a turtle or any items that would obstruct a turtle's ability to surface either to breathe or to float.
3. A holding tank must not contain entangling materials. Rock ledges or other habitat-mimicking items in the tank are encouraged to allow turtles to rest. However, these items must be constructed or placed in a manner that ensures a turtle cannot become tightly wedged or trapped underwater. Sea turtles must demonstrate the ability to maneuver safely around all tank items. Enrichment tools, especially for resident/non-releasable turtles, must be used to enhance quality of life and prevent development of stereotypical behavior. A tank must be designed to ensure the turtle stays within the tank at all times unless removed by facility personnel.

4. A holding tank must use railings/barriers to prevent the public from reaching into the tanks. If it is determined that public presence causes unnecessary stress, turtles must not be accessible to the public.
5. The drains or intakes of a holding tank must be constructed or securely shielded to prevent accidental entrapment. Inflows and drains must be placed to ensure appropriate water turnover and flow rates throughout all areas of the tank.
6. To help prevent the water temperature from becoming too warm ($> 30^{\circ}\text{C}/86^{\circ}\text{F}$), any outdoor holding tank must be at least 30% shaded. If water is recirculated, shading must be increased to at least 50% shaded.

Lighting

1. All the tanks in which sea turtles are housed must have enough lighting (sunlight and/or artificial lighting) to allow for easy viewing of the animals in all areas of the tank. However, artificial light must not be excessive so as to cause light sensitivity and the tank must have dark/shaded areas that allow turtles to select their preferred conditions.
2. If artificial lighting is used as a primary light source, regular veterinary evaluation must address any lighting and/or dietary supplement needs based on clinical assessment and best available medical/husbandry information. Good quality full spectrum bulbs (UVA/UVB) (wavelength of UVB -280 nanometers (nm) to 320 nm) are encouraged to promote general health and avoid potential metabolic problems. If “diffusers” are used, care must be taken to ensure appropriate full spectrum exposure.
3. The photoperiod of captive sea turtles must be similar to a natural photoperiod and mimic the summer and winter season daylight hours. Tanks must not be artificially illuminated to provide a photoperiod of more than 14 hours per 24-hour period to represent the natural seasonal photoperiods.
4. Lights above the top of the tank must have shield guards to prevent accidental breakage.

Water Quality

Good water quality is essential to the health of sea turtles in captivity. Facilities must have written procedures for monitoring and maintaining water quality in all enclosures and maintain records of all water testing results. At a minimum the following specific parameters must be met:

1. The water must be clear enough to allow easy viewing of sea turtles in any part of the tank to assess health and activity.
2. The salinity must be maintained between 20 parts per thousand (ppt) and 35 ppt. If necessary, sea turtles may be maintained in more or less saline water for up to 24 hours per

week. Sick or injured sea turtles may be kept at salinities below 20 ppt or above 35 ppt as prescribed by a veterinarian.

3. Water pH must be maintained between 7.2 and 8.5.
4. High and low water temperature extremes may induce disease (particularly fungal), injury, or even death and must be avoided. For sea turtles (other than cold-stunned sea turtles), water temperature must be maintained between 20°C and 30°C (68°F and 86°F). For cold-stunned sea turtles, rehabilitation requires that turtles be placed in waters within 3°C (5°F) of environmental conditions to the extent practicable, and allowed to warm gradually at the rate of 3°C (5°F) per day (Manire et al. 2017). Sea turtles must not be exposed to temperatures that would thermally shock them upon entering rehabilitation or upon release back into the wild.
5. Chlorine can be used to treat the water to reduce bacterial and algae growth, but levels must be kept below 1.0 part per million (ppm). Chlorine levels greater than 1.0 ppm may cause irritation to turtle eyes. No other chemical may be used to treat water in a tank housing sea turtles if the chemical is not safely ingestible by turtles at the dilution that would be needed for effective treatment.
6. Coliform bacteria counts must be evaluated regularly either by most probable number (MPN) total coliform count, or fecal coliform counts. Coliform MPN must not exceed 1,000 MPN per 100 milliliters (ml) of water. Total coliform counts must not exceed 500 per 100 ml of water, and fecal coliform counts must not exceed 400 per 100 ml of water. Steps must be taken to prevent the conditions in which coliform bacteria proliferate. Testing for coliforms is a simple, inexpensive, preventative/proactive measure; it is recommended testing be conducted monthly on all systems. The steps to prevent coliform proliferation include adequate filtration (removing suspended material and larger pieces of feces and leftover food) and the use of an appropriate sanitizing chemical such as chlorine, or a high turnover rate with fresh, uncontaminated seawater. The USFWS reserves the right to request total coliform counts monthly or more frequently if conditions warrant.
7. If ozone is used for water treatment, the oxidation-reduction potential must be monitored and maintained below 400 millivolts (mV) if possible to reduce the potential for irritation.
8. For artificial seawater only salt formulations that are appropriate for marine life (without anticaking agents) must be used.

