FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

MARINE TURTLE CONSERVATION HANDBOOK

2016







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SECTION 1 – GENERAL INFORMATION FOR PERMIT HOLDERS

GENERAL PERMIT INFORMATION

The Fish and Wildlife Conservation Commission (FWC) issues permits for activities involving interactions or research with marine turtles, their nests, eggs, hatchlings, or parts under the Marine Turtle Protection Act, Florida Statute 379.2431 (1). FWC also has authority granted to the state through a Cooperative Agreement with the U.S. Fish and Wildlife Service (USFWS) under Section 6 of the U.S. Endangered Species Act (ESA) for such authorizations. To qualify for a marine turtle permit, the applicant can be an individual, firm, or corporation who is an accredited entity with one or more qualified individuals with the appropriate knowledge and experience for the requested activity. In accordance with the Section 6 Cooperative agreement and Florida Statute, the applicant must also demonstrate that the activity requested adds to the conservation of marine turtles.

FWC authorizes "otherwise prohibited activities" with marine turtles by Conservation Permit, Consent Permit (once called Letter of Authorization), or a Loan Agreement. Conservation Permits, or Marine Turtle Permits (permit), are issued for any activity involving live or stranded animals, nesting surveys and protection, or holding marine turtles for rehabilitation or education. Permits are requested by submitting the Marine Turtle Application Form incorporated by reference in Rule 68E-1.004 (1) (FWC Form 32-101 effective 2016) to MTP@myfwc. com or online via the FWC permit portal. Hard copies of the application may be obtained by contacting the Imperiled Species Management Section (ISM) at MTP@myfwc. com, at (561) 882-5975, or in writing to ISM staff at the Tequesta Field Lab, 19100 SE Federal Highway, Tequesta FL 33469.

Consent Permits are for short term activities such as transport of live animals or samples into or out of Florida, one-time events or minor activities that do not require a Conservation Permit (e.g., filming, photography) and emergency response activities. Permit holders should request Consent Permits via email to MTP@myfwc. com or in writing to ISM staff at the Tequesta Field Lab. Such requests should include the reason for the request, specific activity (including location and methodologies), individuals involved, dates, species and number of animals or samples.

Activities involving use of any dead marine turtle or parts thereof shall be authorized by a Loan Agreement, the Authorization for Loan of Marine Turtle Specimens (FWC Form ST-LA effective 5/07) incorporated by reference in Rule 68E-1.0041 (2). Loan Agreement requests should be submitted via email to MTP@myfwc. com or in writing to the Tequesta Field Lab. Such requests should include detailed information on the number, type and species of specimens and information regarding how the specimens will be acquired and utilized in educational programs focused on marine turtles and their conservation. Loan Agreements do not require renewal; however, any additions to the inventory must be specifically authorized through an updated Loan Agreement.

Marine turtle permits are not transferable. Persons wishing to apply for a permit must submit an FWC Marine Turtle Permit Application as outlined above. Applications must identify the permit holder, a principal officer, up to two qualified individuals and all authorized personnel. The applicant may request up to 26 individuals total, including authorized personnel, for inclusion on the permit. The permit holder is responsible for ensuring the qualified individual(s) trains and maintains oversight of all authorized personnel.

Each permit consists of a permittee (i.e., permit holder), a principal officer, one or two qualified individuals and all authorized personnel. Individual permit holders may identify themselves as both the principal officer and the qualified individual. For a firm or corporation, it is expected that the permit holder will be the principal

officer. The principal officer shall be responsible for ensuring that all activities are conducted in accordance with all terms and conditions of the permit, this Chapter, and the Handbook and that all reports are submitted by the deadlines identified in the permit or the Handbook. The qualified individual is responsible for all decisions concerning direct interactions with marine turtles including nesting beach surveys, marking and relocating nests, educational displays and activities, and basic husbandry and care for holding marine turtles in captivity (in conjunction with the veterinarian listed on the permit). If more than one qualified individual is identified, the permit shall specify a lead qualified individual who shall serve as the primary contact for all authorized activities and who shall be responsible for ensuring that all activities are conducted in accordance with all terms and conditions of the permit, this Chapter, and the Handbook and that all reports are submitted by the deadlines identified in the permit or the Handbook. In the event the qualified individual has left employment or discontinued their affiliation with the corporation or firm, the permit holder must notify the Commission within forty-eight hours of their departure. Within 30 days of such departure, the permit holder must secure the services of at least one qualified individual.

Each permit shall list all authorized activities, conditions, specific nesting survey areas, construction monitoring projects, beach cleaning monitoring areas, and research projects. Each permit authorizes specific activities depending upon the experience of the permit holder and qualified individual and demonstrated marine turtle conservation needs. Only those activities and projects specifically listed on the permit are authorized. The permit holder, principal officer, each qualified individual and all authorized personnel are expected to know the conditions and responsibilities associated with their permit and to work according to the requirements of Rule 68E-1 and the parameters outlined in this Handbook.

The permit holder, qualified individual and authorized personnel should carry identification and a copy of their FWC permit (conservation or consent) at all times while conducting authorized activities. Wildlife or public safety officers may approach you, in plain clothes, and ask to see a copy of your permit. You may also be approached by concerned individuals who perceive that your activity is harmful or unlawful. Please ensure that your response to such situations is thoughtful and reflects the special responsibilities associated with your permit.

The permit does not allow listed personnel to act as an agent of FWC with powers vested in a public employee. Please do not represent yourself as agency staff or a wildlife or conservation officer unless you are one. Distinctive identifying clothing is encouraged and should display the logo or name of your organization, not symbols associated with FWC. In other words, avoid the appearance of a uniformed public employee unless you are one.

FWC shall consider issuing multiple permits for certain types of authorized activities, excluding nesting surveys, on a case-by-case basis; however, in general the qualified individual should have oversight of no more than 24 personnel for any authorized activity. FWC shall consider authorizing additional personnel or issuing additional permits to one individual on a case-by-case basis. For nesting beach surveys, no new permits will be issued to allow more than 25 authorized personnel (26 total with permit holder) to conduct authorized activities.

HANDBOOK REQUIREMENTS

This Handbook provides instruction on acceptable research and conservation techniques for all authorized activities. Additional copies of the Handbook can be obtained from FWC or downloaded from the agency web site (http: //www.myfwc.com/wildlifehabitats/managed/sea-turtles/conservation-guidelines/). The permit holder, qualified individual and authorized personnel may conduct only those activities specifically listed on the marine turtle permit.

REPORTING REQUIREMENTS

All activities and research projects (see below for coastal construction monitoring projects) authorized under a marine turtle permit, as well as a summary of the results and any additional information requested, must be reported on an annual basis to the FWC. The reporting requirements for all activities described in this Handbook are identified at the end of each section. Issuance of subsequent authorizations is contingent upon the applicant's history of following appropriate reporting procedures and satisfying reporting requirements.

TRAINING

Each qualified individual is expected to be proficient in all activities and actively participate in or oversee all activities authorized on the permit. The permit holder is responsible for ensuring that each qualified individual and all authorized personnel listed are thoroughly and properly trained to conduct the activities authorized on the permit. Nest survey training requires that the qualified individual spend sufficient time with authorized personnel to identify crawls on the beach. The qualified individual must work with inexperienced personnel until they are confident of their ability to distinguish nests from false crawls and to identify the differences in crawl characteristics among species. While proficiency for a particular activity and training may be delegated to the qualified individual, the permit holder and principal officer are expected to actively oversee all activities and ensure compliance with permit conditions, the statute, rule and Handbook.

FWC turtle staff provides annual or biannual nesting and stranding workshops to permitted personnel to ensure that approved conservation practices are well understood and employed. The nesting workshops are generally designed as refresher courses and are not intended as complete training for persons with no prior survey experience. Due to logistics, the workshops do not generally offer much, if any, field training. It is imperative that the qualified individuals spend as much time as necessary providing on-the-beach training for personnel to accurately identify crawls.

CODE OF CONDUCT

Marine turtle permit holders, each qualified individual, and all authorized personnel are the primary interface with residents and visitors to Florida's nesting beaches, coastal habitats, and educational programs and thus have a unique ability to advocate for sea turtle conservation during every nesting survey, stranding response, or presentation. Your attitude and behavior at each interaction with the public will color their view of marine turtles and conservation. Thus, it is the responsibility of the permit holder, each qualified individual and all authorized personnel to act in a manner that promotes trust and confidence with transparency, honesty, courtesy, civility, and kindness in their services and actions, and to avoid the action, appearance, and perception of impropriety and disrespect. Treat interested citizens, fellow permit holders and authorized personnel with civility, respect, and professionalism. Examples of unacceptable conduct include, but are not limited to, profanity directed at another, coarse or abusive language, shouting or overly loud or argumentative language directed at another, or other conduct that exhibits a lack of commonly understood professionalism and decorum. Maintain a professional attitude even when confronted with individuals whose actions may affect marine turtles – use each interaction as an opportunity to educate others about conservation and the things they can do to limit impacts while they are on the beach, fishing or on the water. In the event that a permit holder, qualified individual or authorized personnel encounter an individual or circumstance while conducting authorized activities that is perceived as being unsafe, they should remove themselves from the situation as quickly as possible to ensure their personal safety. Contact the appropriate local law enforcement agency immediately to report the situation and request any assistance. If someone is tampering with a nest, do not confront them. Watch from a safe distance and call FWC's Wildlife Alert Hotline (1-888-404-FWCC).

MONITORING FOR COASTAL CONSTRUCTION PROJECTS

Under existing state law, certain construction activities may occur along or on a nesting beach during the marine turtle nesting season. Under subsections 379.2431((1) (f), (g) and 161.053, Florida Statutes, the Florida Department of Environmental Protection (DEP) must condition the nature, timing, and sequence of coastal construction activities to protect nesting marine turtles, hatchlings, and their habitat. All such activities require a DEP permit, which must be kept at the site. Coastal construction projects are reviewed by FWC and the appropriate local governing body.

In general, only those activities that have minimal impacts to nesting turtles, their nests, and hatchlings should occur during the nesting season. These types of activities include dune planting, beach cleaning, and special events. Such activities can only occur if a nesting survey has been ongoing since the beginning of the nesting season or 65 days prior to the event, whichever comes later, and all nests in the project area are clearly marked. Standardized conditions in the DEP permit require the person conducting the work/event to coordinate with the marine turtle permit holder for a given beach. No work is allowed to commence until after completion of the nesting survey each day. Fences, overnight storage of equipment, water drainage from pumps, lights, and heavy equipment are prohibited on the nesting beach unless specifically authorized in the permit document.

If you are approached by a contractor, individual, or other entity and asked to conduct a nesting survey or relocate nests in conjunction with any coastal construction or recreational activity (e.g., mechanical beach cleaning, beach nourishment, construction of a crossover, dune restoration project, volleyball tournament, beach driving, etc.), please contact the FWC Imperiled Species Management Section (ISM) immediately at (850) 922-4330 or marineturtle@myfwc. com. **Marine turtle permits issued by FWC do not authorize nest relocation for any coastal construction project unless incidental take and additional authorization for such relocation has been granted by the FWC and the U.S. Fish and Wildlife Service (USFWS).**

You are not required to monitor for DEP-permitted activities, but if you agree to provide marine turtle monitoring services for a project, we recommend that you enter into a written agreement whereby both parties fully understand the expected services. Permits for beach restoration activities require a report of marine turtle nesting activity for the project area. The Nourishment Monitoring Spreadsheet (FWC Form Nourish-1, effective 6/16) is incorporated in Rule 68E-1.004 (14)(b)1. and is available at http: //www.myfwc.com/wildlifehabitats/managed/sea-turtles/beach-activities/ or by contacting MTP@myfwc. com. Under certain circumstances, another marine turtle permit holder may be authorized to conduct marine turtle nest surveys and nest protection for a construction project even if the project is within your permitted survey area. Generally, the DEP-permitted entity will be instructed to contact the permitted marine turtle survey person for that area first, then to work with other permit holders if the original permit holder cannot conduct the work.

Beach nourishment projects, in particular, are reviewed by FWC, DEP, U.S. Army Corps of Engineers, and USFWS. The USFWS may, under the provisions of Section 7 of the ESA, issue incidental take for the project, but FWC must specifically authorize the marine turtle permit holder to relocate nests for a construction project – this activity is not considered relocation for conservation purposes and must be added to the FWC marine turtle permit.

Under current federal and state authorizations, beach nourishment and dune restoration may occur during the early nesting season (March through April 30th) in Brevard through Broward counties and during nesting season in all other coastal counties. Sand placement projects that begin in November must have nesting

surveys begin by August 30th and all nests relocated from the construction area. USFWS authorizes incidental take under Section 7 of the Endangered Species Act through a Biological Opinion, but all nesting survey work, relocations, and nest inventories must be authorized by FWC. Marine turtle permits issued by FWC do not authorize nest relocation for any impacts that occur during and after construction of these projects. The DEP-authorized entity constructing the project must implement specific measures to minimize impacts to marine turtles during all activities associated with construction and for impacts that occur after construction.

On leatherback nesting beaches, nighttime surveys are required to maximize the potential for relocating all nests on the project beach. Nighttime surveys must begin when the first leatherback crawl is located on the island where the project occurs or within the region of the nesting beach. Often nests are not allowed to be relocated from the beach after sand placement, and permit holders should confer with FWC staff to determine if they may move nests that are deposited low on the nourished berm.

SECTION 2 - NESTING BEACH SURVEY ACTIVITIES

Nest surveys are an important tool for sea turtle conservation. They allow assessment of the distribution, abundance and trends in nesting of the various species of marine turtles that nest in Florida. Surveys are often done in conjunction with nest marking, which facilitates nest protection (e.g., caging, screening), and allows assessment of nest productivity, i.e., how many hatchlings were produced. Nesting data are used for many purposes, including impact review for coastal construction permits and human activities on nesting beaches, land acquisition, and oil spill response.

STATEWIDE AND INDEX NESTING BEACH SURVEYS

Florida sea turtle nesting surveys include two complementary programs: the Statewide Nesting Beach Survey program (SNBS) and the Index Nesting Beach Survey program (INBS) which are coordinated by the FWC Fish and Wildlife Research Institute (FWRI). Each is performed by a network of people who receive training and guidance from the FWC's Marine Turtle Protection Program, although surveyors may work principally within conservation organizations, state or local governments, universities, state parks, federal agencies, and private consulting groups. SNBS and INBS surveys have different goals and different approaches.

The SNBS program maximizes the temporal and geographic surveillance of nesting activities on state beaches, producing a minimum total count of nests statewide for each species (Information Sheet, Appendix A-1). FWC Statewide Nesting Beach Survey Instructions (effective 6/16) are incorporated by reference in Rule 68E-1.004(14)(b)2. and available from MTP @myfwc. com. Because so many of the state nesting beaches are monitored, this count represents a nearly complete census. For management purposes, the comprehensive coverage provides data for management decisions throughout the state - such as the timing of coastal construction activities. Survey effort in the SNBS program varies somewhat among years and among beaches as new areas are added or dates of coverage fluctuate. Survey frequency can also vary among beaches, with some remote areas being covered only infrequently.

The INBS program collects detailed nesting information in a way that allows the assessment of nesting trends over time and among index beach zones. The most important characteristic of the INBS program is consistent survey effort—all INBS beaches are monitored daily during a 109-day window using an identical protocol, and surveyors report number of nests by species by day by zone. In contrast, SNBS beaches report a total nest and false crawl count by species for their entire beach for the season. All INBS beaches are also SNBS beaches. However, the INBS program includes only some of the state's beaches, and only part of the nesting season is surveyed. For many purposes, combining the data produced by these two programs provides the most complete information. Elements common to both programs include training, methods of nest and track identification, and attempts to make as accurate an assessment of nesting as possible.

Summary
If your permit authorizes you to **conduct nesting surveys,** you are also authorized to conduct the following activities:

- **mark nests**

Additional authorization **and** specific approval are required to conduct the following or any other activities in conjunction with nesting surveys. These activities must be specifically mentioned in the application and listed on the permit.

- **relocate nests**
- **screen nests with self-releasing screens/cages**
- **screen nests with restraining cages**
- **conduct nighttime surveys**
- **conduct hatch success evaluations**
- **recover and release hatchlings**
- **conduct public hatch success evaluations**
- **conduct public hatchling releases**

Activity Description
This activity involves the daily survey of a specific beach area (as specified on the permit) to identify, enumerate, and evaluate nesting activities. Surveys are conducted by foot or by vehicle, principally ATVs. Other vehicles are not recommended because of the increased likelihood of compacting sand and creating ruts. In nesting surveys, surveyors count and identify "crawls," which are the marks left in the sand by sea turtles that have attempted to nest. The goal of FWC's Statewide Nesting Beach Survey is to capture all nesting activity that takes place on Florida beaches, and therefore, to the extent possible, surveys should start and end on whatever dates are appropriate for accomplishing this goal at a specific location. These dates will vary according to which species nest in a particular geographic location and when they nest, with nesting typically beginning earlier on southern beaches. These dates have changed over time as nesting by leatherbacks and green turtles in Florida has increased, and they are likely to be routinely adjusted.

Table 2-1. Suggested minimum start/stop dates for Statewide Nesting Beach Survey

County Range	Suggested Latest Daily Nesting Survey Start Date	Suggested Earliest Daily Nesting Survey End Date
Nassau County through Flagler County	15 April	30 September
Volusia County through Miami-Dade County	1 March	31 October
Monroe County	15 April	31 August (30 September in portions of the county where green turtles nest)
Collier County through Pinellas County	15 April	30 September
Franklin County through Escambia County	1 May	31 August

Surveying more than these suggested dates would provide the most comprehensive assessment of all nesting but may not be possible logistically. Please keep in mind that earlier or later start/stop dates

for required daily nesting surveys may be associated with regulatory permits for sand placement, structure installation or beach cleaning; these suggested start/stop dates do not override the required monitoring dates established within those permits. The INBS season is a fixed, 109-day window regardless of location: 15 May through 31 August.

For best viewing of crawls, nesting surveys should begin shortly after sunrise but never earlier than ½ hour before local published sunrise. Because of potential disturbances to nesting females and the difficulty of locating and interpreting crawls in the dark, nesting surveys may not be conducted at night unless such surveys are required for a beach nourishment project and authorized by both the U.S. Fish and Wildlife Service and FWC.

Surveyors should traverse the beach along (and seaward of, if possible) the most recent high tide line. This is important not only for ensuring that turtle crawls are not obscured before they can be evaluated, but also for avoiding impacts to nesting shorebirds and chicks. Other key points about ATV use include:

- avoid the wrack (where shorebirds might be taking cover),
- minimize ruts by using a light-weight vehicle with low tire pressure (10 psi or less),
- drive slowly (less than 10 mph),
- survey in daylight only,
- respect areas posted for shorebird nesting,
- access the beach through existing pathways, not through the dunes or vegetated areas, and
- be observant for shorebird eggs and chicks.

Best Management Practices (BMP's) for operating a vehicle on the nesting beach are available at http: //myfwc. com/conservation/you-conserve/wildlife/beach-driving/.

Upon discovery of a crawl, surveyors should identify which is the incoming and which is the outgoing track. The next step is to determine which species of turtle made the crawl. Using this information, surveyors should then make a visual determination as to whether the crawl was a nesting emergence (i.e., resulting in eggs being laid) or non-nesting emergence (often called a "false crawl"). In most cases, the eggs will not be seen—their presence is inferred by the evidence visible on the beach. All crawls should be recorded on a data sheet. If a crawl is identifiable as a nest and the nest does not have to be screened, caged, precisely marked, or relocated, the surveyor should not dig into the nest simply to verify the presence of eggs. After each crawl is evaluated and documented, the tracks should be crossed out to avoid duplicate reporting. To accomplish this, a surveyor may obliterate a section of the upper track (not the nest site) by sweeping his/her feet across the track or by crossing over the track (well above the high tide mark but not over the clutch) with a survey vehicle (Figure 2-1).

The decision as to whether a crawl represents a nest or a non-nesting emergence should be made at the time of the survey (not at a later date), and it should be based only on the visual characteristics of the crawl (not the verified presence of eggs). The visible evidence for this assessment will deteriorate, and there is the danger that the crawl might be erased before a decision is made. Do not confirm the presence of eggs before calling a crawl a nest. Likewise, it is not necessary to observe signs of hatching in order to call a crawl a nest. The clutch can be difficult to locate, and hatching events are often not observed. To standardize the survey results across all surveyors, it is necessary that everyone follow the same methodology. For beaches with large numbers of nests, it is not an option to verify the presence of eggs in all clutches, nor would it be desirable for surveyors to disturb the eggs unnecessarily.

In the event a false crawl proves to be a nest, for the purposes of SNBS, this nest should be added to the annual nest count. For the purposes of INBS, do not make any corrections, i.e., leave the emergence as a false crawl. The reason for this is to standardize the survey protocol to the maximum extent possible. Groups conducting INBS surveys vary in their opportunity to notice the hatching of unrecorded nests, especially on beaches with very dense nesting.

Figure 2-1. Crawl crossed out with ATV. Note that marking of the crawl is done as high on the beach as possible but not directly on the nest.

Nesting surveys may only be conducted within the boundaries specified on the permit. Ideally, boundaries should not change, either within a season or from year to year. Requests for expansion of authorized nesting survey areas must be submitted in advance and in writing to FWC, Imperiled Species Management (ISM) at MTP@myfwc. com. It is imperative that survey areas do not overlap. Please inform FWC/FWRI immediately of any reduction in survey efforts so that steps can be taken to ensure continuity in nesting beach coverage. It is extremely important that FWC be informed of any changes in monitoring effort in order to maintain accurate and consistent nesting survey records.

