UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910

FEB 2 8 2018

Charles Littnan, Ph.D.
NMFS Pacific Islands Fisheries Science Center
1845 Wasp Boulevard
Honolulu, Hawaii 96818

Dear Dr. Littnan: Charles!

The National Marine Fisheries Service (NMFS) has issued Permit No. 21260 to NMFS Pacific Islands Fisheries Science Center, for research activities on sea turtles. With the issuance of this permit, Permit No. 15685 is no longer valid.

This permit is effective upon your signature and valid through September 30, 2027. To use your permit:

1. Read the permit, including attachments. If you have questions, call your permit analyst – Erin Markin or Amy Hapeman – at 301-427-8401 before signing the permit.
2. Sign and date both the original and "File Copy" signature pages.
3. Keep the original signature page with your permit.
4. Return the "File Copy" signature page to our office by:
   a. Email to your permit analyst;
   b. Fax (301-713-0376); or
   c. Mail (NMFS Permits and Conservation Division (F/PR1), 1315 East-West Hwy, Silver Spring, MD 20910).

National Marine Sanctuaries: Federal regulations govern activities within National Marine Sanctuaries (NMS) (15 CFR 922) with prohibitions on the use of low-flying aircraft, discharging any material or matter (e.g., tags), and other activities. For further information on NMS permits, contact the national office or appropriate sanctuary as listed in Attachment 3 of the permit.

Unmanned Aircraft Systems: Unmanned aircraft systems (UAS) fall under the jurisdiction of the Federal Aviation Administration (FAA; http://www.faa.gov/). You must be compliant with FAA requirements when operating UAS under this permit. The FAA considers scientific research as either public (governmental) or civil (non-governmental or commercial); it does not fall under the recreational/hobbyist category. You may also be required to obtain additional Federal, State, or local permits to use UAS depending on where you will be working (e.g., National Marine Sanctuaries, National Parks). It is your responsibility to obtain these permits and comply with any other laws or regulations.

Please keep your contact information current in our online database (https://apps.nmfs.noaa.gov). You will receive automated email reminders of due dates for annual and final reports and a notice prior to expiration of your permit.

Sincerely,

Jolie Harrison
Chief, Permits and Conservation Division
Office of Protected Resources

Enclosure

Permit No. 21260
Expiration Date: September 30, 2027
Reports Due: October 31, annually

PERMIT TO TAKE PROTECTED SPECIES[1] FOR SCIENTIFIC PURPOSES

I. Authorization

This permit is issued to the National Marine Fisheries Service Pacific Islands Fisheries Science Center, 1845 Wasp Boulevard, Honolulu, Hawaii, 96818, (hereinafter "Permit Holder;" Responsible Party: Charles Littnan, Ph.D.), pursuant to the provisions of the Endangered Species Act of 1973 (ESA; 16 U.S.C. 1531 *et seq*.) and the regulations governing the taking, importing, and exporting of endangered and threatened species (50 CFR Parts 222-226).

II. Abstract

The objective of the permitted activity, as described in the application, is to continue long-term monitoring of sea turtles in the Pacific Islands Region to understand population status, abundance, and trends; maturity; growth rates; and foraging and movement ecology.

III. Terms and Conditions

The activities authorized herein must occur by the means, in the areas, and for the purposes set forth in the permit application, and as limited by the Terms and Conditions specified in this permit, including appendices and attachments. Permit noncompliance constitutes a violation and is grounds for permit modification, suspension, or revocation, and for enforcement action.

A. Duration of Permit

1. Personnel listed in Condition C.1 of this permit (hereinafter "Researchers") may conduct activities authorized by this permit through September 30, 2027. This permit may be extended by the Director, National Marine Fisheries Service (NMFS) Office of Protected Resources or the Chief, Permits and Conservation Division (hereinafter Permits Division), pursuant to applicable regulations and the requirements of the ESA.

2. Researchers must immediately stop permitted activities and the Permit Holder or Principal Investigator must contact the Chief, NMFS Permits and Conservation Division (hereinafter "Permits Division") for written permission to resume:

[1] "Protected species" include species listed as threatened or endangered under the ESA, and marine mammals.

a. If serious injury or mortality[2] of protected species occurs.

b. If authorized take[3] is exceeded in any of the following ways:

i. More animals are taken than allowed in Table 1 of Appendix 1.

ii. Animals are taken in a manner not authorized by this permit.

iii. Protected species other than those authorized by this permit are taken.

c. Following incident reporting requirements at Condition E.2.

3. The Permit Holder may continue to possess biological samples[4] acquired[5] under this permit after permit expiration without additional written authorization provided a copy of this permit is kept with the samples and they are maintained as specified in this permit.

B. Number and Kinds of Protected Species, Locations and Manner of Taking

1. The table in Appendix 1 outlines the authorized species; number of animals to be taken; number of animals from which parts may be received, imported and exported; and the manner of take, locations, and time period.

2. Researchers working under this permit may collect images (e.g., photographs, video) and audio recordings as needed to document the permitted activities, provided the collection of such images or recordings does not result in takes.

3. The Permit Holder may use visual images and audio recordings collected under this permit, including those authorized in Table 1 of Appendix 1, in printed materials (including commercial or scientific publications) and presentations provided the images and recordings are accompanied by a statement indicating that the activity was conducted pursuant to NMFS ESA Permit No. 21260.

[2] This permit does not allow for unintentional serious injury and mortality caused by the presence or actions of researchers. This includes, but is not limited to: deaths resulting from infections related to sampling procedures or invasive tagging and deaths or injuries sustained by animals during capture and handling, or while attempting to avoid researchers or escape capture.

[3] By regulation, a take under the Marine Mammal Protection Act (MMPA) means to harass, hunt, capture, collect, or kill, or attempt to harass, hunt, capture, collect, or kill any marine mammal. This includes, without limitation, any of the following: The collection of dead animals, or parts thereof; the restraint or detention of a marine mammal, no matter how temporary; tagging a marine mammal; the negligent or intentional operation of an aircraft or vessel, or the doing of any other negligent or intentional act which results in disturbing or molesting a marine mammal; and feeding or attempting to feed a marine mammal in the wild. Under the ESA, a take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to do any of the preceding.

[4] Biological samples include, but are not limited to: carcasses (whole or parts); and any tissues, fluids, or other specimens from live or dead protected species; except feces, urine, and spew collected from the water or ground.

[5] Authorized methods of sample acquisition are specified in Appendix 1.

This statement must accompany the images and recordings in all subsequent uses or sales.

4. The Chief, Permits Division may grant written approval for personnel performing activities not essential to achieving the research objectives (e.g., a documentary film crew) to be present, provided:

   a. The Permit Holder submits a request to the Permits Division specifying the purpose and nature of the activity, location, approximate dates, and number and roles of individuals for which permission is sought.

   b. Non-essential personnel/activities will not influence the conduct of permitted activities or result in takes of protected species.

   c. Persons authorized to accompany the Researchers for the purpose of such non-essential activities will not be allowed to participate in the permitted activities.

   d. The Permit Holder and Researchers do not require compensation from the individuals in return for allowing them to accompany Researchers.

5. Researchers must comply with the following conditions related to the manner of taking:

   a. <u>Aerial Surveys for Following, Hovering or Circling over Turtles</u>

      1. *Unmanned Aircraft Systems (UAS)*

         a. Researchers must use a fixed wing or vertical take-off and landing (VTOL) UAS.

         b. Researchers must end each encounter within 60 minutes.

         c. Operate UAS at an altitude no lower than 75 feet.

   b. <u>Capture Methods</u>

      1. *General Netting Conditions*

         a. Keep in-water chase activities and exertion as brief as possible to minimize the increased stress and associated physiological changes that accompany capture. This includes efficient and safe removal of turtles from the net.

2. *Hand Capture and Dip Netting*

   a. Limit the number of attempts to capture an individual turtle to three (3) attempts per day.