Water handling and life support systems

Water quality must be maintained using either filtration or flow through systems. Tanks that require complete or near complete water changes as the sole means of maintaining water quality, such that the water level is dropped to the point where the turtle is sitting on the tank floor (“dump and fill”), may only be used for rehabilitation on a “temporary” (defined as an event

where the turtle is expected to be medically cleared and ready for release within a 45-day period) or during an “emergency” basis (defined as an acute mass stranding event or an equipment-related failure at the facility such as power outages). Dump and fill water maintenance is not acceptable for long-term rehabilitation due to the additional stress and increased habituation to humans caused by frequent maintenance. Therefore, if a turtle held in a “dump and fill” tank is not medically cleared within 45 days; the facility must contact the USFWS on a case-by-case basis to determine the appropriate course of action for the turtle.

The following measures are required for system functions:

1. Systems must have sufficient water turnover, filtration, and disinfection to maintain water quality.
2. The facility must have the ability to: (1) monitor and operate within the parameters described in this document, (2) correct any situation in which the parameters are not met, and (3) properly care for the sea turtles while corrective measures are being taken.
3. During any draining and filling of tanks, care must be taken to minimize stress and avoid injury (e.g., flapping against hard tank bottoms), such as by using temporary holding tanks adequate holding tanks that are filled with water or padded.
4. Water disposal must be in accordance with all applicable local, State, and Federal laws.
5. Treatment or pre-filtration of natural seawater is recommended to remove infectious cercariae (parasitic larva of a trematode worm) and ectoparasites.

Use of “dump and fill” tanks for rehabilitation on a “temporary” or “emergency” basis must:

1. Place turtles into temporary tanks with water or padding during cleaning to minimize their time out of water.
2. Remove uneaten food in a timely manner (unless live prey) to minimize water fouling.
3. Evaluate the turtle skin and shell daily for any abnormalities or any decline in the turtle’s condition.
4. Contact the USFWS for additional measures if turtles are held for longer than 45 days.

Water Quantity

1. Any facility housing sea turtles must have the ability to provide adequate water quantity under normal and emergency conditions to allow complete submergence and unimpeded turning. In an emergency, sea turtles may be kept out of water for a maximum of 4 hours per week. During this time, they must be kept moist on a padded surface; protected from sun,

heat, temperature extremes, and injury; and monitored for ventral skin lesions and other problems. This situation should occur only very rarely, if ever. Turtles that are unable to be left in water due to severe illness, injury, required treatment, or anesthesia may be kept out of water for the required period under veterinary consultation. In an emergency, sea turtles may be kept out of water for longer periods as necessary.

Food and Feeding

Reasonable efforts must be made to develop proper balanced diets for sea turtles, including use of nutritional supplementation as needed. Feeding of oily or fatty fish can lead to nutritional problems and must be minimized. The quantity of food must be rigidly controlled so turtles do not become obese. It is the responsibility of the holding facility to ensure and justify the adequacy of diets and feeding regimens for each species and size class. Turtles must be weighed and measured monthly (4-6 times a year for non-releasable turtles) to ensure they are not overfed. See Hoopes et al. in *Sea Turtle Health and Rehabilitation* (Manire et al. 2017) for additional information on feeding recommendations. The following are specific requirements for food items and feeding procedures:

1. Without exception, the food fed to sea turtles must always be prepared and handled in accordance with Food and Drug Administration guidelines or comparable quality of food that is reflective of their diet in the wild. Food must either be fresh, flash frozen and glazed, or frozen in some other manner that ensures the quality of the food. Any frozen food must be completely thawed in cool air, preferably, or cool water, prior to feeding and used entirely or discarded. Under no circumstances may food be refrozen. If the quality of the food is questionable, it cannot be used as food for sea turtles. Commercially prepared diets (e.g., dry, pelletized, floating or sinking formations) also may be used provided that they are fresh or stored frozen to maintain nutritional value and to prevent deterioration and microbial growth.
2. Hand feeding of turtles that will eventually be released is prohibited except when absolutely necessary for rehabilitation. In the latter case, the turtle must be allowed to feed on its own as soon as possible. The use of tools mimicking the natural feeding environment is encouraged.
3. For sea turtles housed in groups, food must be appropriately broadcast or target fed to minimize competition and avoid injury. Special precautions and vigilant oversight are required when using broadcast feeding for large numbers of turtles to ensure all turtles are provided the appropriate quantity and quality of food.

Biosecurity, Behavior, and Intermixing

1. In order to prevent transmission of pathogens, each facility must have written biosecurity protocols that are approved by the veterinarian(s) of record for the facility, and subject to review by the USFWS. This protocol must include methods for quarantining turtles,

segregation (to the extent feasible) of individual or groups of turtles housed within different life support systems, and disinfection procedures for personnel and equipment. The USFWS recommends a minimum quarantine period of 60 days for new arrivals. If necessary, turtles may be quarantined in groups, such as for those sharing a common water handling system. During emergencies, such as cold-stunning events, quarantine procedures may be modified or reduced to the extent necessary and reinstated as soon as conditions allow.

2. Some species of sea turtles, especially loggerheads and Kemp's ridleys, may be very aggressive toward their own and other species, particularly while feeding. Whenever the situation dictates that sea turtles be placed together, they must be closely observed until it is established that they display no aggressive behavior that might result in injury or death. Turtles must be separated at the first sign of aggression. Tank dividers can be used provided that there no risk of entanglement or entrapment. Small sea turtles may not be housed with larger turtles, especially of another species, as larger animals can injure or kill smaller animals.
3. Male and female adult turtles must be separated (dividers or separate exhibit) to prevent captive breeding. The approximately adult sizes are as follows: loggerhead turtle straight carapace length ≥ 80 cm, green turtle straight carapace length ≥ 83 cm, Kemp's ridley (*Lepidochelys kempii*) and Olive ridley (*Lepidochelys olivacea*) turtles straight carapace length ≥ 58 cm, hawksbill turtle straight carapace length ≥ 71 cm.
4. If a female deposits eggs in an exhibit or is determined to be gravid, the facility must contact the USFWS within 24 hours to discuss the best course of action for the eggs and/or female.
5. Turtles on exhibit may be housed with non-sea turtle species that are present in their natural environment. The other species housed with a turtle must be reviewed and approved by the USFWS. NOTE: In some cases, the permanent injury of a turtle or the size of a turtle may restrict the species that will be authorized for inclusion in the exhibit with a turtle.

Fibropapillomatosis:

Fibropapillomatosis (FP) is a tumor-forming, transmissible disease that occurs most frequently in green turtles. The preponderance of scientific evidence supports that a herpesvirus is the causative agent. Sea turtles may carry the herpesvirus without having tumors. Facilities that admit turtles with FP must have the capacity for strict biosecurity, including disinfection of equipment, separate water handling systems, and education of staff and caregivers on biosecurity measures. The following minimum conditions must be followed:

1. Maintain turtles *with tumors* in water handling/filtration systems that are separate from turtles without tumors. Turtles that develop tumors in captivity must be immediately placed into designated tumor systems.

2. Utilize barriers or sufficient distance between tanks to inhibit splashes and aerosol (water droplets) contamination.
3. Prevent cross contamination by facility personnel by:
 - i. Using disposable gloves and foot baths when handling turtles or entering enclosures
 - ii. Using dedicated equipment and/or disinfection using virucidal solutions according to manufacturer recommendations
 - iii. Thoroughly disinfecting tanks between patients
 - iv. Removing marine leeches upon admission (*e.g.*, through mechanical removal and/or freshwater baths).