Survey boundaries should be permanent and specific. GPS coordinates of the boundaries are highly desirable, in addition to physical landmarks (or distance from) such as state roads, inlets, county lines, etc. Street addresses are preferable to condominium names, which may change at any time. The protocols for conducting surveys as part of the Statewide Nesting Beach Survey or the Index Nesting Beach Survey are given in Appendices F-1 and F-2, respectively. The FWC Fish and Wildlife Research Institute Statewide Nesting Beach Survey (SNBS) Protocol (effective 6/16) and the FWC Fish and Wildlife Research Institute Index Nesting Beach Survey (INBS) Protocol (effective 6/16) are incorporated by reference in Rule 68E-1.004(14)(b)3. and 4.

While it is important to count all nests and false crawls during your surveys, FWC's authorization to conduct nesting surveys does not allow you to access private property. Most surveys occur on beaches that are managed by local governments and open to all, but in some areas, private property extends to the water line or includes dune areas. If you are not able to access the entire beach where a crawl occurred, do your best to observe the nest from the edges of the property to determine if it was a nesting or non-nesting crawl. You can make a note on your daily survey form that you were not able to access the exact location to observe the crawl.

Summary

- Identify which is the incoming and which is the outgoing track.
- Determine what species of sea turtle made the crawl.
- Determine whether the crawl is a non-nesting emergence or a nest based on visible evidence (it is preferable to avoid digging into a nest site unless the nest will be screened, caged, or relocated).

SPECIES IDENTIFICATION AND DETERMINATION OF NESTING SUCCESS

The tracks and other evidence left on the beach after a sea turtle has emerged (crawls) can be used to identify what species of turtle emerged onto the beach and whether or not it nested. The following outline describes how to use crawl evidence to make these identifications. Note that the amount of sand disturbed during the nesting process for all species will be influenced by vegetation, sand compaction, and objects encountered by turtles while digging. There is some variation in the behavior of turtles, and these guidelines will not lead to a correct determination in every case. They are offered solely to assist with determining whether a nest has been made.

I. **Identify which is the incoming (emerging) track and which is the outgoing (returning) track.**

- As a turtle crawls, it pushes sand backward with each flipper stroke.
- If one track is shorter, it will be the incoming track (Figure 2-2).
- If tracks overlap, the outgoing track will be on top.

Figure 2-2. Difference in length of crawl: incoming (left) vs. outgoing (right) crawl.

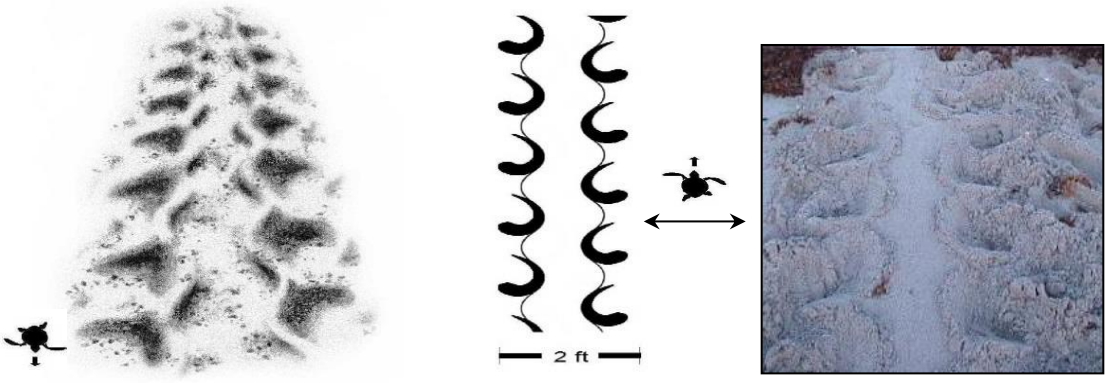
II. What species made the crawl (loggerhead, green or leatherback turtle)?

Although hawksbill and Kemp's ridley turtles occasionally nest on Florida beaches, nesting is rare and their crawl and nest-site characteristics are similar to the loggerhead. Minimal discussion

will be provided below for hawksbill and Kemp's ridley turtles. (Track widths listed for loggerhead, green turtle and leatherback were provided by Erik Martin, Ecological Associates Incorporated. All artwork was provided by Dawn Witherington).

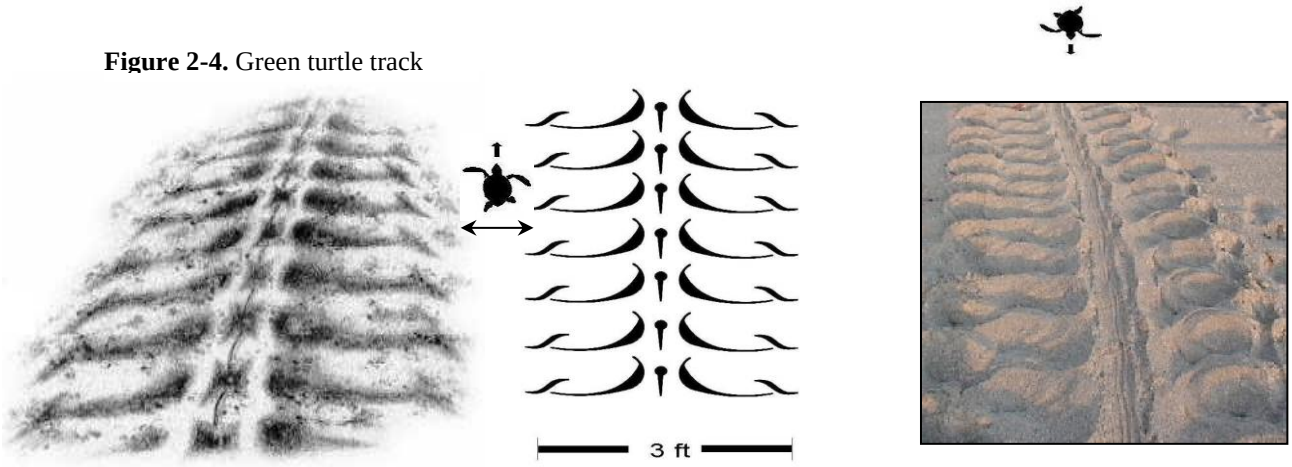
A. Figure 2-3: tracks from a sea turtle with an alternating gait, no tail drag mark, and track width typically ranging from 70 to 124 cm (28 to 49 inches) with a mean of 94 cm (37 inches): **loggerhead turtle** (*Caretta caretta*). Species with similar tracks are hawksbill (*Eretmochelys imbricata*) and Kemp's ridley turtles (*Lepidochelys kempii*).

Figure 2-3. Loggerhead track



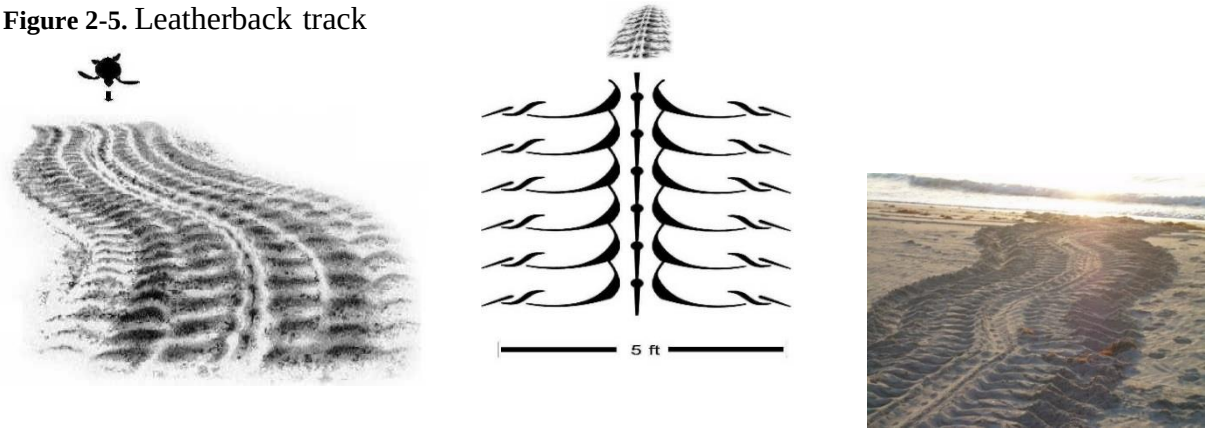
B. Figure 2-4: tracks from a sea turtle with simultaneous limb movement, a center drag mark from the tail (the center drag mark may be a solid or broken line), and track width typically ranging from 95 to 144 cm (37 to 57 inches) with a mean of 119 cm (47 inches): **green turtle** (*Chelonia mydas*).

Figure 2-4. Green turtle track



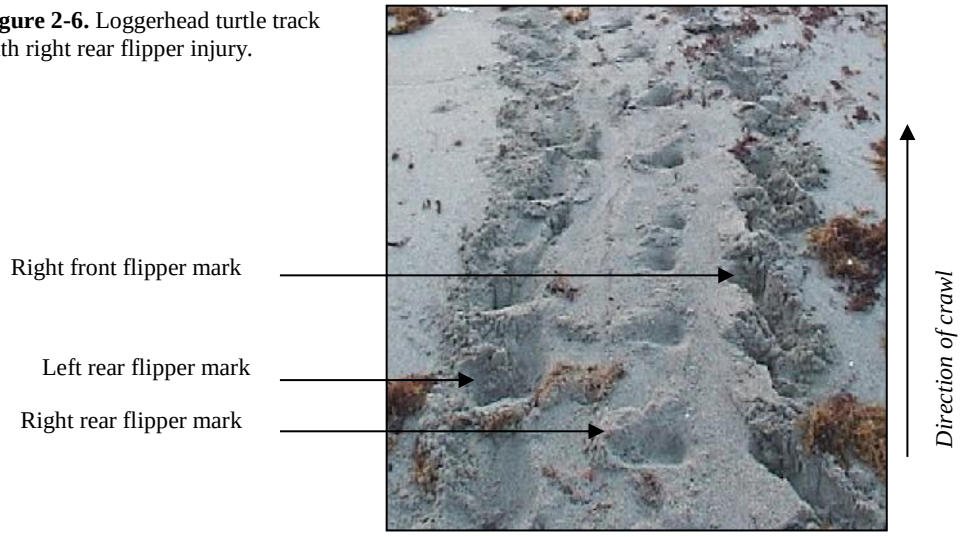
C. Figure 2-5: tracks from a sea turtle with simultaneous limb movement, a center drag mark from the tail, and track width typically ranging from 175 to 214 cm (69 to 84 inches) with a mean of 196 cm (77 inches); track path is sometimes circling or sinusoidal (S-shaped): **leatherback turtle** (*Dermochelys coriacea*).

Figure 2-5. Leatherback track



Note: Flipper injuries to turtles may alter track appearance (Figure 2-6). Characteristics of the nest (given below) should be used in conjunction with track characteristics to identify species.

Figure 2-6. Loggerhead turtle track with right rear flipper injury.



III. If the crawl is from a loggerhead, is it a nest or a non-nesting emergence? It is important to record and report both types of emergences. You only need to confirm the presence of eggs if the nest is to be screened, caged or relocated.

A. Identify emerging and returning tracks by their direction (see I. above).

B. Follow the path taken by the turtle and look for the following attributes.

1. Evidence of covering the nest with the front flippers (Figure 2-7). If present, the crawl can be considered a **NEST**.

    a. Presence of an escarpment.

b. Sand "misted" or "thrown" over the emerging track.

2. Evidence of an abandoned nesting attempt. If present, the crawl can be considered a **NON-NESTING EMERGENCE (i.e., false crawl)**.

   a. Very little or no sand disturbed other than tracks (Figure 2-8).

   b. Back stop with sand pushed back (not thrown) over emerging crawl, typically between two mounds of sand piled by the front flippers during construction of the primary body pit (Figure 2-9).

   c. Considerable amount of sand disturbed from a digging effort, but with the crawl exiting the disturbed area and continuing toward the dune before turning toward the ocean (Figure 2-10).

   d. Considerable amount of sand disturbed from a digging effort, but with a smooth-walled or abandoned/open egg chamber (15-25 cm diameter) in the center of a pit within the disturbed area.

Figure 2-7. A **loggerhead nest** site showing a secondary body pit (A) and a mound of thrown sand that is wider than the track (B).

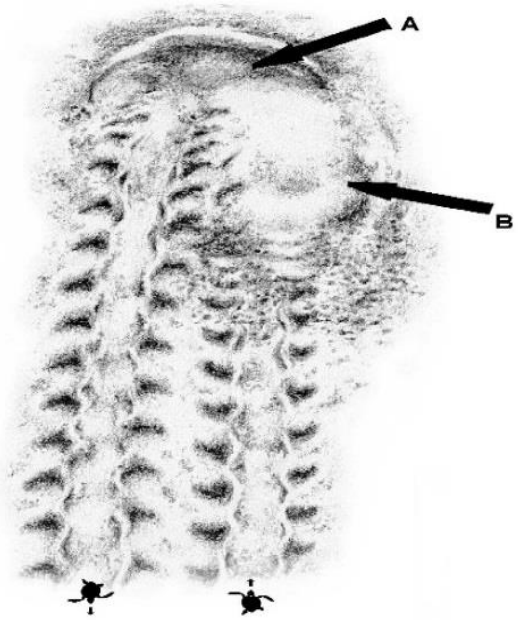


Figure 2-8. A **loggerhead false crawl** showing no evidence of disturbed sand other than the track.

Figure 2-9. A **loggerhead false crawl** showing a small abandoned primary body pit (C) and a mound of pushed sand (D) no wider than the track and lying between two conspicuous ridges.

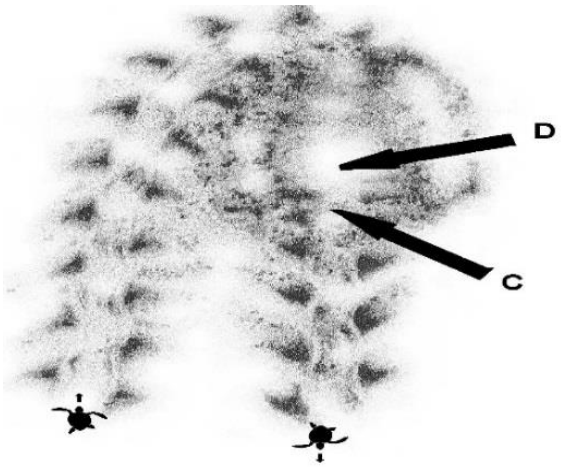
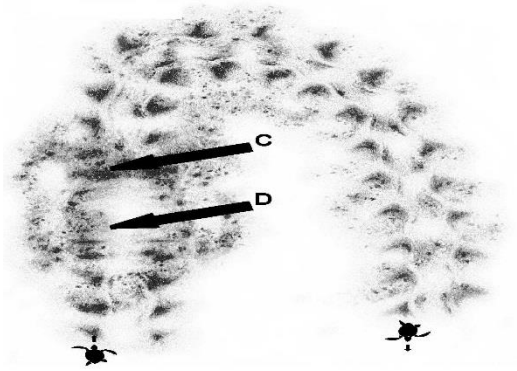


Figure 2-10. A **loggerhead false crawl** showing an abandoned primary body pit (C) and a mound of pushed sand (D) no wider than the track and lying between two conspicuous ridges. As is rarely found in nests, a track continues up the beach from the site where the turtle's last digging occurred.



IV. If the crawl is from a green turtle, is it a nest or a non-nesting emergence?

A. Identify emerging and returning tracks by their direction (see I. above).

B. Follow the path taken by the turtle and look for the following attributes.

1. Evidence of front flipper covering. If present, the crawl can be considered a **NEST**.

    a. Sand thrown into a mound covering more than 2 m of the emerging track and a deep (20-50 cm) secondary body pit with an escarpment (Figure 2-11).

2. Evidence of an abandoned nesting attempt. If present, the crawl can be considered a **NON-NESTING EMERGENCE**.

    b. Very little or no sand disturbed other than tracks (Figure 2-12).

        1b. Less sand thrown over the emerging track and a smaller body pit than described in 1a above.

Figure 2-11. A **green turtle nest** site on an open beach showing a secondary body pit (A) and a mound of thrown sand (B) that is greater than twice as long as the visible secondary body pit. Note that smaller nest mounds are expected when obstacles or vegetation impede digging.

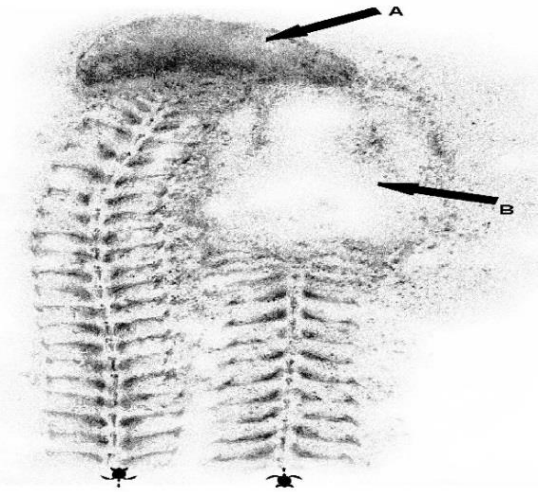
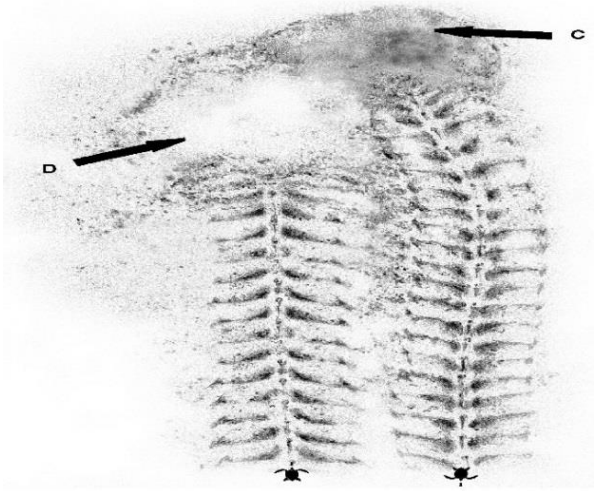


Figure 2-12. A green turtle false crawl on an open beach showing an abandoned primary body pit (C) and a mound of thrown sand (D) that is smaller than twice as long as the visible primary body pit. Note that many green turtle nests may have body pits and nest mounds that look similar to this.



V. If the crawl is from a leatherback turtle, is it a nest or a non-nesting emergence?

A. If the disturbed sand in the crawl covers a large expanse of beach (>4 square meters) with sand thrown in multiple directions, the crawl can be considered a **NEST**.

B. If the crawl is less extensive than in A, the crawl can be considered a **NON-NESTING EMERGENCE**.

RARE SEA TURTLE SPECIES

Kemp's ridley turtles (*Lepidochelys kempii*) and hawksbill turtles (*Eretmochelys imbricata*) also nest on Florida beaches although in small numbers. Fewer than 20 Kemp's ridley nests are recorded each year, but they may occur anywhere in the state. No more than five hawksbill nests have been recorded in the state in any year, and they tend to be located in southeast Florida and the Florida Keys. Surveyors need to be on the alert for crawls that appear different from loggerheads, green turtles and leatherbacks. Both Kemp's ridleys and hawksbills are relatively small sea turtles, more similar in size to the loggerhead than to green turtles or leatherbacks, and they both have alternating gaits (Figure 2-13).

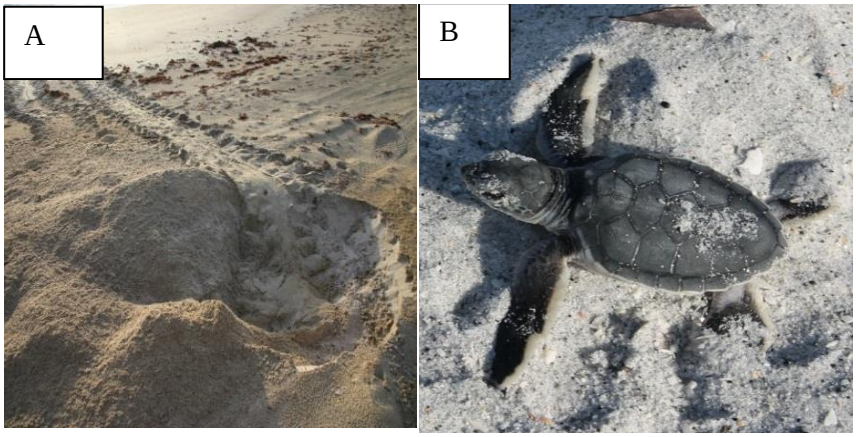
Figure 2-13. Hawksbill (left) and Kemp's ridley (right) crawls.

Kemp's ridley turtles seldom leave a conspicuous tail-drag mark, and a ridley track width ranges from 70 to 80 cm (27 to 31 inches). Kemp's ridleys usually nest in the day, and are often observed and reported by the public. If you find a turtle nesting during the daytime, be sure to look at it closely (and take pictures or video if possible) to determine its species. Kemp's ridleys also pack the sand down by rocking their bodies from side to side during nest covering (unlike the other species that use their rear flippers to "knead" sand to compact it).

Hawksbills usually leave a wavy tail drag mark near the track center, unlike the loggerhead, and this can serve as a useful sign. Hawksbill track widths typically range from 70 to 85 cm (27 to 34 inches). While green turtles and leatherbacks are more common throughout central southeast Florida, in certain areas, such as the southwest coast and the Panhandle, these two species should also be treated as rare.