3. *Breakaway Hoop Netting*

   a. Follow the procedures for handling and monitoring leatherback sea turtles included as Attachment 1 to this permit.

   b. Only personnel experienced with the hoop net capture may perform this technique.

   c. Keep in-water chase activities and exertion as brief as possible to minimize the increased stress and associated physiological changes that accompany capture. This includes efficient and safe removal of turtles from the net.

   d. Limit the number of attempts to capture a leatherback sea turtle with the hoop net to five (5) per 24-hour period. If Researchers are unsuccessful after the first three (3) attempts, they must wait a minimum of 4 hours before making the final two (2) attempts for the day.

   e. Researchers must only target leatherback sea turtles behaving normally with no evidence of external trauma.

4. *Entanglement Netting*

   a. Use nets with mesh size designed to minimize bycatch of non-sea turtle species.

   b. Attach highly visible surface buoys to the float line of each net, spaced at intervals of every 10 yards or less.

   c. "Net checking" is defined as a thorough check of the net either by snorkeling the net in clear water (entire net must be visible) or by pulling up on the top line such that the full depth of the net is viewed along the entire length. The following intervals are the maximum time between viewing any single point of the net (i.e., each point of the net must be viewed every 30 or 20 minutes, depending on water temperature).

i. Check nets every 30 minutes and more frequently if turtles or other organisms are observed in the net.

ii. Check nets every 20 minutes or less if water temperatures are ≤10°C (50°F) or ≥30°C (86°F).

d. Continuously observe the surface float line of all nets for movement indicating an animal has encountered the net. When this occurs, the net must be immediately and thoroughly checked.

e. Plan for unexpected circumstances or demands of the research activities and have the ability and resources to meet the net checking requirements at all times. Contingencies for inclement weather must be in place. For example:

i. If an animal is highly entangled and requires extra time and effort to remove from the net, Researchers must have sufficient staff and resources to continue checking the rest of the net at the same time.

ii. If inclement weather is predicted that would prevent meeting the net checking requirements, Researchers must remove nets in advance of the weather event.

f. Marine Mammals: Do not deploy entanglement and seine nets when Researchers observe marine mammals within the vicinity of the study area. Allow marine mammals to leave or pass through the area safely before deploying nets.

i. The lead line must be raised and dropped to make marine mammals in the vicinity aware of the net should they enter the research area after nets have been deployed.

ii. Nets must be removed if marine mammals remain in the vicinity of the study area.

iii. If a marine mammal becomes entangled or dies, Researchers must follow these steps:

A. Stop netting activities immediately.

B. If the marine mammal is alive, immediately free it from the net in a safe manner (including cutting the net as necessary).

C. If the animal is dead, hold the carcass.

D. Notify the appropriate NMFS Regional Stranding Coordinator within 8 hours (http://www.nmfs.noaa.gov/pr/health/coordinators.htm).

E. Report the incident as specified in Condition E.2.

F. Suspend permitted activities until the NMFS Permits Division has granted approval to continue research per Condition E.2.

g. Netting in Areas Where Fibropapilloma (FP) is Known to Occur:

i. Thoroughly clean and disinfect nets prior to use in other areas where FP is either not known to be present, is considered uncommon, or where there is limited or no information on FP prevalence.

ii. In those cases, Researchers must disinfect nets using a broadcidal solution and the product-recommended contact time or by thoroughly drying nets in sunlight to inactivate FP-associated herpesvirus.

iii. Appropriate disinfectants include 70% isopropyl alcohol, 10% bleach, and other viricidal solutions with proven efficacy against herpesviruses.

c. Handling Compromised Turtles

1. Researchers must have an experienced veterinarian on call for emergencies and a permitted rehabilitation facility(ies) identified should veterinary care be required on shore to treat a compromised turtle. Compromised turtles include animals that are obviously weak, lethargic, positively buoyant, emaciated, or that have severe injuries or other debilitating abnormalities. Prior to conducting research, notify both the veterinarian and facility of the dates and times of the research to ensure their availability.

2. Strandings are defined as turtles that wash ashore, dead or alive, or are found floating dead or alive (if alive, generally in a weakened condition). If Researchers encounter a stranded sea turtle that they have not captured or handled for research, call the appropriate

stranding response authority and follow instructions on what to do with the animal. See here for contact information: https://www.fisheries.noaa.gov/report. If Researchers are working in an area where such contact is not possible or uncertain, work with the state stranding response authority to define a stranded turtle protocol before going into the field. Any collection or handling of a stranded animal that is not collected through the course of research falls under the stranding response authority (50 CFR 222.310 and 50 CFR 223.206) when a turtle is found in the water. In this case, do not count or report the stranded animal as a 'take' under this permit.

3. If an animal exhibits any major abnormality (including weakness, lethargy, or unresponsiveness) or is severely injured during capture or handling, or is found to be severely injured or otherwise compromised upon capture, Researchers must forego or cease activities that will further stress the animal (erring on the side of caution) and contact the on-call veterinarian as soon as possible. In this case, Researchers must count and report the animal as a 'take' under this permit.

   In such cases, Researchers must implement one of the following options (in order of preference):

   a. Contact and follow the instructions of the on-call veterinarian, and, if necessary, immediately transfer the animal to the veterinarian or to a permitted rehabilitation facility to receive veterinary care.

   b. If the on-call veterinarian or permitted rehabilitation facility cannot be reached, Researchers should err on the side of caution and bring the animal to shore for medical evaluation and rehabilitation, at a permitted rehabilitation facility, as soon as possible.

   c. If the animal cannot be taken to a permitted rehabilitation facility due to logistical or safety constraints, allow it to recuperate as directed by the veterinarian (if successfully contacted), or as conditions dictate, and return the animal to the water.

   d. If the animal is taken to rehabilitation, the Permit Holder is responsible for providing all requested information pertaining to the capture, following the status of the sea turtle, and reporting the final disposition (death, permanent injury, recovery and return to wild, etc.) of the animal to

the NMFS Permits Division. Upon transfer, the possession and care of the turtle falls under the authority of the permitted rehabilitation facility.

4. Unresponsive animals: Use the following resuscitation techniques on any turtles that are unresponsive or exhibit severe weakness or lethargy following in-water capture. Resuscitation must be attempted unless the turtle is determined to be deceased based on rigor mortis, decomposition, or confirmation of cardiac arrest by Doppler, ECG, or ultrasonography.

    a. Place the turtle on its plastron so that the turtle is right side up, and elevate its hindquarters at least 6 inches. The amount of the elevation depends on the size of the turtle; greater elevations are needed for larger turtles. Contact the on-call veterinarian immediately for additional instructions.

    b. While it is elevated, periodically rock the turtle gently left to right and right to left by holding the outer edge of the carapace and lifting one side about 3 inches then alternate to the other side.

    c. Keep sea turtles being resuscitated shaded and damp or moist. A water-soaked towel placed over the head, carapace, and flippers is the most effective method to keep a turtle moist. DO NOT place a turtle into a container holding water.

    d. Continue resuscitation until recovery or confirmation of death by onset of rigor mortis, decomposition, or cardiac arrest.

    e. Bring live turtles to shore for medical evaluation at a permitted rehabilitation facility as soon as possible. If the animal cannot be taken to a rehabilitation facility due to logistical or safety constraints, allow it to recuperate as directed by the veterinarian (if successfully contacted), or as conditions dictate, and return the animal to the water. Return all dead turtles to shore for necropsy to be performed at the direction of your on-call veterinarian or permitted rehabilitation facility.