Additional recommendations can be found in “Report of the Technical Expert Workshop: Developing Recommendations for Field Response, Captive Management, and Rehabilitation of Sea Turtles with Fibropapillomatosis (Stacy *et al.* 2019)”

<https://www.fisheries.noaa.gov/resource/document/report-technical-expert-workshop-developing-recommendations-field-response>

Veterinary Care

Any facilities holding sea turtles in captivity must have access to a veterinarian who:

1. Is authorized to practice veterinary medicine within the State/Territory in which the facility is located (i.e. a person who has graduated from a veterinary school accredited by the American Veterinary Medical Association Council on Education, or has a certificate issued by the American Veterinary Graduates Association’s Education Commission for Foreign Veterinary Graduates, and has met State/Territory requirements).
2. Will be on-call 24-hours a day or identify at least one experienced sea turtle backup veterinarian or have a contingency plan for when the attending veterinarian is not available.
3. Has documented 1-year clinical experience working with sea turtles and clear demonstration of clinical proficiency or have a written consulting agreement with an experienced sea turtle veterinarian, which assures availability of consultation when needed.

Upon receiving a sick or injured sea turtle, the attending veterinarian is to examine the turtle within 24 hours to the maximum extent practicable. Remote veterinary consultation is a permissible alternative as long as an experienced sea turtle veterinarian is available for immediate attendance in-person if deemed necessary by the consultation or for any critical patients. If this is not possible, the USFWS must be contacted to make alternative arrangements, which could include transfer of the animal to another facility.

During emergency situations involving large numbers of cold-stunned sea turtles, the USFWS may temporarily authorize the attending veterinarian to designate qualified personnel to evaluate and release recovered cold stunned sea turtles that were previously examined by the veterinarian.

NOTE: The USFWS will coordinate with the NMFS' Stranding Coordinators and the State Coordinators for the Sea Turtle Stranding and Salvage Network to determine when the event rises to the level of an emergency and to define the beginning and end of the emergency.

The diagnosis of disease, surgical intervention, and the prescription of medications must be carried out only by a qualified veterinarian in a manner consistent with applicable federal and state laws and regulations. Veterinary oversight includes assurance of implementation of biosecurity measures and husbandry practices.

Health records must be kept for each animal and be available to the USFWS upon request. These records must include findings from examinations, analytical results, diagnoses, treatments, behavioral and feeding observations, and determination of suitability for release. For guidance on veterinary care, see Leong *et al.* (1989), Campbell 1996; Whitaker and Krum 1999; and Manire *et al.* 2017.

Clinical Evaluation and Treatment of Turtles

1. Blood or tissue samples taken for diagnostic purposes (*e.g.*, to aid in clinical evaluation or treatment of an individual animal) may be sent to laboratories for the sole purpose of diagnostics and disposed of following analysis unless additional authorization is provided by the USFWS.
2. Sampling for any purpose other than diagnostic use requires written approval from the USFWS, and may require additional authorization (*e.g.*, a section 10(a)(1)(A) recovery permit).
3. Sea turtles may be transported off-site for diagnostic imaging, specialized treatment, or other required purpose if deemed necessary by the attending veterinarian for a successful rehabilitation outcome. All live, rehabilitating sea turtles taken offsite for these purposes must be returned to the rehabilitation facility immediately following the test or procedure (time away is expected to be no more than 12 hours). The sea turtle must be accompanied by authorized animal care personnel for the duration of test or procedure. The transport must follow the conditions for transport specified within these *Standard Conditions for Care and Maintenance of Captive Sea Turtles*.

Euthanasia

There are many sea turtles that are rehabilitated and successfully returned into the wild each year. A subset of animals have significant injuries or other conditions that carry a poor prognosis, result in significant life-long debility, or preclude survival in the wild. Note that many injuries, when healed, will not hamper a turtle's existence in the wild. For example, the loss of a flipper does not prevent a turtle from being able to survive in the wild. Humane

euthanasia is appropriate only if, in the judgment of a veterinarian, one or more of the following criteria apply:

- recuperation of the turtle is unlikely;
- a transmissible disease has been diagnosed that likely poses a threat to wild populations or captive turtles;
- the turtle is permanently disabled to a degree that prevents survival in the wild; or
- euthanasia is deemed the most appropriate humane option to alleviate or prevent pain and suffering.