In order to ensure correct identification of rare species, FWC/FWRI requires documentation for both of these species, and for the green turtle and leatherback on the west coast (Figure 2-14). The Rare Species Documentation Protocol (Appendix F-3, effective 6/16) is incorporated in Rule 68E-1.004(14)(b)5. The requirements for documentation vary by species but may include photos of crawls, nests, or hatchlings, and in some cases, hatched egg shells or tissue samples from hatchlings found dead in the nest. Rare species should be reported to FWC/FWRI immediately, so that guidance can be given on how to collect the appropriate documentation.

Figure 2-14. Examples of good documentation for nesting by rare species. A. Green turtle track and nest (documentation required on the west coast only) (photo by Cheryl Sanchez); B. Green turtle hatchling (photo by Cayo Costa State Park).



SEABIRDS, SHOREBIRDS AND BEACH MICE

Sea turtle nest surveys have the potential to impact other animals that depend on the beach ecosystem, including shorebirds, seabirds, and beach mice.

Beach-nesting Birds

Several species of shorebirds and seabirds use the beaches of the Atlantic and Gulf coasts of Florida for nesting and feeding. Habitat loss and degradation associated with coastal development have largely restricted many of these species to stretches of beach within parks and preserves. This group of birds is particularly sensitive to human disturbance since environmental conditions on beaches are already harsh and unpredictable. The nests and chicks are hard to see and can easily be run over (Figure 2-15). Adult birds and chicks often forage and roost outside of posted nesting areas and are frequently found in the wrack line. Chicks rely on their camouflage for protection and may crouch in the sand, wrack or tire ruts when approached, rather than attempt to flee.

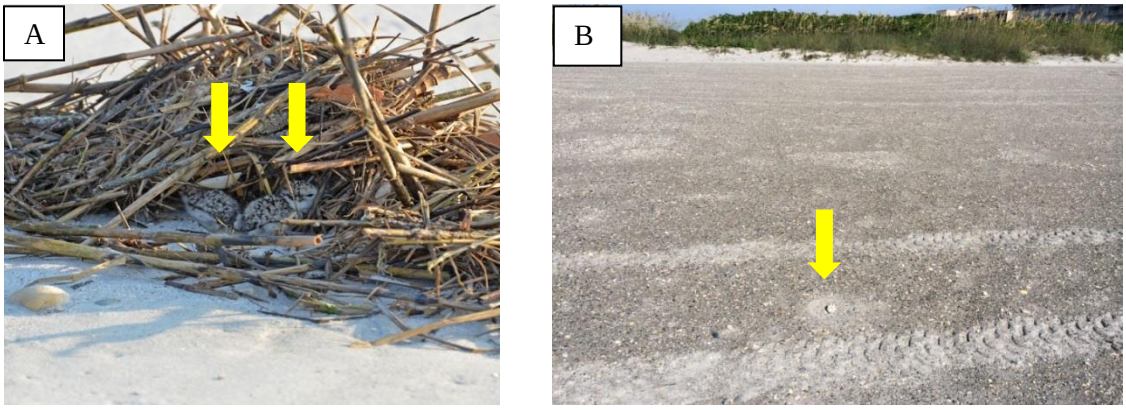
How you can help protect beach-nesting birds.

- Do not enter areas posted with shorebird/seabird signs unless authorized by FWC.
- Minimize ruts by walking or utilizing a light-weight vehicle such as ATV with low tire pressure (10 psi or less).
- Avoid driving on the upper beach, or on the wrack line.
- Drive slowly (10 mph or less) to avoid running over eggs or chicks.
- When birds are agitated, you are too close.

Additional ways to minimize impacts on beach-nesting birds are described at the Florida Shorebird Alliance website at http: //flshorebirdalliance.org/resources.aspx.

To increase communication and coordination among surveyors of sea turtles and shorebirds, FWC maintains a list of names and contact information cross-referenced by location. Please contact MTP@myfwc. com for a list of shorebird monitors in your area.

Figure 2-15. A. Two Wilson's Plover chicks shelter in beach wrack (photo by Pat Leary). B. Black Skimmer nest on open beach narrowly missed by a vehicle (photo by Margie Mitchell).



Beach Mice

Beach mice (Figure 2-16) inhabit coastal dunes in the Panhandle and along the Atlantic coast of Florida. Development of coastal areas has caused a loss of habitat for beach mice and other plants and animals that live in the dunes. Due to this loss of habitat, five of the six subspecies of beach mice found in Florida are state and federally listed as either endangered or threatened. Human activities such as walking in dunes, bringing pets into the dunes, and removing native vegetation also lead to the loss of habitat and the fragmentation of remaining habitat. More information about beach mice can be found at http: //myfwc. com/conservation/you-conserve/wildlife/beach-mice/. Sea turtle nest surveyors should observe the practices listed there to ensure their survey activities do not adversely affect beach mice.

- Avoid walking in dunes. Use crosswalks and boardwalks.
- Do not drive in dunes or on the upper beach near dunes and dune vegetation.
- Properly dispose of trash to keep predators away.

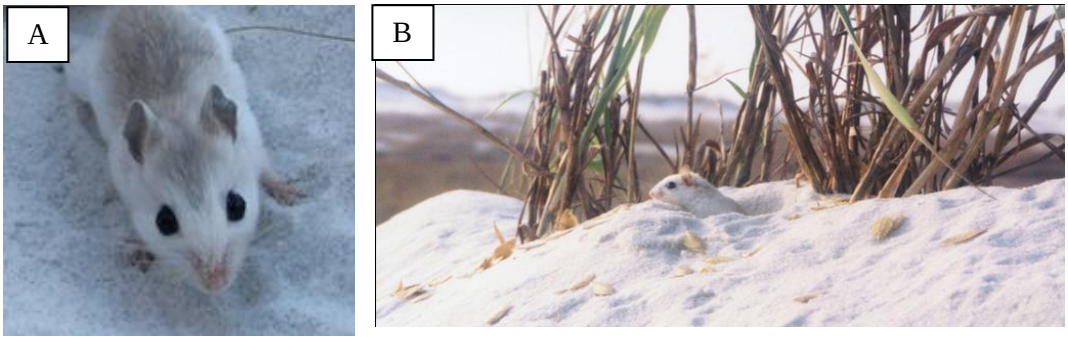


Figure 2-16. A. St. Andrew beach mouse (photo by Jeff Gore). B. Santa Rosa beach mouse (photo by USFWS).

NEST MARKING

Not every sea turtle nest needs to be marked. Marking is necessary for protection from hazardous activities being conducted on the beach or to obtain information on reproductive (hatching) success. Nest-marking methods for each of these two objectives are slightly different. Please keep in mind when driving stakes that some undiscovered and/or unmarked clutches could be present. Drive stakes with caution. It is important that conservation efforts on behalf of turtles do no harm.

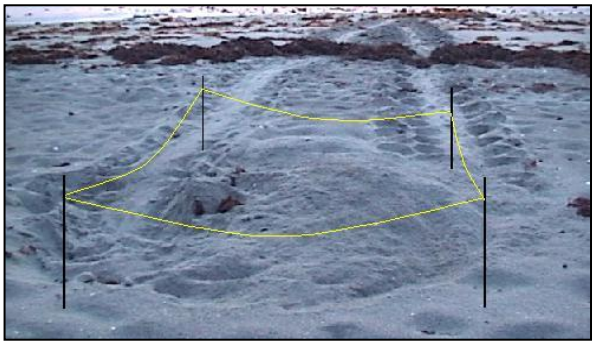
I. Marking nest sites to protect buried eggs from hazardous activities

The goal of this marking method is to clearly identify the nest area and protect it from human activities such as beach cleaning, vehicular traffic, or construction. Any construction activity that occurs on the nesting beach during nesting season, including mechanical beach cleaning, must have a valid permit from the DEP (see Section 1 for additional information on construction permitting).

First, visually inspect the site to determine whether a nest exists. Nests should not be dug into simply to verify the presence of eggs. The entire disturbed area (where digging has occurred) should be delineated with stakes (preferably four) (Figure 2-17). Construction permits generally require that the nest site be marked with a radius of at least three feet or up to ten feet, depending on the construction activity, centered at the approximate location of the clutch – nests on most beaches can be marked with a smaller area. The stakes should extend about 36" above the sand. To further identify the nest site, surveyor's ribbon can be tied from the top of one stake to another to create a perimeter around the nest site. Additionally, a nest sign can be attached to one of the stakes used to create the perimeter (Contact FWC for information on signs). A nest-identifying number should be indicated on at least one of the nest perimeter stakes. At least two additional stakes should be placed a measured distance from the clutch location at the base of the dune or seawall to ensure that the nest can be remarked if the nest perimeter stakes are lost.

Sea turtles occasionally lay their nests close to recreational equipment (chairs, kayaks, etc.). If these items interfere with the marking of a nest or somehow pose a threat to the nest, move the item slightly to the side, if possible, or ask the appropriate parties (e.g., hotel managers) for assistance. Do not place markers around or enclose an object that is adjacent to a nest.

Figure 2-17. Entire disturbed area of nest site marked.



II. **Marking nest sites to determine hatching success**

You do not have to locate the clutch to assess hatching success. Digging into a nest may alter the incubation environment so only verify the clutch-if the nest will be screened, caged, or relocated or for protection from construction activities.

Figure 2-18. Approximate location of egg chamber in a typical loggerhead nest.

Use the characteristics of the nest site, including the incoming and outgoing tracks, to predict the location of the clutch by following the tracks from the water towards the nest site. A loggerhead clutch is often located about two feet into the broad disturbed area (the nest mound) from this approach; it is generally centered between the edges of this area (Figure 2-18). To estimate the location of a green turtle clutch, measure about three feet back from the escarpment created by the final covering activities. A leatherback clutch is more difficult to locate because leatherbacks disturb a large amount of beach when nesting (>4 square meters) and sand is thrown in multiple directions. A leatherback clutch is usually located near where the track enters the disturbed area (versus elsewhere in the disturbed area).

Mark nests so that you can locate the clutch even if no hatchling emergences occur – use the method that works best for your beach. Triangulation requires measuring the exact distance from the approximate clutch location to two separate marking stakes on the dune that are aligned so that a straight line between them orients directly toward the location of the clutch (Figure 2-19). Note the distance between the approximate clutch location and the edges of the disturbed area in each of four opposite directions. Both stakes should be labeled with an identifying nest number. On beaches where removal of marking stakes by the public is a potential problem, an additional stake, driven deeply and hidden from view, should be placed a measured distance landward of the first two. As added insurance, an aluminum marker can be buried by hand approximately hand-deep and 24" from the approximate clutch location in a standardized direction on either side of the nest. This metal marker can be found later with a metal detector.

Please note that in addition to the nest-marking method described, nests being marked for hatch success evaluation may also be marked with stakes surrounding the disturbed area as described for marking nests for protection from hazardous activities (Section 1, Figure 2-17). Any on-beach markers or stakes shall be supplemental to, not replacements of, the stakes placed in the upper part of the beach (stakes A1 and B1 shown in Fig. 2-19).

The measured-distance marking stakes should be used to find the egg chamber location by extending the tape to the previously recorded distance between each stake and the clutch (measured at ground level) and making a large arc in the sand. The clutch will be found where the arcs cross in the sand. Note that this method (called triangulation) requires that the stakes be properly labeled at the start and the original measurements taken when the nest was marked be available at the time of inventory. If the clutch does not produce hatchlings, the location of the clutch will not be indicated by the conspicuous signs of hatchling emergence. Moreover, some hatchling emergence evidence may be from a different nest. To accurately determine overall hatching success, it is very important that all clutches from marked nests be found and evaluated. A nest from which hatchlings did not emerge will be more difficult to locate again, but an inability to find these nests, and their exclusion from the sample, will result in overestimating hatching success for the beach. Please make the greatest effort possible to locate all marked nests after waiting the appropriate length of time. All marking materials should be removed from the beach after the inventory and either stored off beach or properly disposed.

USE OF GPS

It is extremely useful to take GPS coordinates of the location of each nest. Depending on the level of accuracy of the GPS unit, these coordinates may help find the general nest area or the clutch itself at the time of inventory. However, even if the GPS coordinates are not sufficiently accurate for locating the clutch, they will allow mapping of the nests for various management purposes. FWC does not currently ask that these GPS coordinates be submitted along with the SNBS or INBS annual report, but recommends that the data be archived and available upon request. GPS locations are required to be submitted with the monitoring reports for construction activities and for nests that are being marked for the Nest Productivity Assessment program. Appendix F-4 gives the recommended protocol for collecting GPS data in conjunction with nest surveys. The protocol entitled Tips and Tricks for Using a GPS Unit to Record Locations (effective 6/16) is incorporated by reference in Rule 68E-1.004(14)(b)6.

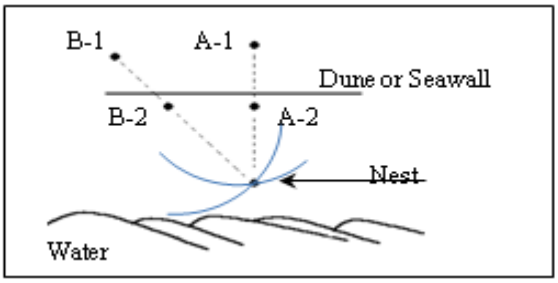


Figure 2-19. Site A stakes are directly landward of the nest in dune vegetation or at the base of a seawall. Site B stakes are in a similar position as Site A but located at an angle from the nest. Stakes A-1 and B-1 should be sunk deeply so that they are not conspicuous to someone not looking for them. Stakes A-2 and B-2 should be placed directly between the clutch and the dune stake(s).

HATCH SUCCESS EVALUATIONS (NEST INVENTORIES)

A hatch success evaluation involves the excavation and inventory of a marked nest to determine the fate of each egg. Evaluations must be conducted for all relocated and restrain-caged nests. Other nests

or a sub-sample may also be evaluated. These data provide vital information for assessing the effectiveness of recovery actions. While the total number of nests on Florida beaches is important to determine population status, it is only one piece of the puzzle. An equally important piece is estimating how many hatchlings emerge annually (i.e., egg-to-hatchling survivorship). Because sea turtle eggs are subjected to a variety of incubation environments, including many that are affected by human activities, we encourage you to conduct inventories for nest productivity on a representative sample of the nests in your survey area each year.

There are three options for conducting and reporting hatch success evaluations.

Option 1 is simply to conduct nest inventories for your **relocated** or **restrain-caged nests**; this is mandatory for these two types of nest treatments. You will be required to provide data on all the nests you inventory.

Option 2 is to conduct voluntary inventories for other research/management-related purposes. An important one is measuring seasonal productivity (the proportion of eggs producing hatchlings that leave the nest) in a way that would allow comparisons among beaches and among years as part of the Nest Productivity Assessment (NPA) program. To measure seasonal productivity, you must mark a representative sample of nests and monitor these nests throughout the season. If you have fewer than 130 nests of any species, mark and inventory them all. If you have more, marking 130 nests by species following a sampling strategy developed in consultation with FWRI would provide a statistically valid subsample to represent your beach. If you have more than 130 nests of any species and you are not able to follow a FWRI-recommended strategy, you will still need to provide data on all the nests you inventory. However, your data might not be used for measuring seasonal productivity. To review the NPA protocol, see Appendix F-5. Although NPA protocol previously called for locating the clutch by gentle probing with the fingers, we are discontinuing this recommendation to minimize human effects on the nest.

Note: The spreadsheet for reporting data (Nest Productivity Assessment Spreadsheet) can be used for both Options 1 and 2 and will be sent out by FWC/FWRI to the permit holder at the beginning of the nesting season. The Nest Productivity Assessment Spreadsheet (FWC Form NPA-1, effective 6/16) and Protocol (Appendix F-5) are incorporated by reference in Rule 68E-1.004(14)(b)7. and 8.

Option 3 Nest inventories conducted as part of beach construction projects must be reported on the monitoring spreadsheet, which can be downloaded at: http: //myfwc. com/wildlifehabitats/managed/ sea-turtles/beach-activities/.

Note: See below regarding required methodology of selecting nests for inventory, nest monitoring, and nest inventory for Options 2 and 3.

Selecting Nests to Mark for Inventory (Option 2 and 3)

To properly represent the beach, nests in a marked sample must be chosen in such a way as to eliminate seasonal, spatial, and observer bias. A sample of nests that is not properly representative can over- or under-represent certain zones on the beach or certain portions of the season. For example, a sampling strategy whereby a set number of nests are marked each day will always under-represent

the middle of the nesting season. A sample of nests that is poorly representative, no matter how numerous, will yield potentially misleading information about nest productivity.

To achieve a valid sample, nearly every nest chosen must be monitored and inventoried. Because the most difficult-to-find nests often have the poorest hatching success, omitting these nests from sampling results in a greater nest productivity estimate than actually occurs. Before giving up on finding a sample nest, one should feel confident that they know the fate of the nest and that failure to find it is due to its destruction (e.g., from erosion) and not due to imperfections in nest-marking techniques (e.g., stakes washing away from a surviving nest).

The best way to select a representative sample of nests is to decide in advance which nests to mark and sample in time and space. If all nests on the beach can be marked and inventoried, then this selection is simple; mark and inventory all nests (but be sure not to overestimate how many nests can be sampled; marking nests is easy, inventorying them is difficult). However, if only part of the nests on a beach can be sampled, then every n^{th} nest should be marked as a sample nest. With this technique, "n" is a number that sets a pace for nest marking that results in a sample size that is adequate, but not too large to handle. Here are some examples of how to use this technique:

If you are participating in the NPA program, you should try to mark, monitor and inventory at least 130 nests for each species (based on the results of a power analysis). If you have fewer than 130 nests on your beach, you should mark them all. On beach A, surveyors feel they can mark, monitor, and inventory the 130 nests by species needed for NPA. In an average season, this beach gets about 2600 loggerhead nests. Here, marking every 20^{th} loggerhead nest will reach the goal if the season is average. Note that the 20^{th} nest is independent of the date of the season. For example, if on the first day of the season there are 19 nests, the first marked sample nest will be the first nest encountered (nest number 20) on the second day of the season. The second sample nest will be the 40^{th} nest; the third will be the 60^{th} ….etc.

Using a subtle modification to the above technique, some surveyors may wish to mark sample nests only one day per week. This is fine. To adjust the sampling protocol, divide your "n" by seven to determine what nests to mark on the one day per week when nest-marking is done. For example, if your calculations are that every 35^{th} nest at your beach needs to be marked in order to keep a pace that would result in 130 nests marked, then every 5^{th} nest marked one day-per-week would keep the same pace and give an adequate sampling of nests. This math gets only slightly more difficult if the "n" for the beach is not divisible by seven. For instance, if 3250 nests are expected, and 130 sample nests are needed (which gives a daily pace of marking every 25^{th} nest), then the pace for marking nests one day-per-week would be 25 divided by 7, or every 3.6^{th} nest. Of course, there are no fractional nests. In this case one can approximate a pace to achieve 130 nests by choosing two alternating n's that bracket the number calculated. In this case, three and four bracket 3.6, and a proper pace would be to mark the 3^{rd}, then 7^{th}, then 10^{th}, then 14^{th} nests…etc. FWC/FWRI staff can help with any questions on proper sampling of nests for hatching success.

Nest Monitoring for all Options

Marked nests should be monitored on a regular basis, preferably each morning during the incubation period and at least every other day. Predation to the nest, type of predator (e.g., raccoon, bird, ghost crab, dog, feral pig, fox, fire ants) and other significant events (e.g., the nest was washed over by tide

or by a major storm, the nest was vandalized or poached, eggs were scattered by another turtle) should be noted whenever possible. If a nest is partially or completely depredated or washed out, do not select another nest as a replacement. These nests are a very important part of your sample to accurately determine overall nest productivity. When a nest marked for evaluation is partially depredated, remove and count the depredated eggs. Cover the egg chamber with moist sand, and return the site to its original pre-depredation condition. Record the nest as partially depredated and record the number of eggs that were depredated in the comment section of the Nest Productivity Assessment Spreadsheet. Then, at the appropriate time, inventory the remainder of the nest. It is important to give marked sample nests the same treatment as other nests. Do not relocate, screen, or cage a nest just because it is a sample nest. During sample-nest monitoring, treat sample nests like other nests, that is, "clean up" depredated sample nests only if this practice is carried out for all other nests.

Nest Inventory for all Options

A nest inventory is the evaluation of the contents of a nest. It does not include live or dead hatchlings on top of the sand. To conduct a nest inventory, begin by excavating the nest. Carefully dig down into the nest chamber with your hands until you reach eggs or eggshells. Do not use shovels, probes or other tools. If you encounter live hatchlings before reaching any eggs or eggshells, the hatchlings have probably not finished emerging and the inventory should be discontinued. Quickly and gently cover the egg chamber with moist sand and return the site to its original condition. Wait at least 24 hours before excavating again.

Carefully remove the contents of the nest and place them in a pile on the sand or in a tray for easier sorting (Figure 2-20). If you find a few (< 10) live hatchlings at the bottom of the nest or within the nest, gently remove them from the nest and follow the instructions provided in the "Hatchling Recovery and Release" Section. Separate the contents into the following categories: hatched eggs (empty eggshells), live hatchlings, dead hatchlings, pipped eggs with live hatchlings, pipped eggs with dead hatchlings, whole unhatched eggs, and damaged eggs (Figure 2-21). In pipped eggs, the turtle has broken through the egg but the hatchling is not completely free of its eggshell. Pipped eggs range from those with just a small hole to those with large tears.