5. Submit an incident report (see Condition A.2 and E.2) if an animal becomes compromised or dies during any research activities.

d. General Handling and Release Requirements

1. Use care when handling live animals to minimize injury.

2. While holding sea turtles out of water, Researchers must:

f. Protect sea turtles from temperature extremes (ideal air temperature range is between 70°F (21.1°C) and 80°F (26.7°C);

g. Provide adequate airflow;
h. Keep sea turtles moist when the temperature is ≥75°F (23.9°C);

i. Prevent sea turtles from sustaining any injuries; and

j. Keep the area surrounding the turtle free of materials that could be accidentally ingested or harm the turtle.

3. Exercise extra care when handling, sampling and releasing leatherback sea turtles. Leatherback sea turtles have more friable skin and softer bones and are more susceptible to external trauma. Researchers must:

a. Only board leatherbacks if they can be safely brought on board the vessel,

b. Handle and support leatherbacks from underneath, and

c. Not turn leatherbacks on their backs.

4. To prevent injury during release, lower sea turtles as close to the water's surface as possible.

5. Researchers must carefully monitor newly released turtles' abilities to swim and dive in a normal manner. If a turtle is not behaving normally upon release, recapture the turtle, if safely feasible, and contact your on-call veterinarian (see Condition d.1 above).

e. Handling, Measuring, Weighing, and Marking

1. Refer to Attachment 2 for more information on the requirements for handling and sampling sea turtles.

2. Clean and disinfect all equipment (tagging equipment, tape measures, etc.) and surfaces that come in contact with sea turtles between the processing of each turtle.

3. *Turtles with Fibropapillomas (FP)*

a. Maintain a designated set of instruments for use on turtles with FP. Items that come into contact with turtles with FP tumors must not be used on turtles without tumors.

b. Exercise all measures possible to minimize exposure and cross-contamination between affected turtles and those without apparent disease, including use of disposable gloves and thorough disinfection of equipment and surfaces.

c. Appropriate disinfectants include 70% isopropyl alcohol, 10% bleach, and other viricidal solutions with proven efficacy against herpesviruses.

4. *Flipper and Passive Integrated Transponder (PIT) Tagging*

a. Examine turtles for existing flipper and PIT tags before attaching or inserting new ones. Researchers must check all flippers.

b. If Researchers find existing tags, record all tag identification numbers and promptly report them to the Cooperative Marine Turtle Tagging Program (CMTTP) at the Archie Carr Center for Sea Turtle Research (ACCSTR): http://accstr.ufl.edu/resources/report-a-tag/ or by email: accstr@ufl.edu. Researchers must have PIT tag readers capable of reading 125, 128, 134.2, and 400 kHz tags.

c. Clean and disinfect:

i. Flipper tags before use (e.g., to remove oil residue).

ii. Flipper and PIT tag applicators, including the tag injector handle, between turtles.

iii. The application site before the tag pierces the animal's skin.

5. *Flipper Tagging*

a. Do not apply more than one tag per flipper for a total of no more than two flipper tags (includes existing flipper tags) per turtle.

b. Researchers must clean the flipper tag application site and then scrub it with a medical disinfectant solution (e.g., Betadine, Chlorhexidine) followed by 70% percent alcohol before the applicator pierces the animal's skin.

c. Do not flipper tag animals less than 20 cm straight carapace length (SCL), nuchal notch to pygal tip.

d. For turtles 20-30 cm SCL, only use 1005 series tags or similar (~ 4.8 x 11.1 mm).

e. For turtles >30 cm SCL, only use Standard 681 tags.

6. *PIT Tagging*

a. Use a new, sterile needle for each PIT tag application.

b. Clean the application site and then scrub it with two replicates of a medical disinfectant solution (e.g., Betadine, Chlorhexidine) followed by 70% alcohol (disinfectant/alcohol/disinfectant/alcohol) before the applicator pierces the animal's skin. Disinfect the injector handle between animals if it has been exposed to fluids from another animal.

7. *Marking the Carapace*

a. Use non-toxic paints or markers that do not generate heat or contain xylene or toluene.

b. Make markings easily legible using the least amount of paint or marker necessary to re-identify the animal.

f. Biological Sampling

1. *Blood Sampling*

a. Only experienced personnel must directly take or supervise blood samples.

b. Use new disposable needles on each animal. Change needles immediately if they contact other surfaces or otherwise become contaminated or damaged.

c. Researchers must thoroughly swab blood collection sites with a medical disinfectant solution (e.g., Betadine, Chlorhexidine) followed by 70% alcohol before sampling. Researchers may use two (2) applications of alcohol if disinfectant solutions may affect intended analyses.

d. Do not attempt blood sampling if an animal cannot be adequately immobilized or conditions on the boat/holding platform preclude the safety and health of the turtle.

e. Researchers must limit attempts (needle insertions) to extract blood from the neck to a total of four, two on either side. Use an individual needle for only one or two attempts before replacing it.

f. You must follow best practices, including retracting the needle to the level of the subcutis prior to redirection to avoid lacerating vessels and causing other unnecessary soft tissue injury and immediately removing the needle if the animal begins to move.

g. Blood Volume Limits:

i. *Sample volume:* Limit the amount of blood withdrawn to the minimal volume necessary to complete permitted activities. Researchers must not collect more than 3 ml per 1 kg of animal per sample.

ii. *Sampling period:* Do not exceed the cumulative maximum safe limit described above from a single turtle within a 45-day period. If Researchers take more than 50% of the maximum safe limit in a single event or cumulatively from repeat sampling events from a single turtle within a 45-day period that turtle must not be re-sampled for 3 months from the last blood sampling event.

iii. *Research coordination:* Researchers must, to the maximum extent practicable, attempt to determine if any of the turtles they blood sample

may have been sampled within the past 3 months or will be sampled within the next 3 months by other researchers. The Permit Holder must make efforts to contact other researchers working in the area that could capture the same turtles to ensure that none of the above limits are exceeded.

iv. *Turtles weighing 1 kg or less:* A single sample must not exceed 6% of total blood volume. Total blood volume is estimated as 7% of total body weight. If Researchers plan to collect additional samples in less than 2 months on the same turtle, samples must not exceed 3 ml/kg of turtle.

2. *Tissue Sampling*

a. Use a new sterile biopsy punch, scalpel blade, or scissors on each turtle.

b. Turtles brought on-board the vessel for sampling:

i. Only tissue sample from the limbs, neck, carapace, or shoulder region as described in the application. Researchers must avoid sensitive areas.

ii. For small skin biopsy samples (6 mm diameter or smaller): Use aseptic techniques at all times. At a minimum, thoroughly swab the tissue surface with a medical disinfectant solution (e.g., Betadine, Chlorhexidine) followed by 70% alcohol before sampling. Researchers may use two applications of alcohol if disinfectants may interfere with analyses. Keep the procedure area and your hands clean.

c. If it can be easily determined (through markings, tag number, etc.) that a sea turtle has been recaptured and has been already sampled, Researchers may not sample turtles more than two times during the same permit year.

3. *Gastric Lavage*

a. Experienced personnel must directly perform or supervise lavage.

b. Discontinue washing within 3 minutes.

c. Once the samples have been collected, turn off the water and allow water and food to drain until all flow has stopped. Slightly elevate the posterior of the turtle to assist in drainage.

d. Researchers must thoroughly clean and disinfect equipment after each use.

e. Do not attempt to lavage compromised animals.

4. *Laparoscopy*

a. Do not attempt laparoscopy on compromised turtles.

b. An experienced veterinarian must perform or directly (in-person) oversee this procedure whenever possible. If a veterinarian cannot be present, emergency protocols must be developed by an experienced veterinarian for use by T. Todd Jones, Ph.D. and Camryn Allen, Ph.D.

c. Researchers must follow a veterinary-approved pain management protocol.

d. Researchers may only use sedation or anesthesia following a veterinary-approved protocol and when directly attended by a veterinarian.

g. Transmitters and Instrument Attachments

1. No more than three (3) transmitters/instruments may be placed on an animal at one time, no more than one of which may be a satellite tag. Leatherback sea turtles will receive no more than two (2) transmitters/instruments at one time, no more than one of which may be a pygal or medial ridge attachment and one may be a suction-cup tag.