Consultation with the USFWS is not required prior to euthanasia under these criteria when administered by a veterinarian that is authorized to treat sea turtles. Prior consultation with the USFWS is required for euthanasia under any other circumstances. Whenever euthanasia is administered, the USFWS must be notified within 24 hours.

The following are specific examples of conditions encountered in sea turtles where euthanasia is typically the recommended course of action:

- bilateral amputation of both front flippers at or above the elbow;
- loss of both flippers on the same side at or above the elbow/stifle;
- permanent bilateral blindness;
- injuries involving complete transection of the spinal cord at or cranial to the pelvis;
- injury, congenital or other deformities that will permanently impair feeding, defecation, diving/buoyancy control, or other vital processes to the degree that release is prevented;
- head trauma that involves the neurocranium and affects brain function;
- sea turtles with fibropapillomatosis in which tumor formation is characterized by any of the following:
 - i. the most severe degree of FP tumor formation based on available grading schemes (e.g., tumor score 3 of 3 as described by Work and Balazs 1999, see Report of the Technical Expert Workshop: Developing Recommendations for Field Response, Captive Management, and Rehabilitation of Sea Turtles with Fibropapillomatosis (Stacy *et al.* 2019).
 - ii. internal tumors
 - iii. tumor invasion of one or both eyes or bone
 - iv. inoperable tumors obstructing the mouth, glottis or cloaca.

- any other condition or injury deemed by the attending veterinarian to be untreatable and associated with intractable pain and suffering based on the resources and treatment capability available.

NOTE: Sea turtles with permanent disabilities that prevent return to the wild, including those listed above, may be maintained in captivity for display and education purposes provided their condition does not entail any unmanaged pain or suffering. However, rehabilitation of animals with such conditions should only be pursued if a facility that is authorized to keep sea turtles is willing to accommodate the animal for its entire life span.

Release

The final determination of an individual's fitness for survival in the wild will be made with input from the facility's veterinarian, animal care personnel, and other persons with sea turtle expertise, as necessary. The attending veterinarian must perform a hands-on physical examination of the turtle prior to the release determination. The attending veterinarian must review the turtle's complete history including all stranding information, last treatment, and diagnostic test results. When a facility's veterinarian has determined that the turtle has recovered sufficiently from its illness or injury, coordination for release must begin immediately. The facility must contact the USFWS to discuss the appropriate time and site for the release. The release location will be determined by the USFWS in coordination with the NMFS' Sea Turtle Coordinator with input from the State Coordinators for the Sea Turtle Stranding and Salvage Network and based on the latest scientific information on turtle movements and regional knowledge. ***The release protocol or procedure and the release location must be approved in advance by the USFWS. Unless there are additional complications and approved in advance by the USFWS, turtles must be released within 2 weeks of medical clearance.***

Release of Cold-stunned Turtles: Previously cold-stunned sea turtles ***with no other life threatening medical conditions*** can be released based on behavior and activity. If a turtle is alert, swimming strongly, not on medication(s), and otherwise behaving normally, it must be released as soon as possible into a biologically appropriate location determined by the USFWS in coordination with the NMFS' Sea Turtle Coordinator with input from the State Coordinators for the Sea Turtle Stranding and Salvage Network. This determination will be based on species, life stage, best available information regarding movement and habitat use, water temperature, weather forecast, and logistical considerations. Sea turtles are released back into the same area where they were found whenever feasible.

Preferred water temperature for release locations is approximately 15.5°C (60°F) and above; however, circumstances may necessitate release at a lower water temperature. Minimally, the water temperature at release locations must be $\geq 13^{\circ}\text{C}$ (55°F) and on a warming trend or with nearby unobstructed access to warmer water (e.g., beach release in proximity to warmer offshore area). The lower threshold at which sea turtles cold stun is approximately 10°C (50°F) (Roberts et al. 2014; Shaver et al. 2017). Prior to release, turtles must be held in water temperatures that

are adjusted as gradually as possible to within 3°C/5°F of the intended release location in order to minimize detrimental effects of rapid temperature changes.