Determine the number of hatched eggs. Hatched eggshells represent hatchlings that emerged from the nest unaided plus live and dead hatchlings found in the nest. Count each eggshell that is more than 50% complete as one hatched egg and disregard the smaller pieces. Be sure that all the eggshells are completely separated from each other. Record the number of empty eggshells, the number of live hatchlings, and the number of dead hatchlings separately (Table 2-2).

Figure 2-20. Excavation of a post-emergent nest.

Figure 2-21. Some categories of the contents of a nest.


Hatched eggs


Whole unhatched eggs


Pipped egg with live hatchling


Unhatched egg damaged by a ghost crab


Eggs damaged by a raccoon

Table 2-2. Contents of a Post-Emergent Nest			
Hatched eggs		=	**98**
Live in nest	=	3	
Dead in nest	=	1	
Live pipped		=	**0**
Dead pipped		=	**1**
Unhatched eggs		=	**5**
No discernable embryo	=	3	
Partially developed embryo	=	1	
Fully developed embryo	=	1	
TOTAL # EGGS		=	**104**

Total # of Emerged Hatchlings (unaided) = # Empty eggshells – (Live + Dead hatchlings in nest)

Next, determine the number of unhatched eggs. Separately record the number of pipped eggs with live hatchlings, the number of pipped eggs with dead hatchlings, the number of whole unhatched eggs, and the number of damaged eggs. Finally, determine the number of eggs originally present in the nest by adding together the hatched eggs and the unhatched eggs. After completing the nest inventory, the nest contents can be reburied within the original egg chamber.

This information is used to calculate two important parameters: Hatching Success (%) and Emergence Success (%).

$$\text{Hatching Success (\%)} = \frac{\#\text{Empty Shells}}{\#\text{Hatched Eggs} + \#\text{Unhatched Eggs}} \times 100$$

$$\text{Emergence Success (\%)} = \frac{\#\text{Empty Shells} - (\text{Live} + \text{Dead hatchlings})}{\#\text{Hatched Eggs} + \#\text{Unhatched Eggs}} \times 100$$

Hatching and Emergence Success based on Table 2-1.

$$\text{Hatching Success (\%)} = \frac{98}{103} \times 100 = 95.1\%$$

$$\text{Emergence Success (\%)} = \frac{94}{103} \times 100 = 91.3\%$$

A nest inventory may only be conducted either 72 hours after the first sign of emergence or 70 days after the eggs were deposited (80 days for leatherbacks), whichever occurs first. Digging into a nest before all the hatchlings have emerged may adversely affect them by disrupting the incubation environment and prompting hatchlings to emerge that may not be completely ready, e.g., yolk sac not yet completely absorbed. Because cooler temperatures sometimes delay hatching and emergence, a nest that has been subjected to inundation, excessive rainfall, shading, or cool fronts should not be excavated until 80 days after egg deposition or 96 hours after the first emergence. It is important to allow all hatchlings to emerge naturally before excavating the nest. (Incubation duration data for leatherback nests were provided by Erik Martin and Niki Desjardin, Ecological Associates Incorporated).

If the first emergence of a nest has occurred (more than 3 hatchling tracks) and the hatchling tracks indicate a clear sign of misorientation or disorientation associated with specific lights, you should notify local code enforcement so that they may contact the property owner responsible for the offending light(s), explain the situation, and ask them to modify or otherwise address the light(s). In the event that there is not a local lighting ordinance, you may attempt to contact the property owner responsible for the offending light(s), explain the situation, and ask them to modify or otherwise address the light(s). Nests may not be inventoried early because of observed disorientation events.

Summary

- Nest evaluation data must be submitted for all nests inventoried in accordance with the specific program, including relocated nests, the Nest Productivity Assessment program, or construction monitoring.

- To obtain an accurate estimate of hatchling productivity on your beach, a sampling plan based on the total number of nests expected must be devised before the nesting season so that the number of nests marked and evaluated for each species will represent nest productivity accurately over the entire nesting season and nesting beach. Once a sampling plan is initiated, it should be followed throughout the nesting season. FWC/FWRI marine turtle program staff

will assist you in developing the best approach for your particular survey area. If you are not able to follow a FWRI-recommended sampling strategy, you will still need to provide data on all the nests you inventory.

- A nest inventory may only be conducted 72 hours after the first sign of emergence or 70 days after the eggs were deposited (80 days for leatherbacks) whichever comes first. If you believe you need to excavate a nest prior to this, please contact FWC/ISM (561-882-5975 during normal business hours) for guidance. Nests may not be inventoried early because of observed disorientation events.

- When a nest marked for evaluation is completely depredated or washed out (all the eggs are destroyed), record this (no further evaluation is necessary). This nest is a very important part of your sample to accurately determine overall hatching success. Do not select another nest as a replacement. When a nest marked for evaluation is partially depredated, remove and count the depredated eggs and bury them far away from the nest. Cover the egg chamber with moist sand, and return the site to its original condition. Record the nest as partially depredated and record the number of eggs that were depredated on the comment section of the Nest Productivity Spreadsheet. Then, at the appropriate time, inventory the remainder of the nest. Do not select another nest as a replacement as this is a very important part of your sample to accurately determine overall hatching success.

- If you encounter live hatchlings before reaching any eggs or eggshells, the hatchlings have probably not finished emerging. Quickly and gently cover the egg chamber with moist sand and return the site to its original condition. Wait at least 24 hours before excavating again.

- While pulling out the contents of the nest, if you find a few (< 10) live hatchlings, gently remove them from the nest and follow the instructions provided in the "Hatchling Recovery and Release" section of this chapter. If this happens often, wait two or three days longer on other nests before conducting the inventory. Pipped eggs with live hatchlings or live hatchlings that have prominent yolk sacs should be carefully removed from the clutch and held on moist sand (not in water) until ready for release. Pipped eggs or hatchlings that are held on moist sand must be kept in a darkened, quiet, temperature-controlled area. When ready, these hatchlings are to be released on the beach at night and allowed to crawl to the water. See the following section for more information on the recovery and release of live hatchlings ("Hatchling Recovery and Release").

LATE SEASON NESTS

The increasing importance of Florida as a green turtle rookery within the western Atlantic (FWC INBS database) raises the question of how *late season nests* should be treated. We define *late season nests* as nests that are laid after August 31st and that may be still incubating past October 31st (the end of the official sea turtle nesting season). An increasing number of green turtle nests fit this definition of *late season nests*: on average 10% of green turtle nests statewide (FWC SNBS database, 2007-2015) and up to 18% (average 11%) of green turtle nests laid in the Brevard county portion of the

Archie Carr National Wildlife Refuge (unpublished data, UCF Marine Turtle Research Group, 2010-2014) were laid after August 31st.

- A *late season nest* should be left *in situ* unless FWC has authorized you to **relocate nests** for beach restoration or sand placement activities starting in November.

- Late season nests may still be incubating in the beach when certain regulated activities (e.g., beach cleaning, special events) occur after October 31st. These nests should be clearly marked by at least four stakes and surveyor's ribbon in a circle with a radius of ten (10) feet centered at the approximate location of the clutch. The stakes should extend about 36" above the sand. Additionally, a nest sign can be attached to one of the stakes used to create the perimeter (contact FWC for information on signs). A nest-identifying number should be indicated on at least one of the nest perimeter stakes. At least two additional stakes should be placed a measured distance from the clutch location at the base of the dune or seawall to ensure that the nest can be remarked if the nest perimeter stakes are lost.

- If a late season nest is marked and no construction occurs on the beach, an inventory is not required but is encouraged, whenever possible. All relocated nests must be excavated and nest inventory data reported to FWC (see "Nest Relocation" in this Section and associated requirements).

- If a nest is laid in September, a nest inventory should be initiated either 72 hours after the first sign of emergence or 70 days after the eggs were deposited, whichever occurs first. However, if the nest has been subjected to inundation, excessive rainfall, shading, or cool fronts, it should not be checked until 80 days after egg deposition or 96 hours after the first emergence because cooler temperatures may delay hatching and emergence. (Incubation duration data for nests laid in September were provided by Erik Martin and Niki Desjardin, Ecological Associates Incorporated).

- To date, few data are available on incubation duration and hatching success of *late season nests* and, in particular, for nests laid in October that may over-winter. FWC recommends using the precautionary principle and to avoid digging into over-wintering nests until sufficient data are gathered to assess the potential impacts for disturbing these nests. If you plan on inventorying nests deposited in October, contact FWC/ISM at MTP @myfwc. com for consultation on how to proceed.

- If temperatures at the expected time of hatching (air ≤60ºF, water ≤65ºF) will be low and you are concerned that hatchlings may become "cold stunned", contact FWC/ISM at MTP @myfwc. com for guidance.

Reporting Requirements

The permit holder is required by Florida Administrative Code Rule to submit marine turtle nesting summary reports to FWC/FWRI following each nesting season. Summary forms for data reporting will be transmitted annually to the qualified individual identified for nesting-related activities on the permit; the permit officer or principal officer will be copied on all transmittals.

The FWC Florida Fish and Wildlife Research Institute Statewide Nesting Beach Survey Form (FWC Form SNBS-1, effective 6/16) and the FWC Florida Fish and Wildlife Institute Index Nesting Beach Form (FWC Form A-1, effective 6/16) are incorporated in Rule 68E-1.004(4)(g). However, FWC staff will send pre-filled nesting forms to each permit holder each year. Qualified individuals who are authorized to conduct hatch success evaluation are required to provide data on all the nests evaluated and will receive the Nest Productivity Assessment spreadsheet from FWC/FWRI. Monitoring for construction projects must be submitted to FWC/ISM at marineturtle @myfwc. com and utilize the appropriate construction monitoring spreadsheet.

HATCHLING RECOVERY AND RELEASE DURING HATCH SUCCESS EVALUATIONS

This activity includes recovering small numbers (<10) of live hatchlings found at the bottom of excavated nests (i.e., stragglers). Hatchling recovery and release does not authorize permit holders, qualified individuals, or authorized personnel to conduct public hatchling releases. See Section 7 in the Handbook for information on conducting public hatchling releases.

Due to the short duration of the hatchling frenzy period, hatchlings should be released as soon as possible following recovery. All healthy active hatchlings found during darkness are to be released immediately. Small numbers of hatchlings (<10), active and with yolk-sac absorbed, that are found at the bottom of nests during daylight excavation may also be released on the beach immediately (but ideally no later than 9 am). Otherwise, recovered hatchlings must be released that night, weather permitting.

FWC provides some guidelines but the qualified individual will often have to decide on a case-by-case basis whether to release hatchlings immediately or that night. If you excavate a nest after 9 am and find fewer than 10 hatchlings at the bottom of the nest, we foresee two options.

1. Place the hatchlings in temporary container with a small amount (one inch) of moist sand and keep them in a cool, dark place free from disturbance and release them that night.
2. If you will be on the beach for more than 1 hour following excavation, release the recovered hatchlings immediately (even if it is after 9 am).

Hatchlings collected from excavated nests should never be held in water. Small Styrofoam or plastic coolers lined with damp sand work well as temporary holding containers. The lid of the cooler should be placed loosely over the top to provide a near-dark environment. Once placed in a holding container, hatchlings should not be handled or disturbed until they are ready for release. Holding containers should be left in a dark and quiet room until time of hatchling release. Activity causes increased expenditure of limited energy stores.

When choosing a release location, select a location that is as close to the original nest site as possible. It is also important to evaluate the lighting conditions at the potential release location. Any release location should be a relatively dark beach without light sources directly visible from the beach and where disorientation events are not regularly documented.

At the time of release, hatchlings should be placed on the beach at a distance from the waterline that is roughly equivalent to the original nest site and allowed to crawl to the water on their own. Lorne and Salmon (2007) suggest a distance of 13 m (~43 feet) from the surf zone for loggerhead turtles on Florida East coast if possible. Flashlights or other artificial lights may not be utilized during hatchling releases. This applies to any members of the public observing the release of hatchlings, as well as all permitted personnel involved in the release. Arranging for the public to observe a hatchling release (Public Hatchling Release) requires approval as an authorized activity (see Section 7). A quick check of the release area with a small flashlight fitted with a red LED light source or red filter that eliminates short wavelength light a short time after release will insure that all hatchlings have reached the water. Occasionally, individual hatchlings may need assistance in reaching the water. In such cases, they

may be moved closer to the water or placed in the shallows and allowed to swim off on their own. Trenching a path or creating runways for the hatchlings to follow is not encouraged; these and other techniques which influence hatchling behavior must be specifically reviewed and authorized on your permit. Individuals conducting the hatchling release should conduct a brief search of the surf zone and shallow water adjacent to the beach 10-15 minutes following the release to ensure that all hatchlings have swam away. Any hatchlings that have not successfully departed the surf zone or nearshore waters should be retrieved and transported to the local rehabilitation facility.

In some cases, weak hatchlings may need to be held for slightly longer periods (1-2 days) to allow them to recover. However, holding hatchlings overnight should not be a routine event. Locations where hatchlings will be held overnight should be approved by FWC: requests shall be submitted in writing to MTP@myfwc. com. To be approved, the location must be secure and have a dark, quiet area that is protected from extremes of heat or cold. If hatchlings require further holding, contact FWC to arrange for their transfer to an authorized rehabilitation facility.

PREDATOR CONTROL

Many native and introduced animals prey on incubating sea turtle eggs and hatchlings. Common predators in Florida include raccoons, armadillos, coyotes, foxes, ghost crabs, feral hogs, dogs, cats, birds, and fire ants. Depredation is a part of the natural system and, to a certain extent, is compensated by the high reproductive output of sea turtles. However, predators will sometimes become so proficient at finding and destroying nests that they may threaten all the nests on a beach. Resource managers sometimes control predators such as raccoons by trapping and removing nuisance animals from the beach. Trapping animals can be controversial with the public and may not be an option for many permit holders. Animal depredation can increase where human debris has accumulated on the beach. To avoid attracting increased numbers of predators to the beach where nests are incubating, trash should be removed.

Protecting Nests From Mammalian Predators

Although raccoons are the most common predators of sea turtle nests in Florida, armadillos, coyotes, domestic dogs, foxes, and feral hogs may also destroy nests in some regions. They generally target nests either within the first few days after egg deposition or as the embryos pip out of their shells releasing odors (attractive to predators) as the fluids within the shell spill out. When depredation becomes a serious problem (as an approximate guide, when greater than 10% of nests are affected), measures should be implemented to protect nests. The easiest method for controlling mammalian predation without killing the predators is to place a self-releasing screen or cage over threatened nests. Protocols for nest screening and caging are described in this Section. Experimental methods for deterring predators may have unintended consequences; any methods other than those specifically included in this Handbook require review and approval by FWC prior to implementation. Methods that should not be implemented for predator control without specific authorization include, but are not limited to: flags; reflective/noise-making tape or devices; strobes; placement of human/coyote/mountain lion urine, habanero pepper powder, or any other chemical or material on the nest; or human patrols/presence on the beach. Note that any method that is applied to a nest – even those used to protect nests from predation - requires prior approval and must be listed on your permit. Requests shall be submitted in writing to MTP@myfwc. com. To be approved, methods to control mammalian predators that are not outlined in this Section must be designed to minimize: entrapment

of hatchlings; interference with nesting females; alteration of the microclimate of the nest; exposure to sunlight; and public safety risk.

Protecting Nests From Fire Ants

Sea turtle nests may be invaded by fire ants during incubation, hatching, or emergence. Both imported and native fire ants of the genus *Solenopsis* have been identified as predators of sea turtle nests. Fire ants are one of the few species that maintain "absolute territories", meaning that they patrol and will recruit (come in large numbers) to any and all obvious food sources within their territory at any time of day and throughout the vast majority of the year. Fire ants also forage above and below-ground. Thus, turtle nests within the foraging range of one or more colonies may be subject to predation. Fire ants can forage more than 50 meters (164 feet) from their mound. Nests deposited closer to irrigated areas, areas of frequent foot traffic, or near developed sites such as garbage bins or near the margins of parking lots are most likely to become invaded by fire ants, although any area with little or no shading can potentially contain fire ant nests.

Even though fire ants can prey on marine turtle nests, on average, less than 1% (unpublished data, FWC SNBS database) of the nests are affected. Fire ants represent an important source of mortality on only a few beaches within the State (unpublished data, FWC SNBS database). It is important not to over-react to a potential or ongoing problem with ants. Some steps taken to protect nests from ants may be unnecessary and may do more harm than good. There are many native ant species that may look like the harmful fire ants but that do not cause problems for turtle nests. The presence of these ants may help to exclude the harmful fire ants. There are resources available that list ant species including online guides such as AntWeb (http://www.antweb.org), the University of Florida Insect Identification Lab, and university labs that work on ant ecology in Florida. Identifying the ants attacking nests is the first step in making good decisions about whether or not to attempt management.

To date, there has been little research on the interaction between fire ants and sea turtle nests and on the effects of fire ant control methods on incubating eggs and hatchlings. If a clutch is deposited near an active fire ant mound (less than 10 meters (33 feet) from it) or if fire ants begin to forage near a nest, and fire ants have killed hatchlings from nearby nests, the mound should be killed with hot water or physically removed using a shovel and buckets, but only if the fire ant nest is not in the immediate vicinity (< 1.5 m or <5 feet) of turtle nests where digging or hot water application could damage eggs or disturb the nest chamber. Fire ant nest removal is best accomplished by digging the circular area around the margins of the mound and straight down into the area of the mound to a depth of up to 1 m. Below ground, the nest architecture of a fire ant nest is typically approximately "carrot shaped" - widest at the surface and extending immediately below the mound but narrowing as it goes deeper in the soil. The soil can be placed in buckets and dumped far inland, on a paved road or well offshore. Workers may be advised to wear shoes and socks and rubber gloves to reduce the likelihood of being stung during excavation. Permits from the Department of Environmental Protection may be needed if native dune vegetation is damaged or removed during fire ant removal efforts.

Alternatively, fire ant nests can be killed very effectively using large volumes of hot water (a medium-sized fire ant nest typically requires the application of ~ 57 liters or 15 gallons of near-boiling water). However, the application of hot water requires appropriate training and must only be carried out on fire ant nests that are far enough from turtle nests to assure that the hot water does not reach eggs. Insufficient volume of water or application of water below 82°C (180° F) will likely not kill the fire

ant nest. For additional information on this method and prior to implementing this technique, you must contact FWC.

Even though toxic baits and mound treatments (contact insecticides) are an effective method to control ants, their potential for non-target effects, including on sea turtle hatchlings, have not been fully assessed, and their potential risk must be weighed against evidence that fire ants are causing significant harm. Thus, FWC recommends to use the precautionary principle and to avoid the application of fire ant baits until potential negative effects on hatchlings are investigated. If you have a serious problem with fire ants that cannot be addressed by physical removal of the ant mound, contact FWC at MTP@myfwc. com for advice and approval of the potential use of insecticides.

If many fire ants are seen entering a nest that is hatching or emerging (as indicated by hatchling tracks or a depression on the sand), and only if fire ants have killed hatchlings from nearby nests, the nest may be excavated. Do not use a tool to dig. Use disposable gloves, rubber gloves or the leg of panty hose or a similarly thin material to protect hands and arms during excavation. Follow the protocols outlined above for hatching success evaluations, including recommended handling of pipped eggs with live hatchlings and/or live hatchlings in nest. An early nest inventory should be done only because of a severe, well-documented problem. By excavating a nest early, the hatching and emergence process is disrupted, and this may lead to diminished hatching success. Actions taken to control fire ants are to be reported on the annual nesting summary forms.

NEST SCREENING/CAGING – SELF-RELEASING

Summary

This section is specifically intended for those persons whose permit authorizes them to **protect nests with self-releasing screen/cage**. These personnel are also authorized to:

- **mark nests.**

Additional authorization and specific approval are required to conduct the following or any other activities in conjunction with the use of self-releasing screens/cages. These activities must be specifically mentioned in the application and listed on the permit.

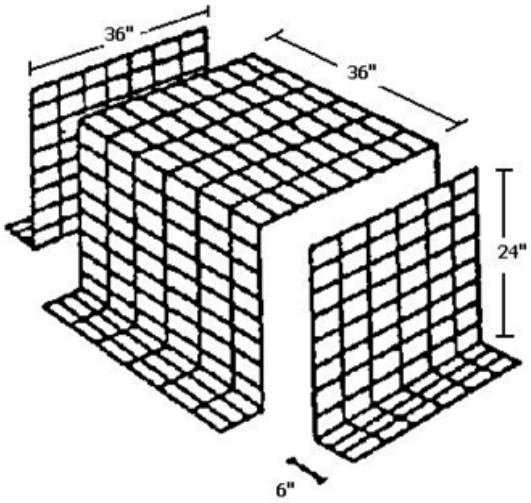
- **conduct nesting surveys**
- **relocate nests**
- **outfit nests with restraining cage**
- **conduct hatch success evaluations**
- **use any screening material with a mesh size that is smaller than 2" x 4"**

Activity Description

When a nest is at high risk of predation (by raccoons, foxes, feral hogs, coyotes, etc.), the eggs and pre-emergent hatchlings may be protected by placing a self-releasing screen or cage over the nest. Screens used for this purpose are typically 4' x 4' pieces of 2" x 4" mesh -welded wire (do not use a smaller mesh size as it is likely to trap emerging hatchlings). This size is large enough to keep mammalian predators out while allowing hatchlings to escape from the nest unaided. Appropriate cages are described below. The screen or cage must be centered exactly over the egg chamber to make it less likely for mammalian predators to burrow to the eggs from the side, and to ensure that any anchoring stakes will not contact the egg chamber.