2. *External Units (Time Depth Recorders, Acoustic or Satellite Tags)*

a. For telemetry devices, attachment material selection, and protocols, Researchers should first use best available, currently published methods, especially with regard to risk for thermal injury. Researchers should test (including monitoring temperature) products not previously used for animal attachment by mock application prior to use on sea turtles.

b. Always incorporate the following considerations into external tag selection and application:

i. Minimize the frontal area (e.g., the anterior or leading side and edges) of the external tag and ensure it has a low profile.

ii. Streamline the external tag attachment while covering as small of an area on the turtle as possible. Minimize the use of adhesives, base plates, and build up of adhesive material.

iii. To the degree possible, avoid placing the external tag at the peak height of the carapace. Place tags slightly anterior or posterior to the peak where uplinks will be maintained and the saltwater switch will still be exposed to the air during breathing, but the frontal area is minimized.

iv. Minimize the antenna length and diameter to reduce risk of entanglement and/or drag.

c. Researchers must minimize the risk of entanglement for each external attachment. The transmitter attachment must contain a weak link (where appropriate) or have no gap between the transmitter and the turtle that could result in entanglement.

d. For tethered instruments, the lanyard length must be less than half of the turtle's carapace length. It must include a corrosive, breakaway link that will release the unit after its battery life.

e. Provide adequate ventilation around the head of the turtle if attachment materials produce fumes. To prevent skin or eye contact with harmful chemicals, do not hold turtles in water during tag attachment.

f. For procedures that drill through marginal scutes of hard-shelled turtles, Researchers must follow aseptic techniques with two alternating applications of medical disinfectant (e.g., Betadine, Chlorhexidine) followed by 70% alcohol. Use a separate drill bit for each turtle. Bits may be reused if sterilized by autoclave or cold sterilization (e.g., gluteraldehyde) before reuse.

Researchers must use similar aseptic protocols for direct attachment of devices to leatherback turtles, with sterilized drill bits used for each turtle.

g. Crittercam: Place the camera attachment so that turtles are able to move freely without impairment.

h. Holding and Sedation/Anesthesia

1. Researchers must not exceed the following holding times for an animal from the time of capture to release:

a. 1 hour for standard work-up (no transmitter attachments);

b. 3 hours if receiving a transmitter attachment; or

c. 36 hours for animals temporarily held in a facility.

2. For the transport, maintenance, and care of turtles temporarily held in a facility, follow the "Standard Permit Conditions for Care and Maintenance of Captive Sea Turtles" issued by the U.S. Fish and Wildlife Service (available at: https://www.fws.gov/northflorida/seaturtles/Captive_Forms/20130213_revised%20_standard_permit_conditions_for_captive_sea_turtles.pdf).

3. Researchers may only use sedation or anesthesia, such as for imaging, following a veterinary-approved protocol and when directly attended by a veterinarian.

i. Non-Target Species

1. *Bycatch*: Release all incidentally captured species (e.g., fishes and birds) alive as soon as possible.

2. If any listed non-target species are taken (captured, injured, etc.) during research, Researchers must stop activities per Condition A.2 and submit an incident report per Condition E.2. Document adverse interactions in the report, including any pertinent details of the interaction (gear type, what was done to handle and release the animals, location, date, size, water and air temperature, and photos if possible).

3. *Submerged Aquatic Vegetation (SAV; e.g., seagrass), Coral Communities, Hard and Live Bottom Habitat*

a. Researchers must take all practicable steps including the use of charts, GIS, sonar, fish finders, or other electronic devices to determine characteristics and suitability of bottom habitat prior to using gear to identify SAV, coral communities, and live/hard bottom habitats and avoid setting gear in such areas.

b. Do not set, anchor on, or pull gear across SAV, coral or hard/live bottom habitats.

c. If research gear is lost, make diligent efforts to recover the lost gear to avoid further damage to benthic habitat and impacts related to "ghost fishing."

e. Seagrass species: Researchers must avoid setting and deploying gear over, on, or immediately adjacent to any seagrass species. If Researchers cannot avoid these species, Researchers must implement the following measures to reduce the potential for seagrass damage:

i. Set anchors by hand when water visibility is acceptable, to reduce the potential for seagrass damage. Researchers must place anchors in unvegetated areas within seagrass meadows or areas having relatively sparse vegetation coverage. Remove anchors in a manner that would avoid the dragging of anchors and anchor chains.

ii. Avoid damaging any seagrass species, and if the potential for anchor or net drag is evident, suspend research activities immediately.

iii. Do not to tread or trample on seagrass and coral reef habitat.

4. *Humpback Whales in Hawaii:* If a humpback whale is observed in the area, Researchers and vessels must maintain a distance of at least 91.4 meters (100 yards) and aircraft must maintain a distance of at least 300 meters (1,000 feet).

5. *Hawaiian Monk Seals:* To minimize disturbance of Hawaiian monk seals:

a. Consult with the NMFS Hawaiian Monk Seal Research Program and either the U.S. Fish and Wildlife Service (USFWS) at Midway or the State of Hawaii Department of Land and Natural Resources (DLNR) at Kure for approval of any land-based activities.

b. Do not enter the water when monk seals are present, and if approached by a seal, leave the area.

c. Report any opportunistic monk seal sightings to the NMFS Pacific Islands Fisheries Science Center, Hawaiian Monk Seal Research Program, NOAA IRC, 1845 WASP Blvd, Building 176, Honolulu, HI 96818, as follows:

i. In the main Hawaiian Islands: Tracy Mercer; Tracy.Mercer@noaa.gov; phone (808) 725-5718; fax (808) 725-5567.

ii. In the Northwestern Hawaiian Islands: Thea Johanos; Thea.Johanos-Kam@noaa.gov; phone (808) 725-5709; fax (808) 725-5567.

6. Transfer of Sea Turtle Biological Samples

a. Samples may be sent to the Authorized Recipients (ARs) listed in Appendix 2 provided that:

i. The analysis or curation is related to the research objectives of this permit.

ii. A copy of this permit accompanies the samples during transport and remains on site during analysis or curation.

b. Samples remain in the legal custody of the Permit Holder while in the possession of ARs.

c. The Permit Holder may add ARs for analysis and curation of samples related to the permit objectives provided the letter designating the AR is submitted to the Chief, Permits Division specifying the following:

i. Name and affiliation of the recipient;

ii. Address of the recipient;

iii. Types of samples sent (species, tissue type); and

iv. Type of analysis or whether samples will be curated.

d. Samples cannot be bought or sold.

C. Qualifications, Responsibilities, and Designation of Personnel

1. At the discretion of the Permit Holder, the following Researchers may participate in the conduct of the permitted activities in accordance with their qualifications and the limitations specified herein:

a. Principal Investigator – T. Todd Jones, Ph.D. –All research activities except UAS operation.

b. Co-Investigator(s) – See Appendix 2 for list of names and corresponding activities.

c. Research Assistants – personnel identified by the Permit Holder or Principal Investigator and qualified to act pursuant to Conditions C.2, C.3, and C.4 of this permit.

2. Individuals conducting permitted activities must possess qualifications commensurate with their roles and responsibilities. The roles and responsibilities of personnel operating under this permit are as follows:

a. The Permit Holder is ultimately responsible for activities of individuals operating under the authority of this permit. The Responsible Party is the person at the institution/facility who is responsible for the supervision of the Principal Investigator.

b. The Principal Investigator (PI) is the individual primarily responsible for the taking, import, export and related activities conducted under the permit. This includes coordination of field activities of all personnel working under the permit. The PI must be on site during activities conducted under this permit unless a Co-Investigator named in Condition C.1 is present to act in place of the PI.

c. Co-Investigators (CIs) are individuals who are qualified to conduct activities authorized by the permit, for the objectives described in the application, without the on-site supervision of the PI. CIs assume the role and responsibility of the PI in the PI's absence.

d. Research Assistants (RAs) are individuals who work under the direct and on-site supervision of the PI or a CI. RAs cannot conduct permitted activities in the absence of the PI or a CI.