The water temperature in the Atlantic Northeast may remain cold for long periods. Therefore, arrangements to move turtles south to North Carolina, South Carolina, Georgia and/or Florida for release are often necessary. Similarly, the water temperatures in the Pacific Northwest are considered too cold year-round to release previously cold-stunned green and olive ridley sea turtles; therefore, turtles must be transported to southern California for release.

Release of FP Turtles: Turtles with FP can be released when a facility's veterinarian has determined that the turtle has recovered sufficiently from its illness or injury and is ready for release. Turtles under treatment for FP must be released as soon as any surgical sites have healed to the degree that continued unaided resolution is anticipated and all other standard measures of medical clearance have been fulfilled. Furthermore, excision of tumors is not required for medical clearance and release. Acceptable alternatives include forgoing excision of any or all tumors that are not immediately life-threatening (e.g., turtles with mild disease or that stranded from other causes); or selective removal of tumors that pose the greatest threat to survival (leaving others to undergo regression). Contact the USFWS to discuss the appropriate timing and site for the release. The site for release must be determined based on the latest scientific information on turtle movements and regional knowledge regarding prevalence of FP.

Release of Pier Caught Turtles: Generally, for nonsurgical hook removal, release is within 24 to 72 hours. Depending on the location of the hook(s), surgery may be needed or time to allow the hook(s) to pass through the system. Turtles undergoing surgery for deeply embedded or ingested hooks must be released as soon as any surgical sites have healed to the degree that continued unaided resolution is anticipated and all other standard measures of medical clearance have been fulfilled.

Release of Oceanic Stage Juvenile Turtles: Sea turtles in this life stage should be released near *Sargassum* habitat (may be at least 8 km (5 miles) off shore). If no accumulation of *Sargassum* is observed, the USFWS will be contacted to coordinate with the NMFS' Sea Turtle Coordinator with input from the State Coordinators for the Sea Turtle Stranding and Salvage Network, on an appropriate release location.

All rehabilitated sea turtles must be measured and weighed prior to release following the protocols listed in the Southeast Fisheries Science Center Sea Turtle Research Techniques Manual (https://www.sefsc.noaa.gov/turtles/TM_579_SEFSC_STRTM.pdf).

External Flipper Tags and Passive Integrated Transponder (PIT) Tags

Flipper and PIT tags may be inserted after recovery and prior to release of rehabilitated sea turtles only under the following conditions:

1. Tagging is authorized by the USFWS.

2. The turtle is tagged by personnel that have been trained, have demonstrated tagging expertise, and are specifically permitted to conduct this activity.
3. The turtle is size-appropriate for receiving a flipper and/or PIT tag.
 - a. For Flipper Tagging:
 - i. Turtles < 20cm must not be flipper tagged.
 - ii. Turtles 20-30cm straight carapace length (SCL) must use the 1005 series tags or similar.
 - iii. Turtles > 30cm SCL must use the Standard 681 tags (standard CMTTP tags).
 - b. For PIT Tagging*:
 - i. Turtles < 16cm must not be PIT tagged.
 - ii. Turtles 16-30cm SCL must use 10 mm PIT tags (with 16 g needle injector). Personnel must have specialized experience to tag small turtles of this size. A local anesthetic may be used (in consultation with a qualified veterinarian) when feasible.
 - iii. Turtles > 30cm SCL may use 10 mm or 12 mm PIT tags.*

*10mm PIT tags (with 16 g needle injector) are preferred for all size classes

NOTE: If PIT tagging is part of a permitted research project, turtles less than 6.3 inches (16 cm) may be tagged under certain conditions as approved by the USFWS and outlined in that permit.

4. Tagging does not delay the release of the turtle.
5. The turtle is tagged following the protocols listed in the Southeast Fisheries Science Center Sea Turtle Research Techniques Manual or as defined in the recovery permit. A Cooperative Marine Turtle Tagging Program (CMTTP) form (http://accstr.ufl.edu/files/CMTTP_Data_Submission.pdf) must be completed and sent to the Archie Carr Center for Sea Turtle Research (<http://accstr.ufl.edu/resources/tagging-program-cmttp/protocols-for-handling-tagging-and-measuring-marine-turtles/>).