While the exact construction of cages may vary (see example of a self-releasing cage in Figure 2-22), the 2" x 4" mesh of all self-releasing cages must be oriented so that the 4" opening is parallel to the surface of the sand. If self-releasing cages are not constructed of a material with a mesh size that is 2" x 4" or greater, then the cage must have an opening on the seaward face that allows hatchlings to escape. The bottom edge of the opening should not extend above the sand's surface, the top edge of the opening should be at least 2" above the sand's surface, and the opening should extend along the entire seaward side of the cage.

Figure 2-22. Example of a self-releasing cage. The cage is constructed of 2" x 4" welded utility wire. Hatchlings are able to escape through the mesh of the wire. Cage design courtesy of The Conservancy of Southwest Florida.



To predict the location of the egg chamber within the body pit, refer to the protocols outlined in the "NEST MARKING" section of this chapter. Find the precise location of the clutch by carefully digging shallow, finger-probing holes in the softer sand over the clutch to verify the eggs. Never use shovels or any other tools for either digging or probing. For any nest that will be screened or caged, the location of the egg chamber should be verified only once during incubation - the morning following deposition. Temporarily mark the location of the egg chamber by carefully placing a marker (must be thin enough to pass through the mesh of the screen or cage) a very short distance into the sand above the egg chamber. Be sure that this marker is not inserted into the egg chamber. Replace the dry sand over this area to the depth present before you began excavation. Your temporary marker should be tall enough to extend above the sand level and easily removed following installation of the screen or cage.

To install a self-releasing screen, level the surface of the sand (2'x4' or 4'x4') centered on your temporary marker. If the screen is to be buried, remove 2" of surface sand from the square. Place the screen on the smoothed sand. Remove the temporary marker. Using hooked stakes, secure the four corners of the screen. Use tent stakes or make your own stakes of rebar or some other durable material. Even though the corners of the screen should be well away from the egg chamber, do not drive the stakes at an angle in the direction of the egg chamber. If the screen was placed 2" below the normal sand surface, place the removed sand back on top of the screen after anchoring so that the egg chamber is at its original depth. In some areas, predators are very persistent and may dislodge screens with only four stakes. In this case, use eight stakes and place the four additional stakes midway between the corners. If stakes are easily dislodged, longer stakes may be used.

Most cages are anchored by burying the outward pointing flanges (Figure 2-22) about one foot under the sand's surface. To install a self-releasing cage, center the cage over the egg chamber and trace the

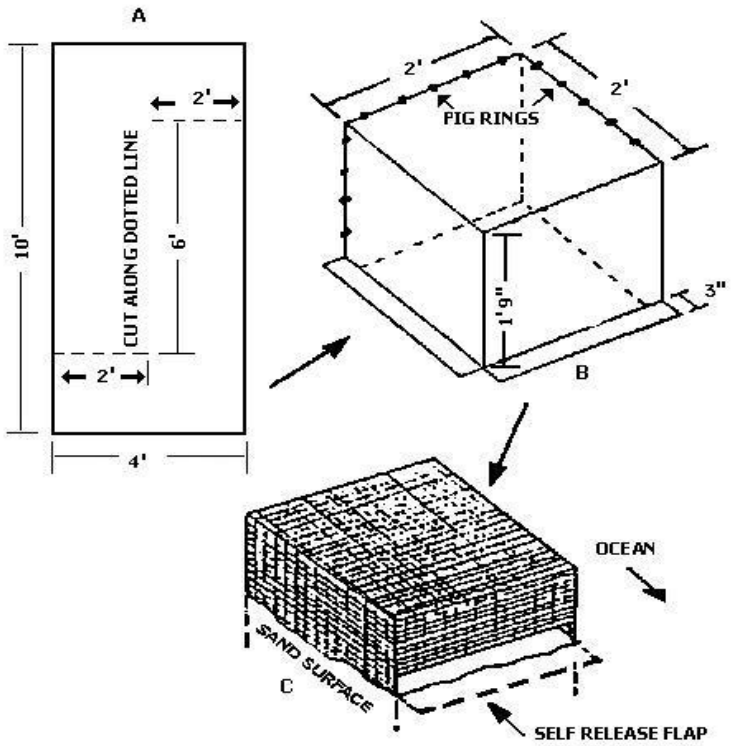
edges of the cage in the sand. The cage should be oriented so that the opposing sides of the cage are either parallel or perpendicular to the shoreline. Remove the cage and the temporary egg chamber marker and carefully dig a one foot deep trench along the tracing of the edges of the cage. Place the cage into the trench and fill the trench with sand. When completed, the sand around the cage and over the egg chamber should be at the original level. If stakes are used to secure a cage, drive the stakes at an angle away from the egg chamber.

Depending on the local situation, you may or may not want to mark screened/caged nests. In some situations, if screened/caged nests are not marked with an appropriate sign, a beach user is likely to discover the screen, think that it should not be on the beach, and pull it up. Marking screened/caged nests may also be necessary to prevent people from inadvertently injuring themselves on the screen or cage or on any stakes. Language for signs to mark screened/caged nests is available from FWC. In other situations, marking nests may attract unwanted attention while providing no benefits.

Because stakes, screens and cages may become partially or completely dislodged, they should be checked regularly. During the period of anticipated hatching, screens and cages should be checked each morning just in case hatchlings become trapped by them. Please remove all screens and cages from the beach after hatchling emergence is complete.

There is a concern that metal screens or cages could interfere with magnetic fields surrounding the nest (Irwin et al. 2004). Disruption of existing magnetic fields, if it occurs, could affect the hatchlings' subsequent magnetic orientation and navigation. FWC agrees it would be ideal to use magnetically inert material but currently there is no alternative material or screen design that effectively prevents predator access to the nests. FWC encourages further research on the topic and the development of new designs and materials that will address this concern.

Figure 2-23. Example of a cage that can be either self-releasing or restraining. The cage is constructed of 1/2" galvanized hardware cloth. It becomes self-releasing if a 3" flap is cut along the entire bottom edge of the seaward side of the cage. This flap is folded outward and downward into a trench dug in front of the cage. The flap is then buried under no more than one inch of sand, leaving a 2" tall space through which hatchlings can escape. Restrained hatchlings are collected through a 6" x 6" flap cut in the top of the screened and secured by wire ties. Cage design courtesy of Ecological Associates, Inc.



Reporting Requirements

The permit holder must report the total number of nests outfitted with self-releasing screens or cages and the reasons for screening/caging on the annual nesting summary forms.

NEST CAGING - RESTRAINING

Summary

This section is specifically intended for those persons whose permit authorizes them to **place restraining cages over nests**. These personnel are also authorized to:

- **mark nests.**

Additional authorization and specific approval is required to conduct the following or any other activities in conjunction with the use of restraining cages. These activities must be specifically mentioned in the application and listed on the permit.

- **conduct nesting surveys**
- **relocate nests**
- **conduct hatch success evaluations**
- **conduct public hatch success evaluations**
- **conduct public hatchling releases**

Activity Description

Restraining cages collect all emergent hatchlings from a nest and prevent them from exiting. Hatchlings within the restraining cage often continue to crawl for the duration of the time they are contained, resulting in loss of limited energy reserves. Therefore, restraining cages should be used sparingly and only as a last resort. Some nests are deposited in locations (e.g., inside of inlets or passes, inshore beaches, landward of dunes/armoring structures/other obstacles) that provide a suitable incubation environment but hatchlings would not be able to reach the water successfully. Certain research projects requiring collection of hatchlings for inclusion in the study may warrant the use of restraining cages. Restraining cages should not be used to prevent lighting impacts to hatchlings but may be allowed on some beaches, provided the local jurisdictional entity and FWC are actively working together to reduce the impacts of the problematic lighting. Restraining cages may not be utilized to facilitate public release of hatchlings, provide educational opportunities or facilitate filming or photography.

While the exact construction of cages may vary (see example of a restraining cage in Figure 2-23), all restraining cages must provide enough room for all hatchlings to completely emerge from the sand and have an opening that can be used to retrieve hatchlings from the cage. Cages are to be centered exactly over the egg chamber so that mammalian predators cannot burrow to the eggs from the side of the cage, and to ensure that anchoring stakes at the edges of the cage will not enter the egg chamber.

To predict the location of the egg chamber within the body pit, refer to the protocols outlined in the "NEST MARKING" section of this chapter. Find the precise location of the clutch by carefully digging shallow, finger-probing holes in the softer sand over the clutch to verify the eggs. Never use shovels or any other tools for either digging or probing. The location of the egg chamber should be verified only once during incubation - the morning following deposition. Temporarily mark the location of the egg chamber by carefully placing a marker (must be thin enough to pass through the mesh of the cage) a very short distance into the sand above the egg chamber. Be sure that this marker

is not inserted into the egg chamber. Replace the dry sand over this area to the depth present before you began excavation. The temporary marker should be tall enough to extend above the sand level and able to be easily removed following installation of the restraining cage.

Most cages are anchored by burying the outward pointing flanges (Figure 2-23) about one foot under the sand's surface. Center the cage over the egg chamber and trace the edges of the cage in the sand. The cage should be oriented so that the opposing sides of the cage are either parallel or perpendicular to the shoreline. Remove the cage and the temporary egg chamber marker and carefully dig a one foot deep trench along the tracing of the edges of the cage. Place the cage into the trench and fill the trench with sand. When completed, the sand around the cage and over the egg chamber should be at the original level. If stakes are used to secure a cage, drive the stakes at an angle away from the egg chamber. Language for signs marking caged nests is available from FWC.

Because cages may become partially or completely dislodged, they must be checked regularly. If a restraining cage is used, each cage must be checked for hatchlings at least twice a night beginning 45 days after the clutch was deposited and ending when the cage is removed. Restraining cages must be checked for hatchlings once between 11 p.m. and 1 a.m., and once between 5 a.m. and 7 a.m. (which may coincide with the morning nesting survey). After checking the nest during the latter period, restraining cages should be opened (see Figure 2-23) to allow hatchlings that may emerge during the day to escape the cage. These cages may then be closed again at sunset. All hatchlings that are discovered within restraining cages should be released immediately at an appropriate beach site and allowed to crawl to the water. Remember, there must be a way to get hatchlings out of a restraining cage without pulling the cage off the nest. Please remove all cages from the beach after hatchling emergence is completed.

There is a concern about the use of metal cages as this material could interfere with magnetic fields surrounding the nest (Irwin et al. 2004). Disruption of existing magnetic fields, if it occurs, could affect the hatchlings' subsequent magnetic orientation and navigation. FWC agrees it would be ideal to use magnetically inert material but currently there is not an alternative material and screen design to effectively prevent predator access to the nests. FWC encourages further research on the topic and the development of new designs and materials that will address this concern.

Reporting Requirements

The permit holder shall report the total number of nests that are outfitted with restraining cages and the reasons for caging on the annual nesting summary forms. Disorientation forms shall be completed for each caged nest where hatchlings are oriented anywhere in the cage other than seaward side of the cage. These disorientation forms shall be submitted to FWC weekly via e-mail (seaturtlelighting@myfwc. com) or fax (561-743-6228).

NEST RELOCATION

Summary

This section is specifically intended for those persons whose permit authorizes them to **relocate nests for conservation purposes** or **relocate nests in association with Authorized Monitoring Projects**. These personnel are also authorized to:

- **mark nests**
- **conduct hatch success evaluations**

Additional authorization and specific approval is required to conduct the following or any other activities in conjunction with relocation. These activities must be specifically mentioned in the application and listed on the permit.

- **conduct nesting surveys**
- **outfit nests with self-releasing screens/cages**
- **outfit nests with restraining cages**
- **relocate a clutch at any time after 9:00 AM the morning following deposition**
- **Note: the use of probes (other than fingers) to locate clutches is not allowed**

Activity Description

Moving sea turtle eggs creates many opportunities for adverse impacts. Movement alone is known to kill developing embryos by disrupting delicate membranes that attach to the inside of the egg. Because the incubation environment greatly influences the developing embryo, nest relocation can involve the transfer of eggs from an appropriate environment to an inappropriate one. For this reason, nest relocation is considered a management technique of last resort. Only a small fraction of nests is relocated each year in the State, and the numbers are decreasing (on average only 1 % of SNBS nests have been relocated each year between 2011 and 2015).

Nests may only be relocated for conservation purposes if they are below the daily high tide line (not storm or spring tide lines) and will be inundated every day or are located in front of a storm water outfall. Nests should not be relocated if the beach appears dry but the qualified individual assumes the nest is wet below the sand. The decision to relocate a nest must be made on a case-by-case basis by the qualified individual with experience with conditions on that beach. Special authorization is required to relocate nests for construction activities such as beach nourishment. If a permit holder has agreed to survey and relocate nests for a state-authorized regulatory activity, they must amend their permit and request to relocate nests for construction purposes. The request should specify the DEP permit number and starting date for that project.

Nests must be relocated only by the qualified individual or authorized personnel with appropriate training and experience designated by the qualified individual. Appropriate training includes a minimum twenty-five (25) hours of having successfully relocated marine turtle nests within the past five (5) years Relocations shall be considered successful if the hatch and emergence success meets or exceeds the hatch and emergence success averaged by species statewide. Existing permit holders authorized to relocate nests do not have to meet this requirement upon renewal.

Natural events, like storms, that accelerate beach erosion and accretion can sometimes reduce hatching success in existing nests. While damage from storm events can be severe, it is difficult to predict the precise areas where the storm is most likely to inflict damage. Because of the negative effects of relocating eggs and the unpredictability of storm events, FWC does not authorize qualified individuals or authorized personnel to move nests out of areas threatened by storms. Moreover, loggerhead clutches (and most likely other sea turtle species clutches) can tolerate a wide range of incubation environments, including a certain amount of inundation. Clutches that are deposited in low-beach areas (close to the water and inundation) can produce hatchlings (Foley et al. 2006).

FWC does not authorize nest relocation for heavy foot traffic, lighting problems or beach cleaning. Foot traffic is not known to cause problems for nests, but if traffic is heavy, a nest can be marked so that it will be avoided by pedestrians. If a nest is near a light that may interfere with the hatchlings' ability to properly orient towards the water, efforts should focus on resolving the problematic light.

When a nest does require relocation, the eggs must be re-buried by 9:00 AM the morning following its deposition. About 12 hours after deposition, the potential for movement-induced mortality in sea turtle eggs increases rapidly. Eggs should be moved no later than 12 hours after deposition (turtles may nest as early as 9:00 PM the preceding night). To relocate a nest, find the location of the egg chamber by gently and systematically digging by hand, and probing with fingers only. Never use shovels or any other tools for either digging or probing. Be sure to set aside sand removed from the nest so that moist sand found at the top and within the egg chamber can be placed into the container used to transport the eggs. Once the eggs are located, carefully remove the sand from around the top eggs and place it into a rigid container that should have approximately a 5 cm (2 inch) layer of moist sand on the bottom. Individual eggs should be gently lifted from the egg chamber and placed into the container. When moving eggs, be sure to maintain each egg's original orientation, do not rotate eggs in any direction and avoid abrupt movements. When placing eggs in the container, maintain their original order as much as possible (the eggs on top of the clutch should be placed at the bottom of the container and so on). Count the eggs as they are being removed (count yolkless eggs separately from yolked eggs). As eggs are placed in the container, be sure that they do not roll. To do so, add moist sand from the egg chamber around the eggs as needed. Eggs are to be shaded if relocated after sunrise. The easiest way to do this is to lay an open umbrella on its side (because there may be eggs incubating nearby, do not stick the umbrella into the ground) or place a towel over the top of the container holding the eggs. When all eggs are in the container, cover them with a layer of moist sand from the bottom of the egg chamber. Measure and record the depth (the distance from the original sand level to the bottom of the egg chamber). Before filling the hole of the excavated egg chamber, use your hand to gently feel the shape of the chamber. Use this information to guide the shape and depth of the new chamber where the eggs will be relocated.

Find a suitable nearby location on the beach that is successfully used by nesting turtles. Be sure that the new nest site is above the high tide level but not in dense vegetation or where landward lights are visible. With your hands, dig a new nest chamber to the same depth, size, and shape of the original nest (note: in the event that a nest was laid in an abnormally shallow egg chamber, the new chamber should be dug to a depth of 60 cm (24 inches) for loggerheads, and 80 cm (32 cm) for green and leatherback turtles). The shape of the new nest chamber should be such that there is a spherical bottom and a slightly narrower neck. The diameter of the spherical bottom should be volleyball to basketball size. The neck should only be 5-10 cm (2-4 inches) narrower than the bottom. Clutches that are greater

than or less than the average number of eggs may require respective nest-chamber dimensions that are larger or smaller. If relocating green turtle and leatherback nests, follow the same general procedure. However, the new egg chamber should be dug to a depth of 80 cm, range 70-90 cm, (approximately 30-32 inches) for these two species. In addition, if relocating a leatherback nest, place the yolkless (the small shelled albumen gobs) on top of the egg clutch to simulate the natural oviposition sequence. (Clutch depth data were provided by Erik Martin and Niki Desjardin, Ecological Associates Incorporated).

Place some of the sand from the bottom of the original egg chamber (and that is now at the top in the bucket used to transfer the eggs) into the bottom of the new egg chamber. Carefully place the eggs in the new egg chamber by transferring them one at a time while continuing to maintain each egg's original orientation. Count the eggs as they are being placed in the new egg chamber and record the clutch size on your data sheet. Once all the eggs have been placed, cover them with the sand from the bucket and then with damp excavated sand. Dry sand should not be allowed to fall into the egg chamber. After replacing approximately 6 inches of moist sand, apply moderate pressure to re-compact the sand over the eggs. Once ambient sand level is reached, gently pack down the sand using a closed hand. Try to replicate what the female does when she presses with leading edge of the rear flippers (moderate pressure). Replace the dry sand over this area and restore the site to its original condition. The relocated nest should then be marked and later evaluated for hatching success.

Summary

- Nests may only be relocated for conservation purposes if they are below the daily high tide line (not storm or spring tide lines) and will be inundated every day or are located in front of a storm water outfall.

- The decision to relocate a nest must be made on a case-by-case basis. The qualified individual may relocate or direct authorized personnel to relocate a nest only if they are certain the nest will be lost otherwise.

- Nests must be relocated only by the qualified individual or authorized personnel designated by the qualified individual and who has the appropriate training and experience. Appropriate training includes a minimum twenty-five (25) hours of having successfully relocated marine turtle nests within the past five (5) years Relocations shall be considered successful if the hatch and emergence success meets or exceeds the hatch and emergence success averaged by species statewide. Existing permit holders authorized to relocate nests do not have to meet this requirement upon renewal.

- When a nest does require relocation, the eggs must be re-buried by 9:00 AM the morning following deposition.

- When moving eggs, maintain each egg's original orientation; do not rotate eggs in any direction and avoid abrupt movements.

- Measure and record the depth of the original egg chamber and use this information to guide the shape and depth of the new chamber where the eggs will be relocated.

Reporting Requirements
The permit holder is to report the number of and the reasons for nest relocations on the annual nesting summary forms. A nest inventory must be completed for every nest that is relocated and the data reported to FWC/FWRI. The annual nesting summary form (see directions in Appendix A-1) and the spreadsheet for reporting data (Nest Productivity Assessment Spreadsheet) will be sent out by FWC/FWRI to all permit holders at the beginning of the nesting season.

CONDUCTING NESTING SURVEYS TO FULFILL MONITORING REQUIREMENTS FOR BEACH NOURISHMENT

Sand placement projects such as beach nourishment, dune restoration, or other types of construction activities may occur on your beach either outside or during nesting season. If you have agreed to monitor for a beach nourishment, dune restoration, or other sand placement, there are specific monitoring requirements that have to be met for the state and federal permits. You should receive a copy of the state permit that describes the specific activity, timing, and location of the authorized project. You will need to clearly define the boundaries of the area where sand was placed and keep track of the start and end dates of the project. This information can usually be obtained from the local sponsor. In most cases, you will have to monitor an equivalent length of beach - a reference beach – that does not receive sand.

If you are contacted to initiate nest relocation, please contact FWC at MTP @myfwc. com to confirm that you are authorized to do so. The authorized activity "nest relocation for conservation purposes" does not apply to relocation for any type of construction, including sand placement. You must request to amend your permit to include the activity "relocate for construction project". Nest relocation may then be authorized during construction. No nests should be relocated for up to three years after sand placement is completed, even if they are located close to the water.

CONDUCTING NESTING SURVEYS FOR MECHANICAL BEACH CLEANING

Mechanical beach cleaning may occur on your beach during nesting season. Operation of the beach cleaning equipment is limited to below the daily tide or wrack line on most beaches in Brevard through Broward Counties from March 1 through October 31. The Florida Department of Environmental Protection currently authorizes mechanical beach cleaning through a specific permit.

Beach cleaning companies are required to coordinate with the permit holder on any beach where mechanical cleaning occurs during nesting season. You do not have to agree to survey the beach and mark nests for mechanical beach cleaning. The beach cleaning company may then decide to contract with another entity who can qualify for a marine turtle permit to survey and or to mark nests in the area to be cleaned. You will still be able to conduct your normal daily survey activities for the SNBS or INBS programs. Coordination between the two entities (Permit Holder conducting nesting surveys and Permit Holder conducting marking for beach cleaning permit condition fulfillment) would be required to ensure that data collection for the state nesting beach programs are not compromised due to the beach cleaning work.