3. Personnel involved in permitted activities must be reasonable in number and essential to conduct of the permitted activities. Essential personnel are limited to:

    a. Individuals who perform a function directly supportive of and necessary to the permitted activity (including operation of vessels or aircraft essential to conduct of the activity);

    b. Individuals included as backup for those personnel essential to the conduct of the permitted activity; and

    c. Individuals included for training purposes.

4. Persons who require state or Federal licenses or authorizations (e.g., veterinarians, pilots – including UAS operators) to conduct activities under the permit must be duly licensed/authorized and follow all applicable requirements when undertaking such activities.

5. Permitted activities may be conducted aboard vessels or aircraft, or in cooperation with individuals or organizations, engaged in commercial activities, provided the commercial activities are not conducted simultaneously with the permitted activities.

6. The Permit Holder cannot require or receive direct or indirect compensation from a person approved to act as PI, CI, or RA under this permit in return for requesting such approval from the Permits Division.

7. The Permit Holder or PI may designate additional CIs without prior approval from the Chief, Permits Division provided:

    a. A copy of the letter designating the individual and specifying their duties under the permit is forwarded to the Permits Division by facsimile or email on the day of designation.

    b. The copy of the letter is accompanied by a summary of the individual's qualifications to conduct and supervise the permitted activities.

    c. The Permit Holder acknowledges that the designation is subject to review and revocation by the Chief, Permits Division.

7. The Responsible Party may request a change of PI by submitting a request to the Chief, Permits Division that includes a description of the individual's qualifications to conduct and oversee the activities authorized under this permit.

8. Submit requests to change the PI or CI designations by one of the following:

    a. The online system at https://apps.nmfs.noaa.gov;

    b. An email attachment to the permit analyst for this permit; or

c. A hard copy mailed or faxed to the Chief, Permits Division, Office of Protected Resources, NMFS, 1315 East-West Highway, Room 13705, Silver Spring, MD 20910; phone (301)427-8401; fax (301)713-0376.

D. Possession of Permit

1. This permit cannot be transferred or assigned to any other person.

2. The Permit Holder and persons operating under the authority of this permit must possess a copy of this permit when:
   a. Engaged in a permitted activity.

   b. A protected species is in transit incidental to a permitted activity.

   c. A protected species taken under the permit is in the possession of such persons.

3. A duplicate copy of this permit must accompany or be attached to the container, package, enclosure, or other means of containment in which a protected species or protected species part is placed for purposes of storage, transit, supervision or care.

E. Reporting

1. The Permit Holder must submit incident, annual, and final reports containing the information and in the format specified by the Permits Division.

   a. Reports must be submitted to the Permits Division by one of the following:

      i. The online system at https://apps.nmfs.noaa.gov;

      ii. An email attachment to the permit analyst for this permit; or

      iii. A hard copy mailed or faxed to the Chief, Permits Division.

   b. You must contact your permit analyst for a reporting form if you do not submit reports through the online system.

   c. The report must provide data on disturbance rates of sea turtles specific to UAS operations, including: species, altitude and angle of approach, context of exposure (e.g., behavioral states), and observed behavioral responses to the UAS.

2. Incident Reporting

a. If a serious injury or mortality occurs or authorized takes have been exceeded as specified in Condition A.2 the Permit Holder must:

i. Contact the Permits Division by phone (301-427-8401) as soon as possible, but no later than 2 business days of the incident;

ii. Submit a written report within 2 weeks of the incident as specified below; and

iii. Receive approval from the Permits Division before resuming work. The Permits Division may grant authorization to resume permitted activities based on review of the incident report and in consideration of the Terms and Conditions of this permit.

b. The incident report must include 1) a complete description of the events and 2) identification of steps that will be taken to reduce the potential for additional serious injury and research-related mortality or exceeding authorized take.

3. Annual reports describing activities conducted during the previous permit year (from October 1 to September 30 of the following year) must:

a. be submitted by October 31 each year for which the permit is valid, and

b. include a tabular accounting of takes and a narrative description of activities and their effects.

4. A combined annual/final report summarizing activities over the life of the permit must be submitted by October 31, 2027, or, if the research concludes prior to permit expiration, within 30 days of completion of the research.

5. Research results must be published or otherwise made available to the scientific community in a reasonable period of time. Copies of technical reports, conference abstracts, papers, or publications resulting from permitted research must be submitted to the Permits Division.

F. Notification and Coordination

1. NMFS Regional Offices are responsible for ensuring coordination of the timing and location of all research activities in their areas to minimize unnecessary duplication, harassment, or other adverse impacts from multiple researchers.

2. The Permit Holder must ensure written notification of planned field work for each project is provided to the NMFS Regional Office listed below at least two weeks prior to initiation of each field trip/season.

   a. Notification must include:

      i. Locations of the intended field study and/or survey routes;

      ii. Estimated dates of activities; and

      iii. Number and roles of participants (for example: PI, CI, veterinarian, boat driver, Research Assistant "in training").

   b. Notification must be sent to the following Assistant Regional Administrator for Protected Resources:

      Pacific Islands Region, NMFS, 1845 Wasp Blvd., Building 176, Honolulu, HI 96818; phone (808)725-5000; fax (808)973-2941
      Email *(preferred)*: nmfs.pir.research.notification@noaa.gov.

3. Researchers must coordinate their activities with other permitted researchers to avoid unnecessary disturbance of animals or duplication of efforts. Contact the Regional Office listed above for information about coordinating with other Permit Holders.

G. Observers and Inspections

1. NMFS may review activities conducted under this permit. At the request of NMFS, the Permit Holder must cooperate with any such review by:

   a. Allowing an employee of NOAA or other person designated by the Director, NMFS Office of Protected Resources to observe and document permitted activities; and

   b. Providing all documents or other information relating to the permitted activities.

H. Modification, Suspension, and Revocation

1. Permits are subject to suspension, revocation, modification, and denial in accordance with the provisions of subpart D [Permit Sanctions and Denials] of 15 CFR Part 904.

2. The Director, NMFS Office of Protected Resources may modify, suspend, or revoke this permit in whole or in part:

a. In order to make the permit consistent with a change made after the date of permit issuance with respect to applicable regulations prescribed under Section 4 of the ESA;

b. In a case in which a violation of the terms and conditions of the permit is found;

c. In response to a written request[6] from the Permit Holder;

d. If NMFS determines that the application or other information pertaining to the permitted activities (including, but not limited to, reports pursuant to Section E of this permit and information provided to NOAA personnel pursuant to Section G of this permit) includes false information; and

e. if NMFS determines that the authorized activities will operate to the disadvantage of threatened or endangered species or are otherwise no longer consistent with the purposes and policy in Section 2 of the ESA.

3. Issuance of this permit does not guarantee or imply that NMFS will issue or approve subsequent permits or modifications for the same or similar activities requested by the Permit Holder, including those of a continuing nature.

I. Penalties and Permit Sanctions

1. A person who violates a provision of this permit, the MMPA, ESA, or the regulations at 50 CFR 222-226 is subject to civil and criminal penalties, permit sanctions, and forfeiture as authorized under the ESA, the MMPA, and 15 CFR Part 904.

2. The NMFS Office of Protected Resources shall be the sole arbiter of whether a given activity is within the scope and bounds of the authorization granted in this permit.

a. The Permit Holder must contact the Permits Division for verification before conducting the activity if they are unsure whether an activity is within the scope of the permit.

b. Failure to verify, where the NMFS Office of Protected Resources subsequently determines that an activity was outside the scope of the permit, may be used as evidence of a violation of the permit, the ESA, and applicable regulations in any enforcement actions.