Animal-borne devices: An investigator or facility wanting to attach a transmitter (e.g., satellite, acoustic) or other animal-borne device to a sea turtle due for release must first obtain a USFWS section 10(a)(1)(A) recovery permit. To apply for the necessary permit, applicants must complete and submit a complete application form (Form 3-200-55). Information that must be included with the application is specified in the U.S. Fish and Wildlife Service's Process for Telemetry Attachment on Nesting Sea Turtles and Sea Turtles Housed in a Rehabilitation Facility (https://www.fws.gov/northflorida/SeaTurtles/Docs/20161230_FWS%20process%20and%20conditions%20for%20telemetry%20attachments_Sea_Turtles_final.pdf).

The release of a turtle must not be delayed to obtain permits or to facilitate the attachment of a satellite transmitter.

Necropsy and Disposal of Carcasses

1. Necropsies must be performed on any turtle greater than 10 cm SCL that dies at a captive facility. Necropsy must be completed within 30 days if the cause of death or debilitation (if euthanized) is not clearly known or if there are other outstanding questions related to diagnosis or treatment. In such cases, necropsies must be performed by or in consultation with the attending veterinarian. Specific sampling requirements and other instructions may be provided by the USFWS and the STSSN Coordinator (administered by the NMFS) including during mass stranding or mortality events, especially those of unknown cause. For guidance on conducting necropsies, see Wolke and George 1981; Rainey 1994, Wyneken 2001; and Manire *et al.* 2017.
2. A copy of the necropsy report (including all gross, histopathological, and laboratory findings) must be sent to the STSSN Coordinator. If there was a recovery permit issued under section 10(a)(1)(A) of the ESA, the documents must be sent to the USFWS' contact within that permit.

Following necropsy, the carcass of any sea turtle that dies while in the custody of a USFWS or State permitted/authorized facility must be completely destroyed (in accordance with State and local laws) or, subject to the approval of the USFWS be offered to a museum, university, or other educational or research facility. Under no circumstances may a dead sea turtle, or any part thereof, be used for any purpose other than USFWS or State-approved education and/or research activities.

Conclusion

Inspection:

In order to ensure that facilities holding live sea turtles for rehabilitation, education, and/or research are maintaining the requirements for care and maintenance and are in compliance with all applicable laws, rules, and guidelines, all facilities are subject to inspection at any time by USFWS or State personnel. Facilities may be asked to provide a current coliform bacteria count and water quality data upon inspection. Facilities will be provided with a copy of the report generated from the inspection. If the facility does not meet the requirements of their authorization, which include the above *Care and Maintenance Requirements*, the USFWS will work with the facility to meet the requirements or may remove the turtles and transfer them to other qualified facilities.

Reporting:

The responsibilities of your facility under the ESA and implementing regulations are to report on the disposition of the turtle(s) via annual reports as outlined in a Section 10(a)(1)(A) permit, Designated Agent Letter, or letter of transfer/authorization; otherwise, the following forms must be provided to the USFWS:

1. The stranding form provided by the person from the STSSN who placed the animal(s) with your facility, documenting the transfer of the animals to your facility and including all conditions under which the transfers occurred,
2. If quarterly reports are required as outlined in a Section 10(a)1(A) permit or Designated Agent Letter, the number and species of sea turtles taken to a permitted rehabilitation facility for treatment, and their diagnosis must be emailed to the USFWS at seaturtle@fws.gov (Quarterly Report-Appendix A: https://www.fws.gov/northflorida/SeaTurtles/Captive_Forms/Appendix%20A_Quarterly_Report_Form_V4.pdf). Information must be emailed on the following dates (January 15, April 15, July 15, and October 15) each year.
3. Non-Releasable report (Annual Report-Appendix B: https://www.fws.gov/northflorida/SeaTurtles/Captive_Forms/Appendix_B_Non-Releasable_Sea_Turtle_Annual_Report_V3.pdf) must be emailed to the USFWS no later than January 30 of each year.

Recovery Permit Coordinators contact:

Region 1: fw1_AEAinbox@fws.gov

Region 2: r2esweb@fws.gov

Region 4: permitsr4es@fws.gov.

Region 5: permitsr5es@fws.gov.

Region 8: fw8_permits_r8es@fws.gov

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