The specific marine turtle protection requirements for beach cleaning are listed at http://www.myfwc. com/wildlifehabitats/managed/sea-turtles/beach-activities/beach-cleaning-guidelines/. Beach cleaning may only occur during daylight hours and only after you have completed the morning survey. The beach cleaner must not access the beach until you have completed your survey and marked nests as specified in the DEP permit. Nests may not be relocated to facilitate beach cleaning; this includes vehicle and beach cleaning equipment access points. In areas where beach cleaning occurs in nesting habitat during nesting season, all nests must be marked for protection. If you have agreed to monitor and mark nests for beach cleaning, you will have to mark each nest with a radius of at least three (3) feet centered at the approximate location of the clutch. The stakes should extend about 36" above the sand. To further identify the nest site, surveyor's ribbon can be tied from the top of one stake to another to create a perimeter around the nest site. Additionally, a nest sign can be attached to one of the stakes used to create the perimeter (contact FWC for information on signs). A nest-identifying number should be indicated on at least one of the nest perimeter stakes. At least two additional stakes should be placed a measured distance from the clutch location at the base of the dune or seawall to ensure that the nest can be remarked if the nest perimeter stakes are lost. These perimeters must be checked and maintained each day and replaced if the stakes are removed by a storm or humans.

Reporting Requirements
At this time, reporting is not required for most beach cleaning operations. You will be notified if reporting is required for a particular beach cleaning area.

HATCHLING AND ADULT TURTLE DISORIENTATION

Although sea turtles do nest on beaches with artificial lights, there is much evidence suggesting that they prefer darker beaches. When sea turtles choose to nest on lighted beaches, their hatchlings are at risk. In Florida, artificial lighting is probably the single greatest human threat to emergent hatchlings trying to reach the ocean.

Both hatchlings and nesting adults exposed to artificial lighting can be led in the wrong direction (become misoriented) or meander and circle (become disoriented). Both misorientation and disorientation indicate that the turtle was unable to properly orient towards the ocean and should be documented. Qualified individuals who conduct nesting surveys are expected to search for evidence of abnormal orientation by hatchling and adult turtles and document these events through submission of FWC's disorientation reporting form. The FWC Marine Turtle Disorientation Report (Appendix A-2, FWC Form Dis-1, effective 6/16) and Disorientation Form Instructions (Appendix F-6) are incorporated in Rule 68E-1.004(14)(b)9. and 10. and from seaturtlelighting @myfwc. com. A nest is considered disoriented if five or more hatchlings headed in a direction other than toward the water. Because a lighting problem may be able to be immediately resolved and thus avoid subsequent problems, it is very important that you inform local code enforcement and the FWC Tequesta office of all disorientation events as soon as possible. You can fax the forms to FWC Tequesta at (561) 743-6228 or submit them electronically at seaturtlelighting @myfwc. com.

Nests may not be inventoried early because of observed disorientation events.

Some indirect tracks from adult turtles may not be due to artificial lighting. Adult females may wander on the beach for a period of time looking for a suitable nesting site. Leatherback turtles are known to make orientation circles on their way back to the ocean after nesting. A diagram of the crawl should be included with adult disorientation reports to help assess the actions of the turtle.

Wind and rain may obscure tracks, making it difficult to document hatchling disorientation. Still, every effort should be made to count the number of hatchlings disoriented. Counting the tracks farther from the nest, in the area where the tracks spread out, is generally a little easier than trying to count the tracks right next to the point of emergence.

Identifying the light source is also important. If time and personnel permit, a nighttime lighting survey of areas with high disorientation rates or the location of a catastrophic disorientation event would be useful in identifying contributing light sources that need to be addressed to prevent future disorientation events. The address of the property, and the number, variety and location of lights are of particular value to local code enforcement personnel and FWC.

Several counties and municipalities have lighting ordinances. A list of local ordinances can be found on FWC's website at http://www.myfwc. com/conservation/you-conserve/lighting/ordinances/. In areas where a local ordinance is in place, local code enforcement personnel are generally responsible for ensuring compliance with the ordinance. In areas where there is no local ordinance, FWC may attempt to work with the property owner to correct the problematic light(s). Please notify the local code enforcement office and/or FWC as soon as possible after a disorientation event.

Because resolving problematic lighting can require a lengthy process, permit holders have attempted several creative techniques (e.g., nest shades or barriers, trenching, nest sitting) to mitigate for the persistent problematic lighting and to prevent additional disorientation events in the immediate future. While these techniques are well-intentioned to prevent light from disorienting hatchlings, they often have unintended consequences such as trapping hatchlings, creating a trip/fall risk for beachgoers, increased disturbance to nesting turtles, or instilling public perception that light management isn't needed because the issue "is being handled". These activities are not encouraged and implementation of any nest-focused treatments or techniques to address disorientation from problematic lighting must be specifically reviewed and authorized by FWC on a case-by-case basis.

RECOVERY AND RELEASE OF DISORIENTED HATCHLINGS

This activity must be listed on your permit and includes recovering live hatchlings following involvement in a misorientation or disorientation event. Recovery and release of disoriented hatchlings does not authorize the conduct of public hatchling releases. See Section 7 for information on conducting public hatchling releases.

This activity may occur during daytime or nighttime hours. Due to the short duration of the hatchling frenzy period, hatchlings should be released as soon as possible following recovery. All healthy active hatchlings found during darkness are to be released as soon after recovery as possible. All healthy active hatchlings found during daylight hours should be handled according to the guidance provided earlier in this Section under "Hatchling Recovery and Release".

Activity Conditions

The following conditions must be followed when recovering and releasing disoriented hatchlings during nighttime hours.

1. Surveys and/or response to reported disorientation events should occur only by foot.
2. Sticks or other poking/probing devices may not be used to search for disoriented turtles in the wrack line or dune vegetation.
3. Use of flashlights is prohibited, except when necessary to locate disoriented marine turtle hatchlings, to verify that all released hatchlings have departed the swash zone or to confirm nest label on the nest stakes. Any flashlight or head lamp used shall have either a red LED light source or employ a red filter that eliminates short wavelength light. Flashlights may not be used to attract hatchlings into the water.
4. Flash photography is strictly prohibited under all circumstances.
5. Only disoriented marine turtle hatchlings may be recovered. If hatchlings are making their way towards the ocean at an angle less than 45 degrees from the most direct path to the water, do not collect these hatchlings. Do not collect hatchlings as they emerge and disperse from a nest until such time as the hatchlings have traveled a minimum of 10 feet from the clutch site and become disoriented (e.g., are traveling at angle of 45 degrees or greater from the most direct path to the water).
6. Recovered hatchlings should be released as soon after recovery as possible; hatchlings that can be released should not be held more than 30 minutes after recovery and solely for the purpose of recovering additional disoriented hatchlings from the same emergence. Disoriented hatchlings may not be held while waiting for subsequent emergences of hatchlings from the same nest or different nests.
7. If disoriented hatchlings need to be temporarily contained in order to recover additional disoriented hatchlings from the same emergence, they shall be placed in a bucket with a small amount of moist sand in the bottom. Hatchlings should not be held in water.
8. All live disoriented hatchlings must be released or transported to the local rehabilitation facility within two hours following collection. In the event you do not have a local rehabilitation facility that accepts hatchlings within two hours of your location, contact FWC at MTP @myfwc. com prior to hatching season for guidance.
9. Release of recovered disoriented hatchlings shall be attempted immediately after hatchling recovery and as close to the original nest site as possible. The first release attempt should take place closer to the water line seaward of the nest site. If the hatchlings continue to disorient, the hatchlings may be transported to a nearby section of beach that is darker.
10. If any recovered hatchlings are lethargic, injured, still have a yolk sac, or have not successfully departed the surf zone or nearshore waters within 10-15 minutes of release, they should be retrieved and transported to the local rehabilitation facility and deposited in the designated hatchling drop-off box to receive treatment rather than being released.
11. Only the qualified individual or authorized personnel designated by the qualified individual may dispose of dead hatchlings.
12. Responders may not enter into or disturb the area inside of the stakes and tape marking sea turtle nests. Sand outside of the marked area may be smoothed by hand before first hatch emergence and/or following documentation of a disorientation event to better observe subsequent events.

13. Disorientation forms shall be completed for each hatchling emergence event where hatchlings become disoriented. These disorientation forms shall be submitted to FWC weekly via e-mail (seaturtlelighting@myfwc. com) or fax (561-743-6228). Disorientation forms shall also be submitted to the appropriate local code enforcement contact.

OBSTRUCTED NESTING ATTEMPTS

An Obstructed Nesting Attempt (ONA) occurs when a nesting female encounters a natural or man-made obstacle on the beach, regardless if the attempt results in a nest or a false crawl. The FWC Marine Turtle Obstructed Nesting Attempt Report Form (Appendix A-3: FWC Form ONA-1, effective 6/16) is incorporated in Rule 68E-1.004(14)(b)11. and available from MTP_@myfwc. This form should be submitted for all obstacles encountered – beach chairs, boats, seawalls, other equipment, including any escarpments that are at least 18 inches high and 100 feet long. Natural changes in slope associated with the dune system are not considered escarpments and would not require submission of an ONA report. Likewise, interactions with sea oats or other frontal dune vegetation are considered to be part of the dune system and would not require submission of an ONA report.

An ONA report should be completed for each nesting female that encounters obstacles (i.e., if two turtles encounter the same obstacle, such as a seawall, a report should be completed for each turtle: directions are given in Appendix F-7. FWC's Obstructed Nesting Attempt Instructions (effective 6/16) are incorporated in Rule 68E-1.004(14)(b)12. and available from MTP_@myfwc. com. If the turtle is unable to return to the water on her own as a result of the ONA and requires assistance, a stranding report should also be submitted. Additionally, if the turtle was disoriented when the obstacle was encountered, a disorientation report should be submitted. Reports (both disorientation and ONA) may be submitted electronically to seaturtlelighting @myfwc. com or they may be mailed or faxed to the Tequesta Field Laboratory:

FWC – ONA Reports
19100 SE Federal Hwy
Tequesta, FL 33469
Fax: 561-743-6228

SECTION 3 - STRANDING AND SALVAGE ACTIVITIES

Summary
If the permit authorizes the activity to **conduct stranding and salvage activities,** the qualified individual listed on the permit and authorized personnel designated by the qualified individual are authorized to conduct the following activities.

- **document dead, sick or injured marine turtles**
- **temporarily mark live turtles for the purpose of identification**
- **collect morphometric data (e.g., carapace length/width, tail length, weight)**
- **transport or transfer live turtles, carcasses, or preserved material within Florida**
- **store carcasses of dead marine turtles in freezer when requested by FWC staff**
- **dispose of carcasses of dead marine turtles**
- **temporarily hold (<12 hours) live turtles overnight when requested by FWC staff**

Additional authorization and specific approval are required to conduct the following or any other activities in conjunction with responding to strandings. These activities must be specifically mentioned in the application and listed on the permit. Any additional requested activities that involve direct interaction with a living or dead marine turtle must be conducted by the qualified individual or authorized personnel designated by the qualified individual.

- **conduct necropsies**
- **hold turtles for rehabilitation**
- **transport or transfer live turtles, carcasses, or preserved material into or out of Florida (this activity requires a specific Consent Permit from FWC)**

Activity Description
This activity involves the qualified individual or authorized personnel designated by the qualified individual collecting information on sea turtles that are found dead or debilitated (i.e., stranded turtles). Timely reporting of stranded sea turtles is essential to address mortality factors. FWC is required to report all stranded sea turtles on a weekly basis to the National Marine Fisheries Service (NMFS). Therefore, all qualified individuals or authorized personnel designated by the qualified individual conducting this activity must complete a Sea Turtle Stranding and Salvage Network Stranding Report (STSSN) report for each dead or debilitated turtle encountered (see copy of form in Appendix B-1). The Sea Turtle Stranding and Salvage Network Stranding Report (FWC Form STSSN-1, effective 6/16) is incorporated by reference in Rule 68E-1.004(b)13. Different forms may be required for turtles with fibropapilloma or cold stun animals.

Other important information on responding to sea turtle strandings is available online at http:// ocean.floridamarine.org/SeaTurtle/flstssn/flStssnResources.htm. Blank STSSN reports can also be obtained from FWC stranding staff - please do not make copies of blank reports. A copy of the STSSN report should be submitted to FWC sea turtle stranding staff within 48 hours of documenting the stranding. STSSN reports can be completed either in written (or typed) form or in electronic form. Electronic STSSN reports (and scanned written reports) can be e-mailed to STSSNForm@myfwc.com (a printed copy of the electronic report does not need to be mailed), or

written reports can be faxed to the FWC Tequesta Field Laboratory at (561) 743-6228. These faxes do not need a cover sheet; they will be routed correctly without it. The fax machine will answer 24 hours a day; if there is a busy signal, please try back in a few minutes. If a written report is generated, that original must also be mailed within one week to the FWC Tequesta Field Laboratory at 19100 SE Federal Highway, Tequesta, Florida 33469 (address also given on back of stranding report). If a report cannot be submitted timely, summary information (date, species, size, location, and anomalies) can be reported within 48 hours by e-mail (STSSNForm @ myfwc.com) or by phone (561-575-5407). Photographs of each stranded turtle are to be submitted electronically to STSSNForm @ myfwc.com or mailed to the Tequesta Field Laboratory at the above address. Be sure to identify the photographs by using the observer's three initials, the date, and the number-by-day on the STSSN report.

If a stranded turtle has any growths that may be related to fibropapillomatosis, a Fibropapilloma Documentation Form must be completed in addition to the STSSN report (see copy of this form in Appendix B-2). The Fibropapilloma Documentation Form (FWC Form STSSN-2, effective 6/16) is incorporated by reference in Rule 68E-1.004(14)(b)14. This form can be completed either in written (or typed) form or in electronic form. Written forms can be mailed with the original STSSN report to the FWC Tequesta Field Laboratory at 19100 SE Federal Highway, Tequesta, Florida 33469 (address also given on back of stranding report). Electronic forms (and scanned written forms) can be e-mailed to STSSNForm @ myfwc.com (a printed copy of the electronic report does not need to be mailed).

Conducting stranding and salvage activities may also involve the collection of information on turtles that have been impacted by a human-related activity or situation but not necessarily killed or debilitated. A STSSN report should be completed any time a turtle is captured or trapped even if the turtle is released unharmed (the only exceptions occur when these captures or entrapments are already reported to FWC through other reporting requirements). A STSSN report should be used to document any hazardous situations encountered by nesting turtles on the beach (e.g., trapped under boardwalk, trapped under boat, trapped in rocks, trapped in beach furniture, fell off seawall, wandered into a nearby road, wandered into road and got hit by car, became trapped behind the dune, etc.). These are situations where a nesting turtle is either injured, killed or rescued. A STSSN report should also be completed for all post-hatchling washbacks (turtles that have been living in the water; they are a bit larger than newly-emerged hatchlings, and may be covered with algae, barnacles, or other epizoa).

STSSN participants may periodically respond to cold-stunning events (involving more than 10 turtles). The response to cold-stunning events operates under a separate protocol (see copy of FWC's Protocol for Responding to Cold-Stunning Events in Appendix G-1). The Protocol for Responding to Cold-Stunning Events (effective 6/16) is incorporated by reference in Rule 68E-1.004(14)(b)15. Turtles that are part of a cold-stunning event are also documented using a different report form (see copy of Cold Stun Event Turtle Data form in Appendix B-3). The Cold Stun Event Turtle Data Form (FWC Form STSSN-3, effective 6/16) is incorporated by reference in Rule 68E-1.004(14)(b)16. Small numbers of cold-stunned turtles (< 10 turtles) can be documented using the STSSN report.

The data collected by the Florida STSSN are critical to FWC's marine turtle recovery efforts. To maintain good data quality, STSSN activities should only be conducted by highly experienced

personnel with explicit training from FWC. All personnel conducting STSSN activities are to follow instructions and guidelines circulated by FWC in periodic STSSN updates. Please note carefully the following additional permit requirements:

1. A completed STSSN report must be submitted for all live or dead stranded turtles, post-hatchling or larger; all post-hatchling wash-backs - turtles that have been living in the water that are a bit larger than newly-emerged hatchlings (typically >5 cm straight carapace length notch to tip for all hard shelled species) and may have algae, barnacles, or other epizoa on the carapace; any captured or trapped turtle even if the animal is released unharmed, including nesting females trapped under a boardwalk, boat, rocks, beach furniture or behind a dune; animals that fall off seawall or wander into a nearby road (except if these captures or entrapments are already reported to FWC through other reporting requirements); and all turtles incidentally captured by hook and line or in fishing gear.

2. Photographs of the stranded sea turtles documented in STSSN reports are essential. Include at least three photographs of each stranded turtle when submitting the STSSN report. These include one close-up photograph of the turtle's head, one photograph of the dorsal surface of the turtle, and one photograph of the ventral surface of the turtle. Please include an index card with the STSSN ID (three initials of the observer year, month, day and the number-by-day (ex. AMF20150823-01)) with each photograph.

3. Please contact FWC stranding staff if you find a live stranded turtle or any stranded turtle with tags or tag scars. Do not dispose of any carcasses that have tags or tag scars unless directed to do so by FWC stranding staff. The FWC stranding staff can be reached via text message at SeaTurtleStranding @ myfwc.com or by calling 888-404-3922 and telling the dispatcher that you are reporting a stranded sea turtle and would like a call from a biologist.

4. Please contact FWC stranding staff if you find a stranded hawksbill, Kemp's ridley, or leatherback. Do not dispose of any hawksbill, Kemp's ridley, or leatherback carcasses unless directed to do so by FWC stranding staff who can be contacted as described above.

5. Do not dispose of any turtle carcass that has not been positively identified to species (classified as probable or unsure) unless directed to do so by FWC stranding staff who can be contacted as described above.

6. If entangling materials are found on a stranded turtle, take photographs of the turtle before the entangling materials are removed and take extra photographs of the entangling material, especially of any hooks or types of identification marks. Do not dispose of any entangling materials unless directed to do so by FWC stranding staff who can be contacted as directed above.

7. Please contact FWC stranding staff (as described above) regarding any carcasses with no signs of injury or disease that are not severely decomposed. Attempts will be made to save as many of these as possible for necropsy.

8. Please contact FWC stranding staff (as described above) regarding any stranding (live or dead) that may exhibit signs of either intentional harm or illegal collection/salvage of portions of the animal (e.g., skull, carapace, flippers).

9. Include a copy of a local map with each stranding report showing the exact location of the stranded turtle whenever the descriptive location of where the turtle was found does not reference a major map feature (e.g., causeway, inlet, cape, point, etc.). Clearly indicate whether or not the stranded turtle was found in or along offshore waters (Atlantic Ocean or Gulf of Mexico) or in or along inshore waters (passes, inlets, sounds, bays, lagoons, rivers, harbors, bayous).

10. Once you have completed your report, please mark the turtle with spray paint to avoid duplicate reporting for that carcass. Paint on the carapace, head and mouth areas (both outside and inside) typically lasts longer than paint on soft tissue and also helps deter unauthorized collection of sea turtle specimens. To prevent duplicate documentation, please do not leave an unpainted or unmarked turtle carcass that has been documented on the beach.

COMPLETING THE STSSN DATA REPORT SHEET

The following information is provided to assist with the proper completion of the STSSN report (see copy of form in Appendix B-1). Permit holders, qualified individuals, or authorized personnel conducting stranding and salvage activities are to be familiar with the following information; qualified individuals and authorized personnel are to complete reports in an appropriate manner.

Observer's Name/E-Mail Address/Phone: This is the person who documented (collected the data on) the stranded turtle. Please include the observer's full name with the middle initial. Three initials are important, the records are partially indexed by observer initials. The e-mail address and phone number of the observer are needed in case we need to contact that person with questions regarding the data in the STSSN report.

Stranding Date: This is the date the stranded turtle was first reported or encountered. If the carcass was documented on a date that was different from the date first reported or encountered, please note that in the comment box. The turtle number-by-day is used to keep track of more than one stranded turtle (regardless of species) investigated on a single day by the same observer. An observer's first stranded turtle of the day is 01, the second for that observer on the same day is 02, the third for that observer on the same day is 03, etc.

Species: If a stranded turtle cannot be identified, please contact FWC stranding staff by texting SeaTurtleStranding @ myfwc.com or by calling 888-404-3922 before you dispose of the carcass. If you are unable to contact FWC stranding staff, please take several photographs of the carcass (from different angles, including the head). If the skull is present, please save it for later identification.

Location: Indicate if the stranded turtle was found along a shoreline of, or floating in, offshore waters (Atlantic Ocean, Gulf of Mexico) or was found along a shoreline of, or floating in, inshore waters (passes, inlets, sounds, bays, lagoons, rivers, harbors, bayous). When describing the location, be as specific as possible and use reference points that would be found on a map. Local names or landmarks

not found on maps do not help determine a location. Good reference points are inlets, county lines, state boundaries, cape points, major roads that intersect the beach, etc. An example of a good, descriptive location is: "2.5 miles south of the Ft. Pierce Inlet on the ocean beach". The stranding location is one of the most important data items on the form. If the location is difficult to describe and will be difficult to find on a standard map, please include a copy of a map with the location of the stranded turtle indicated. If the turtle was found floating, please indicate that. If a GPS is used or the location is found in Google Earth (or a similar mapping application), include the latitude and longitude of the stranded turtle on the STSSN report. Positions are coded to the nearest tenth of a degree and recorded in the following format (e.g., 28 º16.8'N and 80 º 36.3'W). If a latitude and longitude is given, please say how it was determined. Otherwise, leave the latitude and longitude blank.