[6] The Permit Holder may request changes to the permit related to: the objectives or purposes of the permitted activities; the species or number of animals taken; and the location, time, or manner of taking or importing protected species. Such requests must be submitted in writing to the Permits Division in the format specified in the application instructions.

J. Acceptance of Permit

1. In signing this permit, the Permit Holder:

   a. Agrees to abide by all terms and conditions set forth in the permit, all restrictions and relevant regulations under 50 CFR Parts 222-226, and all restrictions and requirements under the ESA;

   b. Acknowledges that the authority to conduct certain activities specified in the permit is conditional and subject to authorization by the Office Director; and

   c. Acknowledges that this permit does not relieve the Permit Holder of the responsibility to obtain any other permits, or comply with any other Federal, State, local, or international laws or regulations.

Donna S. Wieting
Director, Office of Protected Resources
National Marine Fisheries Service

FEB 2 8 2018
Date Issued

Charles Littnan, Ph.D.
Science Center Director, NMFS PIFSC
Responsible Party

Date Effective

FILE COPY

J. Acceptance of Permit

1. In signing this permit, the Permit Holder:

   a. Agrees to abide by all terms and conditions set forth in the permit, all restrictions and relevant regulations under 50 CFR Parts 222-226, and all restrictions and requirements under the ESA;

   b. Acknowledges that the authority to conduct certain activities specified in the permit is conditional and subject to authorization by the Office Director; and

   c. Acknowledges that this permit does not relieve the Permit Holder of the responsibility to obtain any other permits, or comply with any other Federal, State, local, or international laws or regulations.

Donna S. Wieting

Donna S. Wieting
Director, Office of Protected Resources
National Marine Fisheries Service

FEB 2 8 2018
Date Issued

Charles Littnan, Ph.D.
Science Center Director, NMFS PIFSC
Responsible Party

Date Effective

Appendix 1: Table Specifying the Kinds of Protected Species, Locations, and Manner of Taking

Table 1. Authorized Annual Takes of Adult, Subadult, and Juvenile Sea Turtles in the Pacific Islands Region (e.g., Hawaii, American Samoa, Guam, Commonwealth of the Northern Mariana Islands, Pacific Remote Islands Areas [Midway Atoll, Johnston Atoll, Palmyra Atoll, Kingman Reef, Howland Island, Baker Island, Jarvis Island, and Wake Island], and U.S. Exclusive Economic Zone). Distinct Population Segments (DPS) are noted in the table.

Species	Listing DPS Unit	No. Animals per Year	Takes Per Animal	Take Action	Collect Method	Procedure	Details
Turtle, green sea	Central North Pacific, Central West Pacific, East Pacific, East Indian-West Pacific, Southwest Pacific (NMFS Threatened and Endangered)	200	1	Harass	Survey, aerial	Count/survey; Photograph/Video; Remote vehicle, aerial (VTOL or fixed wing)	May use fixed wing or rotary systems but not together during a single survey event

Species	Listing DPS Unit	No. Animals per Year	Takes Per Animal	Take Action	Collect Method	Procedure	Details
Turtle, green sea	Central North Pacific, Central West Pacific, East Pacific, East Indian-West Pacific, Southwest Pacific (NMFS Threatened and Endangered)	250	2	Capture/Handle/Release	Hand and/or Dip Net	Instrument, epoxy attachment (e.g., satellite tag, VHF tag); Laparoscopy; Lavage, gastric; Mark, shell (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Other; Photograph/Video; Sample, blood; Sample, cloacal swab; Sample, voided fecal; Sample, oral swab; Sample, scute scraping; Sample, tissue; Sample, tumor, Transport; Ultrasound; Weigh	Capture: tangle encircle, or dip net, hand; Other: 1) Oral exam; 2) Sample, voided urine; 3) inject, oxytetracycline. Laparoscopy or lavage - subset of animals but not both methods on an individual at one time. No more than 3 tags per turtle.
Turtle, hawksbill sea	Range-wide (NMFS Endangered)	50	1	Harass	Survey, aerial	Count/survey; Photograph/Video; Remote vehicle, aerial (VTOL or fixed wing)	May use fixed wing or rotary systems but not together during a single survey event.

Species	Listing DPS Unit	No. Animals per Year	Takes Per Animal	Take Action	Collect Method	Procedure	Details
Turtle, hawksbill sea	Range-wide (NMFS Endangered)	150	2	Capture/Handle/Release	Hand and/or Dip Net	Instrument, epoxy attachment (e.g., satellite tag, VHF tag); Laparoscopy; Lavage, gastric; Mark, shell (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Other; Photograph/Video; Sample, blood; Sample, cloacal swab; Sample, voided fecal; Sample, oral swab; Sample, scute scraping; Sample, tissue; Sample, tumor, Transport; Ultrasound; Weigh	Capture: tangle encircle, or dip net, hand; Other: 1) Oral exam; 2) Sample, voided urine; 3) inject, oxytetracycline. Laparoscopy or lavage - subset of animals but not both methods on an individual at one time. No more than 3 tags per turtle.
Turtle, olive ridley sea	Range-wide (NMFS Threatened)	20	1	Harass	Survey, aerial	Count/survey; Photograph/Video; Remote vehicle, aerial (VTOL or fixed wing)	May use fixed wing or rotary systems but not together during a single survey event.

Species	Listing DPS Unit	No. Animals per Year	Takes Per Animal	Take Action	Collect Method	Procedure	Details
Turtle, olive ridley sea	Range-wide (NMFS Threatened)	100	2	Capture/Handle/Release	Hand and/or Dip Net	Instrument, epoxy attachment (e.g., satellite tag, VHF tag); Laparoscopy; Lavage, gastric; Mark, shell (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Other; Photograph/Video; Sample, blood; Sample, cloacal swab; Sample, voided fecal; Sample, oral swab; Sample, scute scraping; Sample, tissue; Sample, tumor; Transport; Ultrasound; Weigh	Capture: tangle encircle, or dip net, hand; Other: 1) Oral exam. 2) Sample, voided urine; 3) inject, oxytetracycline. Laparoscopy or lavage - subset of animals but not both methods on an individual at one time. No more than 3 tags per turtle.
Turtle, loggerhead sea	North Pacific (NMFS Endangered)	20	1	Harass	Survey, aerial	Count/survey; Photograph/Video; Remote vehicle, aerial (VTOL or fixed wing)	May use fixed wing or rotary systems but not together during a single survey event

Species	Listing DPS Unit	No. Animals per Year	Takes Per Animal	Take Action	Collect Method	Procedure	Details
Turtle, loggerhead sea	North Pacific (NMFS Endangered)	100	2	Capture/Handle/Release	Hand and/or Dip Net	Instrument, epoxy attachment (e.g., satellite tag, VHF tag); Laparoscopy; Lavage, gastric; Mark, shell (temporary); Mark, flipper tag; Mark, PIT tag; Measure; Other; Photograph/Video; Sample, blood; Sample, cloacal swab; Sample, fecal; Sample, oral swab; Sample, scute scraping; Sample, tissue; Sample, tumor; Transport; Ultrasound; Weigh	Capture: tangle encircle, or dip net, hand; Other: (1) Oral exam, (2) Sample, voided urine (3) inject, oxyteracycline. Laparoscopy or lavage - subset of animals but not both methods on an individual at one time. No more than 3 tags per turtle.
Turtle, leatherback sea	Range-wide (NMFS Endangered)	20	1	Harass	Survey, aerial	Count/survey; Photograph/Video; Remote vehicle, aerial (VTOL)	May use fixed wing or rotary systems but not together during a single survey event.

Species	Listing DPS Unit	No. Animals per Year	Takes Per Animal	Take Action	Collect Method	Procedure	Details
Turtle, leatherback sea	Range-wide (NMFS Endangered)	100	2	Capture/Handle/Release	Net, breakaway hoop net	Instrument, drill carapace attachment; Instrument, suction-cup attachment (e.g., camera); Mark, flipper tag; Mark, PIT tag; Measure; Other; Photograph/Video; Sample, blood; Sample, cloacal swab; Sample, voided fecal; Sample, oral swab; Sample, tissue; Sample, tumor; Ultrasound; Weigh	Other: 1) Oral exam, 2) Sample, voided urine 3) inject, oxytetracycline; 4) instrument, pygal or medial ridge attachment but not both on one individual. No more than 2 tags per turtle, one of which may be a suction cup tag.

Appendix 2: NMFS-Approved Personnel and Authorized Recipients for Permit No. 21260.

The following individuals are approved to act as Co-Investigators pursuant to the terms and conditions under Section C (Qualifications, Responsibilities, and Designation of Personnel) of this permit.

Name of Co-Investigator	Activities
Camryn Allen, Ph.D.	All research activities *except* capture by breakaway hoop net, lavage, instrument attachment (drill carapace), operate UAS
Michelle Barbieri, D.V.M.	All research activities *except* capture, tag attachment, and operate UAS
Sallie Beavers	Capture by hand and dip net, instrument attachment (epoxy), lavage, tag (flipper and PIT), sample blood, mark shell (temporarily), oral exam/swab, morphometrics
Shandell Brunson	Capture by hand and dip net, collect tumors, instrument attachment (epoxy), tag (flipper and PIT), mark shell (temporarily), sample blood, scute, and tissue, oral exam/swab, morphometrics
Tommy Cutt	Capture by hand and dip net, mark shell (temporarily), tag (flipper and PIT), sample blood and tissue, morphometrics
Rory Driskell	Operate UAS
Alexander Gaos, Ph.D.	All research activities *except* capture by breakaway hoop net, ultrasound, laparoscopy, operate UAS
Laura Jim	Capture by hand, dip and tangle nets, instrument attachment (epoxy), tag (flipper and PIT), mark shell (temporarily), oral exam/swab, morphometrics
Mark MacDonald	Instrument attachment (epoxy), tag (flipper and PIT), mark carapace (temporarily), sample tissue, morphometrics
Summer Martin, Ph.D.	All research activities *except* capture by breakaway hoop net, instrument attachment (drill carapace), lavage, ultrasound, laparoscopy, operate UAS
Shawn Murakawa	All research activities *except* capture by breakaway hoop net, instrument attachment (drill), plastron marking only, laparoscopy, operate UAS

Name of Co-Investigator	Activities
Marc Rice	All research activities *except* capture by breakaway hoop net, instrument attachment (drill carapace), plastron marking only, ultrasound, laparoscopy, operate UAS
Jennifer Sims	Capture by hand and dip, encircle, and tangle nets, tag (flipper, PIT), mark shell (temporarily), oral exam/swab, morphometrics
Thierry Work, D.V.M.	All research activities *except* tag attachment, laparoscopy, and operate UAS

Biological samples authorized for collection or acquisition in Table 1 of Appendix 1 may be transferred to the following Authorized Recipients for the specified disposition, consistent with Condition B.6 of the permit:

Authorized Recipient	Sample Type	Disposition
Dr. Peter Dutton National Marine Mammal and Sea Turtle Research NMFS Southwest Fisheries Science Center La Jolla, CA	Tissue and blood	Analysis and curation of remaining samples
Dr. Jeffrey Seminoff National Marine Mammal and Sea Turtle Research NMFS Southwest Fisheries Science Center La Jolla, CA	Tissue and blood	Analysis and curation of remaining samples
Dr. Thierry Work, DVM USGS National Wildlife Health Center Hawaii Field Station Honolulu, HI	Tissue	Analysis
Dr. Jennifer Lynch National Institute of Standards and Technology Hollings Marine Laboratory Charleston, SC	Tissue and blood	Analysis
Bishop Museum Honolulu, HI	Tissue	Analysis, curation of samples, and bone cleaning via beetle box

Attachment 1: Procedures for handling and monitoring leatherback sea turtles during capture-related work (revised 10/26/2017).

The following provisions are for handling juvenile and adult leatherback turtles. These requirements incorporate recommendations made by a panel of veterinarians and biologists with experience capturing leatherbacks in the Pacific, Atlantic, and Gulf of Mexico.

Personnel requirements

To effectively monitor leatherback turtles during capture and handling, researchers must have a designated medical observer on each capture outing team. Whenever possible, this observer should be an experienced[7] veterinarian. If a veterinarian is not in attendance, one must be reachable by cellular or satellite phone or radio (as appropriate) in case of emergency. A veterinarian is required to be on board if invasive procedures[8] are to be performed or if the capture interval will be longer than 1 hour.[9] For any captures, at least one individual must have the dedicated role of monitoring vital rates, behavior, and ensuring temperature control. This individual should not have any other duties that limit their attentiveness to these responsibilities. Moreover, monitoring and delegation of responsibilities should be coordinated such that the period of restraint is as brief as required to accomplish research objectives.

The chief scientist for each outing must be trained by a veterinarian in the following information and procedures:

- Acceptable parameters for responsiveness, respiration rate, heart rate, and temperature.
- Recognition and appropriate response to situations that suggest cessation of animal handling/procedures, and initiation of release.
- Safe water reintroduction and monitoring of a turtle in possible distress.

Capture, boarding, handling time, monitoring, emergency intervention

The number of attempts to capture an individual leatherback sea turtle is limited to 5 per 24-hour period. If researchers are unsuccessful after the first 3 attempts, they must wait a minimum of 4 hours before making the final 2 attempts to capture that individual on the day. Unless otherwise stipulated in the permit, only turtles observed to be normal (e.g., normal swimming and diving behavior) and with no evidence of external traumatic wounds or other abnormalities may be approached. **Any animal deemed to be in distress at any time during the pre-capture period must be avoided.**

Upon capture, and unless otherwise stipulated in the permit, the turtle should be immediately released if it is found to have any previously unapparent traumatic injuries, abnormal behavior, or other abnormalities that are deemed by the chief scientist or medical observer to create an

[7] "Experienced" refers to a documented history of working with sea turtles under conditions requiring proficiency in emergency procedures and resuscitation.
[8] "Invasive" includes biopsy or other procedures that involve incision into or penetration of tissues deeper than the dermis (e.g., fat biopsy), excluding phlebotomy, PIT tag implantation, and attachment of other tags/devices.
[9] The 1-hour time duration starts as soon as the leatherback is caught in the net.

additional risk of complication.

A captive duration of one hour or less is preferred. The following parameters are monitored during the capture period. Additional parameters may be added at the discretion of the Principal Investigator (PI), Co-investigator (CI), or attending veterinarian. A "fill-in-the-blank" observation sheet is used and must be retained as part of each animal's permanent capture record.

Parameter	**Frequency**
Responsiveness/activity level	Throughout
Respiration rate	Upon capture, every 20 minutes
Heart rate* (by Doppler, ultrasound, or ECG))	Upon capture, every 20 minutes
Body temperature	Upon capture, every 20 minutes
Point-of-care analyzer* (for blood gases, electrolytes, glucose)	Upon capture, every 30 minutes

*Recommended if feasible, especially for capture intervals exceeding 1 hr, with initial blood sample taken as soon as possible after the turtle is boarded to facilitate comparison with later samples.