Condition of Turtle: Report on the condition of the animal when first encountered. If the stranded turtle seems intermediate between two stages of decomposition, pick the one that fits best. If it smells bad at all, it is not fresh. Live turtles that die prior to or during transport should be reported as live, not fresh dead, on the report.

Final Disposition of Turtle: These codes refer to the fate of the stranded turtle. The preferred method is to paint and then bury the turtle either on the beach or off the beach. At the very least, please paint the turtle and move it out of reach of the tide. During the nesting season, turtles should not be buried on the beach (to avoid hitting an incubating nest). Codes 1-4 refer to dead turtles only. Codes 6 and 7 are for live animals. If code 6 is used (alive, released), please indicate where and when the turtle was released in the comment box at the bottom of the STSSN report. If code 7 is used (alive, taken to holding facility), please give the name and location of the facility that received the turtle. Remember, only permitted rehabilitation facilities are allowed to receive sea turtles. If a turtle was found floating and was unable to be recovered, use code 8 (left floating). If none of the disposition codes fit the event being reported, please explain what was done with the turtle in the comment box. Paint all dead stranded turtles unless they are being salvaged.

Sex: This will most often be undetermined, as immature (and some mature) sea turtles cannot be sexed externally. Adult male sea turtles have a tail that extends well beyond the carapace. Generally, the sex of loggerheads and green turtles under 98-cm curved carapace length will be considered undetermined if a long tail is not present. If you determine the sex to be male, give a measurement for the length of the tail extending beyond the posterior edge of the carapace in the adjacent blank.

Tags: Check all the flippers of a stranded turtle for external tags or indications of lost tags (tag scars) and PIT tags. Check the carapace and plastron for living tags or a transmitter (radio, ultrasonic, satellite). If you encounter a stranded turtle with a tag or transmitter, contact FWC stranding staff. Researchers depend heavily on these rare events (recovery of a tagged or transmittered turtle) to learn important things about sea turtles. We may want to collect skeletal parts or the whole animal. If you are instructed by FWC to dispose of the carcass, always remove the tags before you leave the site and bury the turtle. List the tag number(s) and location (e.g., left front flipper) on the STSSN report. Enclose the tags in a padded envelope and submit them, along with the stranding report, to the Tequesta Field Laboratory (address given above). All turtles with tag scars should be scanned for PIT (internal) tags. If necessary, please contact FWC stranding staff (as described above) to arrange for a PIT tag scan.

Tumor Documentation: Check all areas of the stranded turtle (including inside the mouth) for tumors that are possibly associated with fibropapillomatosis. Always check either yes or no after the question "Fibropapilloma-like tumors present?", even if the species is not green turtle. Complete a Fibropapilloma Documentation Form and submit it with the STSSN report if any fibropapilloma-like tumors are present.

Carapace Measurements: Please take both straight-line and curved measurements when possible. Curved measurements are taken with a flexible tape measure. Straight-line measurements are taken only with calipers. If calipers are not used, please do not report straight-line measurements. Do not take straight-line measurements with a flexible tape measure. Be sure to circle the units used, either centimeters (cm) or inches (in). Methods of obtaining standard carapace measurements are depicted on the stranding form. Please indicate if measurements are only estimates or if they are over barnacles or other epibiota.

Remarks: The box at the bottom of the STSSN report is for comments. Comments are strongly encouraged. Use the back of the STSSN report to continue comments if there is not enough space. Always note anything unusual about a stranded turtle (some of these anomalies are listed on the STSSN report). Use the diagrams on the STSSN report to indicate flipper damage, carapace wounds, etc. Please do not leave this section blank. If there are no anomalies, please say so. If the turtle was caught in any type of gear, please indicate this.

LIVE TURTLE TRANSPORT

During transport, a sick or injured sea turtle must be shaded and otherwise protected from extremes of heat and cold (not above 90°F and not below 50°F). If a turtle is transported at temperatures greater than or equal to 75°F, it should be cooled by keeping a wet towel on the carapace and by periodically pouring water over the head. Water and wet towels should not be used when transporting turtles at temperatures less than 75°F or at any time they are exposed to an air-conditioned environment. The only exception is that any open wounds should be kept moist with clean freshwater. At temperatures less than 75°F, turtles may be kept from drying out during transport by applying a thin layer of petroleum jelly (e.g., Vaseline®) to the carapace and all the soft tissues (except the eyes and any open wounds). The use of petroleum jelly is recommended only for small turtles (juveniles).

The table below provides guidance in determining which treatment is most appropriate for any live turtle during transport.

Table 3-1. Guidelines for Transporting Live Turtles

Ambient Air Temperature around Turtle	Duration of Transport (hours)	Barnacles or Other Epibiota present on carapace	Turtle Class Size	Recommended Treatment
75ºF (or warmer)	Any	--	Any size	Wet towel or water mist
74ºF (or cooler)	≤2 hours	--	Any size	Dry towel
74ºF (or cooler)	≥2 hours	Carapace clear	Juvenile	Petroleum jelly
74ºF (or cooler)	≥2 hours	Carapace clear	Sub-adult/Adult	Dry towel
74ºF (or cooler)	≥2 hours	Large amounts of epibiota present	Any size	Dry towel

Any containers housing turtles during transport are to be padded and may not contain any material that could be accidentally ingested. In the event that a container is not used during transport, the area containing the turtle should be padded. Closed cell foam 2-4" thick works well for ensuring sufficient protection for most turtles and can be sanitized and reused. Hatchlings should be transported in a container with moist sand. Post-hatchlings should be transported in a container with a damp towel. No turtles should be transported in water. Transport containers should be secured during transport such that they do not slide around or tip over. Unless specifically directed by FWC staff, live turtles should be transported on their plastron.

CONDUCTING NECROPSIES

Summary
If the permit authorizes the activity to **conduct necropsies,** the qualified individual listed on the permit or authorized personnel designated by the qualified individual are also authorized to conduct the following activities:

- **transport or transfer carcasses or preserved material within Florida**
- **dispose of carcasses of dead marine turtles**

Additional authorization and specific approval are required to conduct the following or any other activities in conjunction with conducting necropsies. These activities must be specifically mentioned in the application, listed on the permit, and conducted by the qualified individual or authorized personnel designated by the qualified individual.

- **conduct stranding and salvage activities**
- **hold turtles for rehabilitation**
- **conduct research activities**
- **transport or transfer carcasses or preserved material into or out of Florida (this activity requires a specific Consent Permit from FWC)**

Activity Description
The listing of necropsy as an activity on a permit does not imply that all listed personnel can conduct this activity. Only the qualified individual or authorized personnel who have been designated by the qualified individual and who have been trained by FWC or NMFS staff and have demonstrated expertise in this area may conduct necropsies. Qualified individuals or designated authorized personnel who are authorized to conduct necropsies on stranded turtles (that have not been held in a rehabilitation facility) must contact FWC stranding staff by e-mail (STSSNForm @ myfwc.com), by text message (SeaTurtleStranding @ myfwc.com), or by phone (561-575-5407) before conducting a necropsy.

Reporting Requirements
An FWC necropsy report is to be completed for each sea turtle necropsied and the original submitted to FWC either by e-mail (to STSSNForm @ myfwc.com) or by mail to the FWC Tequesta Field Laboratory at 19100 SE Federal Highway, Tequesta, Florida 33469 (address also given on back of stranding report). This form can be obtained at http:// ocean.floridamarine.org/SeaTurtle/flstssn/flStssnResources.htm (see Appendix B-4 for a copy of the blank necropsy report). The Sea Turtle Stranding and Salvage Network Gross Necropsy Report (FWC Form STSSN-4, effective 6/16) is incorporated by reference in Rule 68E-1.004(14)(b)17.

TED TURTLES
Each year the National Marine Fisheries Service conducts turtle excluder device (TED) certification trials off of Panama City Beach, Florida. The turtles used in these tests are juvenile loggerheads that were collected from Florida's nesting beaches as hatchlings and raised for approximately two years specifically for the TED certification trials. Upon completion of the annual trials, the turtles are released. Some of the turtles released swim into the nearshore waters where they are observed by the

public. FWC is interested in knowing about sightings of these turtles. Should calls regarding small turtles that appear to be "friendly" toward people be received, please collect as much information as possible including flipper tag number(s), date and location of siting, and the general behavior of the animal. Please report sightings in writing to the Imperiled Species Management Section office in Tequesta (address given above) or via email at MTP @ myfwc.com.

SECTION 4 – HOLDING TURTLES IN CAPTIVITY

Summary
In order to qualify to hold marine turtles in captivity, a facility must have ownership or control over property that maintains adequate equipment to safely hold and care for marine turtles for the purposes of the permitted activity and meet all requirements of Florida Administrative Code (FAC) Rule 68E-1. To be eligible to obtain a permit, the applicant can be an individual, firm or corporation. The applicant must identify a principal officer and provide documentation of at least one qualified individual responsible for the care and treatment of marine turtles in accordance with Rule 68E-1 (12), FAC.

If the permit authorizes the activity to hold marine turtles, the permit holder may house marine turtles for the following purposes as indicated on the permit.

- **hold loggerheads for educational display**
- **hold non-releasable turtles for educational display**
- **hold turtles for rehabilitation**
- **hold turtles for research**

If any of the above activities are listed on the permit, the qualified individual or authorized personnel designated by the qualified individual are also authorized to do the following.

- **transfer or transport turtles within Florida after consultation with FWC**
- **conduct necropsies on turtles that die at the holding facility**
- **release turtles after consultation with FWC**

Additional authorization and specific approval are required for the qualified individual or authorized personnel designated by the qualified individual to conduct the following or any other activities while holding marine turtles. These activities must be specifically mentioned in the application and listed on the permit.

- **tag turtles**
- **transfer or transport turtles into or out of Florida**
- **hold turtles for any reason other than that specifically stated on the permit**
- **conduct research on turtles held for rehabilitation or educational display**
- **conduct educational tours involving captive turtles**
- **conduct educational presentations using live turtles**
- **conduct dive/snorkel programs in tanks holding marine turtles**
- **collect or maintain and display educational specimens**
- **use turtles held for rehabilitation for educational displays or presentations.**

Activity Description
All facilities holding marine turtles for rehabilitation, education, or research must meet and maintain the minimum requirements for care and maintenance set forth in this Section. The permit holder shall maintain these standards as a requirement of continued authorization. Any inability to attain

or maintain these standards shall be reported to the FWC immediately so an appropriate and a timely resolution of the problem can occur. Failure to notify the FWC or repeated inability to follow these standards without specific exceptions granted in writing by the FWC is considered a violation of the marine turtle permit. All wildlife possessed under the authority of the marine turtle permit shall remain the property of the State of Florida and under the primary jurisdiction of FWC.

HOLDING TURTLES FOR EDUCATIONAL DISPLAY

Depending upon the display capabilities of a facility and proper justification, up to three loggerhead turtles (*Caretta caretta*) may be held solely for educational purposes by a facility that is primarily educational in nature, that is open to the general public at least five days per week, and that receives no less than an average of 100 visitors per week. The turtles shall be on display and the display is to be accompanied by interpretive signage that includes the following information: species identification, protection status under the Endangered Species Act, general life history, and current conservation issues (e.g., ingestion of debris, ocean dumping, loss of nesting beaches, loss of developmental habitats and adult foraging grounds, beach lighting, incidental capture, boat strikes, etc.). Wild turtles (bycaught, stranded, or congenitally deformed) that have been rehabilitated but which have permanently handicapping injuries or defects that preclude their survival in the wild should be used whenever possible for educational display *in lieu* of healthy, releasable marine turtles.

Unless otherwise authorized by FWC, loggerheads obtained as hatchlings shall be held until they reach a straight carapace length of at least 45 centimeters or a curved carapace length of at least 50 centimeters (measured from the nuchal notch to the posterior marginal tip). If loggerheads held for educational display are to be released, the release location must be approved in advance by the FWC. Note that federal law (CFR 17.21(c)(3)) does not allow for any marine turtle listed as endangered to be held solely for educational display (in Florida this includes green turtles, leatherbacks, hawksbills, and Kemp's ridley turtles).

Any educational turtle that is injured or dies following injuries sustained while in captivity must be reported to FWC immediately. Educational turtles that die in captivity must be necropsied as soon as possible to determine the cause of death. For additional information on conducting necropsies, please refer to the necropsy requirements in this Section.

HOLDING NON-RELEASABLE TURTLES FOR EDUCATIONAL DISPLAY

Facilities may be authorized to hold non-releasable marine turtles for educational display. Some animals sustain injuries that preclude their ability to survive in the wild as determined by an experienced marine turtle rehabilitation veterinarian. One example of this would be permanent blindness.

Animals in captivity whose genetic identity does not match that of the wild populations found in Florida or whose genetic origin is unknown may also be held for educational display. These are generally animals that were brought into Florida from other countries many years ago for research purposes or animals that have been transferred from an out-of-state facility that originally obtained the animal from another region of the world.

The number of non-releasable turtles that may be held for educational purposes at a facility shall be dependent upon the specific display capacity within the facility. Florida continues to have newly stranded turtles that are designated as non-releasable, limited space for rehabilitation of stranded turtles and a limited number of facilities that are equipped and qualified to house non-releasable turtles. Due to space limitations, FWC typically will not be able to authorize the importation of turtles that are known to be non-releasable from other states or countries.

Any non-releasable turtle that is injured or dies following injuries sustained while in captivity must be reported to FWC immediately. Non-releasable turtles that die in captivity must be necropsied as soon as possible to determine the cause of death. For additional information on conducting necropsies, please refer to the necropsy requirements in this Section.

HOLDING TURTLES FOR REHABILITATION

A facility whose permit authorizes them to hold turtles for rehabilitation may receive any marine turtle that is sick or injured for treatment or rehabilitation. Upon receiving a sick or injured marine turtle, the attending veterinarian shall examine the turtle within 24 hours. If this is not possible, immediate arrangements shall be made with the FWC to move the turtle to another facility. Facilities must notify the FWC within four days of receiving a turtle for rehabilitation (even if the turtle dies). Guidelines for releasing rehabilitated turtles are on page 4-12.

Turtles held for rehabilitation should be isolated from other turtles whenever possible. The water from tanks used for rehabilitation may not flow into tanks holding other marine turtles unless it is appropriately treated (e.g., chlorination, ozonation, etc.). Isolation of rehabilitating turtles is vital to prevent the spread of diseases.

Turtles with fibropapillomatosis (FP) must be isolated from turtles that are not known to have the disease. The high incidence of FP in green turtles in Florida waters is of special concern. Research is in progress but the cause of this disease remains undetermined. These growths are highly vascular when large and appear to be extremely sensitive due to the presence of nerve bundles, especially around the eyes. Only the most experienced veterinary personnel should be treating these individuals.

Any rehabilitating turtle that dies in captivity must be necropsied as soon as possible to determine the cause of death. For additional information on conducting necropsies please refer to the necropsy requirements on page 4-13.

HOLDING TURTLES FOR RESEARCH PURPOSES

Individual investigators may be authorized to hold turtles for scientific research in accordance with Florida Administrative Code Rule 68E-1.004(2)(a). This authorization is granted only after a research proposal has been submitted by the investigator and approved by FWC in accordance with Florida Administrative Code Rule 68E-1.004. Unless a specific exception is granted because of research conditions, anyone holding turtles for scientific research shall follow all the guidelines for holding turtles (i.e., general tank size and water quality standards must be met). Additional requirements for holding research turtles may be imposed, depending on the nature of the research.

Research that is likely to result in the death of an endangered marine turtle (all species except loggerheads) may require a federal U.S. Fish and Wildlife Service (USFWS) permit (in addition to the FWC permit). A USFWS permit is also required for research utilizing any endangered marine turtle (all species except loggerheads) that will be held for more than 45 consecutive days.

Any turtle that is injured or dies following injuries sustained while being held for research purposes must be reported to FWC immediately. Research turtles that die must be necropsied as soon as possible to determine the cause of death. For additional information on conducting necropsies please refer to the necropsy requirements on page 4-13.

ADDITIONAL REQUIREMENTS FOR HOLDING MARINE TURTLES

Facilities must ensure the safety of all marine turtles held in captivity by ensuring individuals within a common tank or holding space are matched by species and size. Species such as loggerhead and Kemp's ridley turtles often display aggressive behavior towards other turtles in captive settings, particularly smaller animals or while feeding. Any time turtles are housed together, they must be watched closely and separated at the first sign of aggression. Tank dividers may be utilized provided they are constructed of appropriate materials, do not provide an opportunity for entanglement or entrapment and effectively prevent interaction between the turtles being separated. Only similarly sized marine turtles should be housed in the same space.

Captive breeding of marine turtles must be prevented by housing adult male and female turtles separately. Any other method of preventing captive propagation must be reviewed and approved by FWC staff. The following information is provided as guidance regarding estimated breeding size by species: loggerhead turtles (≥80 cm SCL), green turtles (≥83 cm SCL), Kemp's ridley turtles (≥58 cm SCL), and hawksbill turtles (≥71 cm SCL). Turtles smaller than these sizes are capable of breeding and should be separated if breeding behaviors or physical examination reveals maturity or breeding status. All species should only be housed with other marine species that are present in their natural environment.

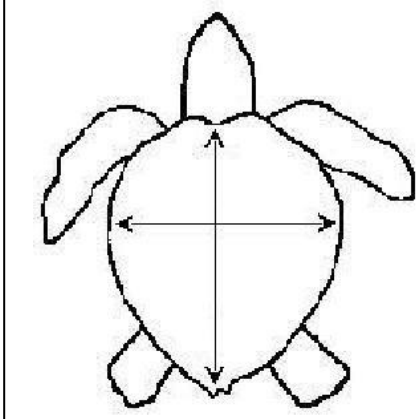
Marine turtles exhibiting fibropapillomatosis (FP) tumors must be isolated from turtles without symptoms of FP. FP is an infectious disease, most likely caused by a contagious herpesvirus. Only certain facilities have been approved to hold FP turtles, as specific measures including sterile techniques for disinfecting equipment, separate water handling systems, and experienced staff and caregivers are required.

HOLDING TANK REQUIREMENTS

Tank Size:

Holding tank sizes for turtles shall be based upon the size of the largest specimen in the tank as described below. Use straight carapace measurements, straight carapace length notch to tip (SCLst) and straight carapace width (SCW), to determine the appropriate tank size (Figure 4-1).

Figure 4-1. The **carapace length** is taken from the center of the nuchal notch to the posterior marginal tip. The **carapace width** is taken at the widest point and perpendicular to the longitudinal body axis. The widest point may be forward of "halfway" down the carapace



1. Hatchlings (up to 5 cm SCLst for all species other than leatherback) and post-hatchlings (5 cm SCLst up to 10 cm SCLst for all species other than leatherback) – for one hatchling, a tank must have a surface area at least five times the shell length by two times the shell width of the turtle plus minimum water depth of one foot. For each additional hatchling or post-hatchling, increase the original surface area by 25%.

2. Turtles up to 50 cm SCLst– for one turtle, a tank must have a surface area at least seven times the shell length by two times the shell width of the turtle plus a minimum water depth of two and a half feet. For each additional turtle, increase the original surface area by 50%.

3. Turtles up to 65 cm SCLst– for one turtle, a tank must have a surface area at least seven times the shell length by two times the shell width of the turtle plus a minimum water depth of three feet. For each additional turtle, increase the original surface area by 50%.

4. Turtles with a carapace length greater than 65 cm SCLst – for one turtle, a tank must have a surface area of at least nine times the shell length by two times the shell width of the turtle plus a minimum water depth of four feet. For each additional turtle, increase the original surface area by 100%.

TIP #1: 3 foot diameter tank = 7 square feet of surface area
6 foot diameter tank = 28 square feet of surface area
9 foot diameter tank = 64 square feet of surface area
12 foot diameter tank = 113 square feet of surface area

TIP #2: 10 cm straight carapace length needs a tank with ≥ 1 square foot of surface area
45 cm straight carapace length needs a tank with ≥ 25 square feet of surface area

50 cm straight carapace length needs a tank with ≥ 31 square feet of surface area
65 cm straight carapace length needs a tank with ≥ 51 square feet of surface area
90 cm straight carapace length needs a tank with ≥ 123 square feet of surface area

Tank Size Exceptions:

1. Sick and/or injured turtles may be held in smaller isolation tanks to facilitate medical treatment. Any turtles held for this purpose must be protected from desiccation and moved to an appropriate tank as soon as health allows.

2. Tanks holding mobility-impaired turtles shall meet the standard size requirements, unless it can be demonstrated that the tank is detrimental to the health or welfare of the animal. In such cases, written documentation by a veterinarian confirming the need for such exemption shall be maintained by the permit holder and made available upon request by FWC.

3. If necessary, healthy turtles may be held in tanks with dimensions less than those required for no more than one (1) week every three (3) months or as approved after consultation with FWC. Those tanks must be large enough to allow complete submergence and unimpeded turning.

Tank Condition:

1. The inside surfaces of holding tanks must be non-abrasive, free of burrs or projections that could cause harm to turtles and free of toxic substances such as lead or copper paints. Turtles may not be housed in any tank with painted internal surfaces with signs of chipping or flaking. Non-finished concrete tanks are not appropriate for housing turtles.

2. Holding tanks shall be designed and water levels maintained to ensure turtles remain within the tank at all times unless removed by facility personnel. Turtles must be prevented from accessing beaches, stairs, medical pools, ladders and other exhibit features that could result in escape.