Below are general guidelines regarding alteration of these parameters that should trigger immediate assessment by the medical observer and PI or CI. Note that blood values are only intended for interpretation by an attending veterinarian:

Parameter	**Trigger threshold**
Responsiveness	Reduction in response to procedures or noxious stimuli
Respiration rate	Apnea for periods >2 min.
Heart rate	<20 bpm
Blood pH	<7.2 (temperature corrected)
Potassium	>6.8 mmol/l
Glucose	<60 mg/dl
Body temperature	Alteration of initial body temperature by >2˚F or 1˚C (or if temp exceeds 86˚F/30˚C)

The attending veterinarian should be prepared to render aid and resuscitation in the event of an emergency. If a veterinarian is not in attendance, members of the capture team must be trained by a veterinarian in basic resuscitation procedures, which may include endotracheal intubation, ventilatory support, and epinephrine administration.[10] The level of training and expected level of intervention is determined by the designated project veterinarian based on the ability/aptitude of the capture team. Such intervention should follow a previously developed response plan that includes remote consultation with a veterinarian by phone and a written contingency protocol if communication is not possible. An emergency field kit should include:

- Means of ventilatory support (e.g., demand breathing valve, 2 L Ambu bag, oxygen cylinder)
- Endotracheal tubes (non-cuffed 10, 12, 14, and 16; other sizes as appropriate)
- Oral speculum and appropriate sized blade
- Water-based lubricant
- Disinfectants (e.g., betadine scrub, isopropyl alcohol)
- Sterile gauze
- Medical tape

[10] Medical intervention must be compliant with pertinent veterinary practice regulations for the state in which captures are being conducted.

- Needles and syringes (size appropriate)
- Epinephrine*

*Additional medications (e.g., doxapram, lidocaine, sodium bicarbonate, furosemide, dexamethasone sodium phosphate, fluids) and equipment may be included at the discretion of the attending veterinarian.

Attachment 2: Requirements for Handling and Sampling Sea Turtles

Conditions have been included in the permit for research procedures that involve the handling and sampling of sea turtles. These conditions include requirements provided by a suite of expert veterinarians to minimize and mitigate potential impacts to the study animals. This information is being provided to help understand the permit requirements and standard veterinary protocols for sea turtles.

I. Permit requirements for antiseptic practices and research techniques

Measures required to minimize risk of infection and cross-contamination between individuals generally fall under the categories of clean, aseptic, and sterile techniques. Clean technique applies to noninvasive procedures that result in contact with skin or mucous membranes. Aseptic technique is used for brief, invasive procedures that result in any degree of internal contact, e.g. drawing blood. Sterile technique applies to longer invasive procedures, such as laparoscopy or surgery. Reusable instruments for procedures requiring aseptic or sterile technique should be sterilized by standard autoclave or cold sterilization procedures. Instruments that do not have internal contact, e.g. tagging pliers and PIT tag applicators, should be disinfected using a broadcidal solution and the product-recommended contact time between individuals.

Clean technique:

1. Routine hand washing or use of non-sterile disposable gloves.
2. Cleaning and disinfection of equipment between individuals.

Aseptic technique:

1. Disinfection of hands or use of new non-sterile disposable gloves (preferred)
2. Disinfection of the turtle's skin using a surgical scrub (e.g. betadine scrub or chlorhexidine gluconate)† followed by application of 70% alcohol (isopropyl or ethanol) (minimum requirement).*
3. Clean work area.
4. Use of sterile instruments or new disposable items (e.g. needles and punch biopsies) between individuals.

† Alcohol alone may be used in lieu of surgical scrub if necessary to avoid interference with research objectives, e.g. isotopic analysis.

* Multiple applications and scrubbing should be used to achieve thorough cleansing of the procedure site as necessary. A minimum of two alternating applications of surgical scrub and alcohol are to be used for PIT tag application sites and drilling into the carapace, due to potential increased risk of infection.

Sterile technique:

1. To be conducted in accordance with approved veterinary protocol that considers analgesia/anesthesia, use of antimicrobials, anticipated risks and response measures, and exclusionary criteria for animal candidacy.

2. Direct veterinary attendance
3. Disinfection of hands and use of sterile disposable gloves
4. Dedicated site (surgery room) or work area modified to reduce contamination
5. Surgical preparation of skin
6. Sterile instruments

Research Procedure	**Required Technique**
Handling, gastric lavage, and cloacal lavage	Clean technique
Tissue sampling (biopsy punch or comparable)	Aseptic technique
Blood sampling	Aseptic technique
PIT tagging	Aseptic technique; 2 applications of surgical scrub and alcohol
Flipper tagging	Aseptic technique
Carapace drilling for instrument attachment or bone biopsy	Aseptic technique; 2 applications of surgical scrub and alcohol
Bone biopsy (other than carapace)	Sterile
Laparoscopy (+/- biopsy)	Sterile
Large skin, muscle, fat biopsy, other tissue biopsy	Sterile

II. Minimum requirements for pain management and field techniques

Procedures used for sea turtle research include those anticipated to cause short term pain or distress, such as tagging, as well more invasive procedures where relatively longer periods of pain or discomfort may result. The minimum requirements below consider animal welfare and relative benefits and risks of different modes of pain management under field and laboratory conditions. Additional measures are encouraged whenever possible, including sedation or anesthesia for invasive procedures, e.g. laparoscopy, when release does not immediately follow the procedure and full recovery can be assessed. Any protocols that do not include the minimum requirements below, e.g., omission of a systemic analgesic, must be approved by a consulting veterinarian with due consideration of pain management.

Research Procedure	Minimum Requirement
Tissue sampling (biopsy punch or comparable)	None
Blood sampling	None
PIT tagging	Local anesthetic if <30 cm SCL
Flipper tagging	None
Carapace drilling for instrument attachment or bone biopsy	Systemic analgesic
Bone biopsy (other than carapace)	Local anesthetic and systemic analgesic
Laparoscopy	Local anesthetic and systemic analgesic
Laparoscopy biopsy	Local anesthetic, sedation, and systemic analgesic
Large skin, muscle, fat biopsy, other tissue biopsy	Local anesthetic and systemic analgesic

Attachment 3. NOAA Office of National Marine Sanctuaries (ONMS) Sanctuary and Monument Permit Contact Information

Site	Mailing Address	Contact Numbers	Permit Contact(s)
Hawai‘ian Islands Humpback Whale National Marine Sanctuary	Hawai‘ian Islands Humpback Whale National Marine Sanctuary 6600 Kalaniana’ole Highway, Suite 301 Honolulu, HI 96825	wk 808-397-2651 x 251 fax 808-397-2650	Malia Chow Malia.Chow@noaa.gov
National Marine Sanctuary of American Samoa	National Marine Sanctuary of American Samoa P.O. Box 4318 Pago Pago, AS 96799	wk 684-633-6500 x 226 cell 684-252-9786 fax 684-633-7355	Joseph Paulin Joseph.Paulin@noaa.gov
Papahānaumokuākea Marine National Monument	Papahānaumokuākea Marine National Monument NOAA/IRC NOS/ONMS/PMNM 1845 Wasp Boulevard, Building 176 Honolulu, HI 96818	wk 808-725-5805 fax 808-455-3093 wk 808-725-5831 fax 808-455-3093 wk 808-725-5823 fax 808-455-3093	Tia Brown Tia.Brown@noaa.gov Justin Rivera Justin.Rivera@noaa.gov Pua Borges-Smith (Alternate contact) Pua.Borges-Smith@noaa.gov

J. Acceptance of Permit

1. In signing this permit, the Permit Holder:

   a. Agrees to abide by all terms and conditions set forth in the permit, all restrictions and relevant regulations under 50 CFR Parts 222-226, and all restrictions and requirements under the ESA;

   b. Acknowledges that the authority to conduct certain activities specified in the permit is conditional and subject to authorization by the Office Director; and

   c. Acknowledges that this permit does not relieve the Permit Holder of the responsibility to obtain any other permits, or comply with any other Federal, State, local, or international laws or regulations.

Donna S. Wieting
Director, Office of Protected Resources
National Marine Fisheries Service

FEB 2 8 2018
Date Issued

Charles Littnan, Ph.D.
Science Center Director, NMFS PIFSC
Responsible Party

2/28/18
Date Effective

FILE COPY