3. Holding tanks shall not contain any non-food items that could be ingested by a turtle. Items or components of items which are small enough to allow turtles to bit or swallow could be either ingested immediately or broken apart and ingested. Enrichment tools are encouraged and may be utilized provided they are constructed of a size and material that cannot be broken apart or ingested by the turtle(s) in the exhibit.

4. Holding tanks shall not contain entangling materials. If there are rocks, ledges, or other structures in the tank, these items must be constructed and positioned such that a turtle cannot become wedged, prevented from surfacing or trapped underwater.

5. The drains or intakes of holding tanks shall be securely shielded such that a turtle, or part of a turtle, cannot become trapped or held underwater. Inflows and drains shall be configured to ensure appropriate water turnover and flow rates throughout all areas of the tank and to prevent vortices.

6. All tanks housing marine turtles shall have enough lighting (sunlight and/or artificial lighting) to allow for easy viewing of the animals in all areas of the tank. The photoperiod of captive marine turtles shall be similar to a natural seasonal photoperiod. Tanks may not be artificially illuminated for more than sixteen (16) hours per twenty-four (24) hour period. Lighting must not be excessive

so as to cause sensitivity, but must be sufficient to effectively penetrate the water column and provide intended benefits.

7. 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 information. Full spectrum bulbs (UVA/UVB, with UVB wavelength -280 nm to 320 nm) are encouraged to promote general health and to avoid potential metabolic problems.

8. Overhead lighting must be protected or shielded to prevent accidental breakage.

9. Any tank with the surface accessible or viewable to the public must incorporate the use of railings, barriers, screens or other structures to prevent the public from reaching into or depositing items in the tank. Viewing windows incorporated into tanks are permissible; however, the facility must be able to cover or block viewing windows if an animal housed within exhibits stress related to public viewing. Rehabilitating turtles, particularly small juveniles, may be particularly susceptible to stress associated with public presence, and individuals demonstrating signs of stress should be removed from public viewing or exhibited in a way that prevents stress associated with public viewing or presence (e.g., one-way glass, angled overhead mirrors, viewing cameras).

WATER QUALITY AND FEEDING STANDARDS

Water Quality/Quantity:

1. Facilities utilizing natural seawater are encouraged to treat or pre-filter source water to remove infections or parasites (e.g. cercariae).

2. Facilities making seawater must ensure that an appropriate variety of salt (without anticaking agents) is used to make and maintain appropriate water quality standards. Further, facilities making seawater must ensure that the water created is sufficiently supplemented, as needed, to reasonably replicate components of natural seawater.

3. The salinity shall be maintained between 20 parts per thousand (ppt) and 40 ppt unless otherwise authorized by FWC. If necessary, marine turtles may be maintained in less saline water for up to 24 hours per week. Turtles undergoing medical treatment may be kept at salinity's below 20 ppt or above 40 ppt as prescribed by the attending veterinarian.

4. Water pH shall be maintained between 7.2 and 8.5.

5. Water temperatures shall be maintained between 20^{o}C and 30^{o}C (68^{o}F - 86^{o}F). Outdoor tanks that are not otherwise temperature controlled must be at least 30% shielded to prevent tank water temperatures from becoming too warm. At facilities where tank water temperatures drop below 20^{o}C (68^{o}F), heating units shall be utilized to maintain acceptable temperatures. All rehabilitation facilities are expected to be able to control water temperature as needed for patient treatment through the use of appropriate heating/cooling components. Back-up temperature sensors are strongly encouraged to prevent turtles from being unintentionally subjected to unsafe water temperatures.

6. If chlorine is used to treat the water, free chlorine levels should be maintained no higher than 1.0 parts per million (ppm). Other chemicals may be used to treat water in a tank housing marine turtles so long as the dilution needed for effective water treatment is safe for turtles.

7. If ozone is used for water treatment, the oxidation-reduction potential (ORP) must be monitored and maintained below 400 millivolts (mV) to reduce the potential for irritation, unless otherwise prescribed by the attending veterinarian.

8. Coliform bacteria counts should be conducted regularly to monitor the efficiency of filtration systems. Coliform counts may be evaluated either by most probable number (MPN), total coliform count or fecal coliform counts. Coliform MPN must not exceed 1000/100 ml of water. Total coliform counts must not exceed 500/100 ml of water, and fecal coliform counts must not exceed 400/100 ml of water.

    a. If the allowable coliform bacterial count is exceeded, two (2) subsequent samples must be taken to repeat the test; one sample is to be taken immediately after the initial test result and the other should be taken within forty-eight (48) hours of the initial test. If the averaged value of all three (3) test results are still in excess of the acceptable levels (as indicated above), steps must be taken to reduce levels (Spotte, 1991).

    b. FWC may, at any time, request a coliform count from a facility holding marine turtles. Facilities will not be expected to provide results of routine coliform tests, provided steps are taken to prevent the conditions in which coliform bacteria proliferate and there are no chronic health problems as determined by FWC. The aforementioned steps include adequate filtration (removing suspended material and larger pieces of feces and leftover food), the use of an appropriate sanitizing chemical such as chlorine, or a high turnover rate with fresh, uncontaminated seawater.

9. Unless a turtle is being treated with a substance that inadvertently temporarily reduces clarity (e.g., the use of mineral oil as part of medical treatment), the water shall be clear enough to allow viewing of marine turtles in any part of the tank.

10. Water turnover, flow rates and filtration associated with all tanks must be sufficient to maintain minimum water quality parameters outlined in this chapter. Any flow-through system must have a filtration system on intake. Closed or semi-open systems must incorporate filtration to ensure appropriate water quality of recirculated water.

11. Rehabilitation facilities must employ systems (e.g., open, closed, semi-closed) that maintain water quality by filtration or flow through. Dump and fill systems may be used for rehabilitation only under emergency circumstances on a temporary (<30 days) basis and only following consultation with and subsequent written authorization from FWC.

12. Any facility housing marine turtles shall provide adequate water quantity under normal and emergency conditions. In an emergency, marine turtles may be kept out of water for a maximum of four (4) hours per week (longer periods are acceptable when directed by the veterinarian for health reasons). During this time, the animal shall be kept in a temperature-controlled

environment to ensure that its core temperature is not chilled or heated. It should also be protected from drying out and physical damage. Dry-docking turtles should occur only when prescribed by the attending veterinarian or during emergency situations (e.g., evacuation of tanks for imminent storm events, system malfunction resulting in unsafe holding conditions). If marine turtle tanks are regularly drained and cleaned, adequate temporary holding tanks must be available to house the turtles during this time.

13. Water disposal shall be in accordance with all applicable local, State, and Federal regulations.

Feeding:

1. Food shall be provided in an unspoiled and uncontaminated condition. Food should either be fresh, flash frozen and glazed, or frozen in some other manner that ensures the quality of the food. Any frozen food is to be completely thawed in cool water or in air in refrigerated coolers prior to feeding and used entirely or discarded. Frozen food that has been thawed shall be used within 24 hours after thawing. Under no circumstances may food be refrozen. If the quality of the food is questionable, it shall not be used for marine turtle feeding. Commercially prepared diets (e.g., dry, pelletized, floating or sinking varieties) may be utilized, but they must be fresh or stored frozen to maintain nutritional value and to prevent deterioration or microbial growth.

2. Food shall be of a type and quantity that meets the nutritional requirements for the particular species and size class. Reasonable efforts shall be made by the holding facility to develop proper diets for marine turtles. It is the responsibility of the holding facility to ensure and justify the adequacy of its feeding regimen. Turtles must be regularly evaluated to ensure they are not being over or underfed; quantities and composition should be sufficient to promote safe growth rates but prevent obesity.

3. Hand feeding of educational, research or rehabilitating turtles that will eventually be released is prohibited except when absolutely necessary as a part of rehabilitation. In the latter case, the turtle should be allowed to feed on its own as soon as possible. Feeding tools (e.g., bottom feeders, feeding mats) that are designed to mimic natural feeding conditions or behaviors are encouraged when appropriate.

4. Release candidates of species and size classes that routinely feed on live prey in the wild should be provided with, and observed to effectively capture and consume, live food prior to release to assess foraging behavior. Live prey that serves as an immediate host for parasites, such as snails, are not appropriate food for captive turtles.

VETERINARY CARE

All facilities housing marine turtles must have the assistance of two (2) licensed veterinarians, a primary veterinarian (attending) and a secondary (back-up) veterinarian, trained and experienced in marine turtle medicine. The secondary veterinarian must be able to provide necessary care whenever the primary veterinarian is unavailable. Both the primary and secondary veterinarians shall be listed as Authorized Personnel on the facility's Marine Turtle Permit.

To qualify to care for marine turtles, veterinarians must meet basic husbandry and clinical experience working with marine turtles. This experience must have occurred under the direct mentorship of the resident marine turtle veterinarian at a state or federally authorized educational, research or rehabilitation facility. Diplomates of the American College of Zoological Medicine may be exempt from this qualification, but they must consult a veterinarian who meets the requirements in Rule 68E-1 and this section for all marine turtle cases as outlined in the Marine Turtle Permit.

The attending or secondary veterinarian at a rehabilitation facility must examine all new patients within twenty-four (24) hours of admittance to the facility, either in person or remotely through the use of currently available technologies including but not limited to video-conferencing (e.g., Skype™, FaceTime), electronic file sharing (e.g., email, ftp sites, Dropbox) and telephone. Both veterinarians must be available to examine animals in person on a regular schedule and emergency basis and be able to conduct post-mortem examinations. They must also be able to recognize and treat common marine turtle diseases. They should have experience with watercraft and other traumatic injuries, cold stress, entanglement, red tide or other toxin exposure, emaciation, ingestion of foreign material and debilitation for all marine turtle species regularly encountered in Florida. Veterinarians are expected to diagnose, treat, and medically clear rehabilitated marine turtles for release or transport, and when necessary humanely euthanize a marine turtle.

Veterinarians providing treatment at rehabilitation facilities admitting marine turtles exhibiting Fibropapillomatosis (FP) tumors must provide documentation of active participation in numerous rehabilitation cases involving treatment of FP tumors. Veterinarians treating turtles with FP tumors must be able to document significant experience in diagnostic and treatment techniques commonly employed during treatment including imaging, endoscopy and surgical removal of FP tumors.

Table 4-1. Recommended Veterinarian Requirements

Recommended Veterinarian Minimum Requirements	Educational Facility	Rehabilitation Facility
Licensing	• Active veterinary license in US • Active veterinary license in state where turtles are being held • Active DEA Controlled Substance Registration Certificate	• All Educational Facility requirements
Knowledge, Skills, and Abilities	• Post-mortem examination • Knowledge of marine turtle diseases • One (1) year post-graduation at educational, rehabilitation or research facility authorized to hold marine turtles	• All Educational Facility requirements • Ability to diagnose, treat & medically clear rehabilitating marine turtles for release or transport • Documentation of active participation in marine turtle rehabilitation cases (including FP if facility will be treating FP turtles) • Two (2) years post-graduation at authorized education, rehabilitation or research facility
Letters of Support	• One (1) letter of support from a practicing marine turtle rehabilitation veterinarian with personal knowledge of clinical proficiency in marine turtle rehabilitation	Two (2) letters of support from practicing marine turtle rehabilitation veterinarians with personal knowledge of clinical proficiency in marine turtle rehabilitation

TRANSPORTING LIVE TURTLES

If you need to transport a marine turtle to or from a facility, it must be shaded and otherwise protected from extremes of heat and cold (not above 90°F and not below 50°F) during transport. If a turtle is transported at temperatures greater than or equal to 75°F, cool the animal by keeping a wet towel on the carapace and by periodically pouring water over the head. Water and wet towels should not be used when transporting turtles at temperatures less than 75°F or at any time they are exposed to an

air-conditioned environment. The only exception is that any open wounds should be kept moist with clean freshwater. At temperatures less than 75°F, turtles may be kept from drying out during transport by applying a thin layer of petroleum jelly (e.g., Vaseline®) to the carapace and all the soft tissues (except the eyes and any open wounds). The use of petroleum jelly is recommended only for small turtles (juveniles) and only for turtles which are not being released back into the wild at the end of the transport

The table below provides guidance in determining which treatment is most appropriate for any live turtle during transport.

Table 4-2. Requirements for Transporting Marine Turtles

Ambient Air Temperature around Turtle	Duration of Transport (hours)	Barnacles or Other Epibiota present on carapace	Turtle Class Size	Recommended Treatment
75ºF (or warmer)	Any	--	Any size	Wet towel or water mist
74ºF (or cooler)	≤2 hours	--	Any size	Dry towel
74ºF (or cooler)	≥2 hours	Carapace clear	Juvenile	Petroleum jelly
74ºF (or cooler)	≥2 hours	Carapace clear	Sub-adult/Adult	Dry towel
74ºF (or cooler)	≥2 hours	Large amounts of epibiota present	Any size	Dry towel

Any containers housing turtles during transport are to be padded and may not contain any material that could be accidentally ingested. In the event that a container is not used during transport, the area containing the turtle should be padded. Closed cell foam 2-4" thick works well for ensuring sufficient protection for most turtles and can be sanitized and reused. Hatchlings should be transported in a container with moist sand. Post-hatchlings should be transported in a container with a damp towel. No turtles should be transported in water. Containers should be secured during transport such that they do not slide around or tip over. Unless specifically directed by FWC staff, live turtles should be transported on their plastron.

RELEASE OF TURTLES

The goals of the Endangered Species Act (ESA) and Florida's Marine Turtle Program are to conserve and recover wild populations of threatened and endangered species. Species are listed under the ESA only after it has been determined that they are threatened or endangered with extinction. It is therefore imperative that as many individuals as possible are available to the wild population to mature and become part of the breeding population. Furthermore, a cooperative agreement under section 6 of the ESA between the USFWS and FWC only allows FWC to remove endangered marine turtles from the wild if such action is necessary to aid sick or injured animals. It prohibits the holding of healthy endangered turtles in captivity for a period of more than 45 consecutive days. Therefore, endangered and threatened turtles must be released when their health status has improved to a point where they can be expected to survive in the wild. 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's ability to survive in the wild. Flipper damage is not an unusual occurrence and is often documented on nesting beaches.

Not all size classes of each marine turtle species occur in Florida waters, which can complicate the optimal timing and location for release. For example, hatchling loggerhead turtles leave the beach and then spend years in the open ocean around convergence zones and offshore currents. Loggerhead turtles are not normally observed in Florida's nearshore/inshore waters until they reach 45 cm straight carapace length notch to tip (SCLst) (Foley, STSSN). It appears that hawksbill and green turtles, on the other hand, move back into nearshore waters at a much smaller size. Hawksbills of all size classes occur in Florida waters including the very small pelagic size. Hawksbill turtles residing in Florida waters have been observed around nearshore reef sites off the southeast coast of Florida in the 20-30 cm SCLst size class (Meylan, personal communication). Green turtles are observed in nearshore and inshore waters off the central east coast of Florida as small as 21 to 25 cm SCLst (personal communication with D. Bagley and M. Bresette). In Florida Bay, the smallest green turtles observed are ~28 cm SCLst (Schroeder, personal communication).

The final determination of an individual's fitness for survival in the wild will be made through FWC staff consultations with the facility's animal care personnel. When a facility's veterinarian has determined that an animal has recovered sufficiently from its illness or injury and is ready for release, the qualified individual shall contact FWC staff in Tequesta to discuss the appropriate time and site for the release. All marine turtles shall be measured, weighed and tagged (if size appropriate) prior to release (see Section 5 on tagging turtles). Tagging forms (Appendix C-1) must be completed (this includes tagged and non-tagged animals, except hatchlings) and submitted with the quarterly report (Appendix C-2) for all turtles released. The FWC Cooperative Marine Turtle Tagging Program (CMTTP) Tagging Data Form (effective 6/16) is incorporated by reference in Rule 68E-1.004(14)(b)18.

Note on release of turtles with fibropapillomatosis (FP): Turtles with FP may be released when the attending veterinarian has determined that the tumor burden has been sufficiently reduced and the turtle has recovered sufficiently from other illness or injury. The presence of minimal FP tumors that are not immediately life threatening should not prevent release if the veterinarian determines the animal is otherwise ready for release as determined by other health parameters.

NECROPSY REQUIREMENTS FOR TURTLES THAT DIE IN CAPTIVITY

Necropsies shall be performed on turtles that die at a holding facility, including post-hatchling and larger turtles held for rehabilitation, all non-releasable turtles, and all turtles held for education or research. Hatchlings that are being held for research or educational purposes must be necropsied; necropsies of hatchlings being treated at a rehabilitation facility are not required. Necropsies shall be performed by or in consultation with the attending or secondary veterinarian, by a qualified marine turtle pathologist or by FWC marine turtle program staff. Unless needed for ongoing FWC studies, rehabilitation facilities are expected to conduct necropsies of their patients. Additional information on necropsy techniques can be found in the Sea ~~Marine~~ Turtle Necropsy Manual (Wolke and George, 1981). The necropsy report (Appendix B-4) is to be submitted with the holding facility's quarterly report. If a non-releasable, educational, or research turtle dies, all efforts shall be made to determine the cause of death in order to help prevent future losses. Investigation into the cause of death should include a histopathological examination whenever possible.

Note: Before conducting necropsies on any stranded turtles that die within a week after arriving at a facility, the qualified individual must contact an FWC Sea Turtle Stranding Network coordinator to determine if the animal should be salvaged for other purposes.

DISPOSITION OF DEAD TURTLES

Following necropsy, the carcass of any marine turtle that dies while in the custody of an FWC-permitted facility shall be completely destroyed (in accordance with state and local laws) or, subject to the approval of FWC, transferred to a duly authorized museum, university, educational or research facility. **Under NO circumstances may a dead marine turtle, or any part thereof, be salvaged for any purpose other than FWC-approved education and/or research activities.**

FACILITY INSPECTIONS

In order to ensure that facilities holding live marine turtles for rehabilitation, education, and/or research are maintaining FWC's standards for care and maintenance, and that all applicable laws, rules, permit conditions and parameters are being met, all facilities are subject to inspection at any time by FWC personnel. Prior to issuance of a permit, new facilities applying for a permit to hold live marine turtles for rehabilitation, education, and/or research shall be subject to inspection by FWC personnel. All new or modified facilities being inspected should be fully operational for a minimum of two (2) weeks prior to the date of inspection in order to ensure that water quality and filtration components are working properly. 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.

QUARTERLY AND ANNUAL REPORTING REQUIREMENTS

All permit holders authorized to hold marine turtles for any reason are required to submit the FWC Marine Turtle Holding Facility Quarterly Report (Appendix C-2). The FWC Marine Turtle Holding Facility Quarterly Report (FWC Form CAP-1, effective 6/16) is incorporated by reference in Rule 68E-1.004(14)(b)19. In Section 1 of the Quarterly Report Form, the permit holder shall report the turtle's state identification number (SID), the species, the date acquired, the stranding ID (if applicable), the turtle's current size class, status, final disposition (including date) and copies of pertinent reports (e.g., stranding, transfer, tag/release, necropsy) for each turtle held.

A SID number is assigned to every turtle that arrives at an FWC-authorized facility alive; turtles that are dead upon arrival (e.g. died during transport) do not require a SID number. Turtles that are transferred from one Florida facility to another should have received a SID number at the first facility receiving the turtle. The SID number is transferred, via a Marine Turtle Transfer Form (Appendix C-3, available from MTP @ myfwc.com), with the turtle to the facility taking over the care of the animal. The Marine Turtle Transfer Form (FWC Form CAP-2, effective 6/16) is incorporated by reference in Rule 68E-1.004(14)(b)2. Each time a facility receives a turtle (excepting hatchlings and turtles that are transferred as described above), the qualified individual shall contact the FWC Tequesta office (MTP @ MyFWC.com or 561-882-5975) to obtain a SID number for the animal.

Section 1 of the Quarterly Report also requires the permit holder to identify the current status of each turtle using the STATUS CODES list on the reporting form. Section 1 requires information on the weekly temperature, salinity, and pH values for the water in which the turtles are held. Hatchling totals are reported on the last page of the Quarterly Report.

Quarterly Reports are due as follows:

1st quarter report due by no later than April 15th (January – March activities)
2nd quarter report due by no later than July 15th (April – June activities)
3rd quarter report due by no later than October 15th (July – September activities)
4th quarter report due by no later than January 15th (October – December activities)

The annual report is due no later than January 31st (and should include a January through December summary). Quarterly reports shall include copies of STSSN forms (for all live strandings received during the quarter), transfer forms, tag/release forms, papilloma forms, and necropsy forms as applicable during the reporting period. In addition, an annual (calendar year) report is required that includes: the SID number, tag numbers (if tagged), species, sex (if known), acquisition date, purpose of acquisition, disposition date, and measurements at disposition.

Quarterly and annual reports shall be submitted to FWC by any of the following methods: upload to FWC's online permitting system (FWC Permit Portal); email (MTP @ MyFWC.com); mail to the Tequesta office (Imperiled Species Management, Tequesta Field Station, 19100 SE Federal Highway, Tequesta, Florida, 33469); or fax to the Tequesta office (561-743-6228).

EDUCATIONAL TOURS INVOLVING CAPTIVE TURTLES

Summary
If the permit authorizes the activity to **conduct educational tours involving captive turtles,** the permit holder may house marine turtles for the following purposes as indicated on the permit.

- **hold loggerheads for educational display**
- **hold non-releasable turtles for educational display**
- **hold turtles for rehabilitation**
- **hold turtles for research**

Additional authorization and specific approval are required to conduct the following or any other activities during while holding marine turtles. These activities must be specifically mentioned in the application, listed on the permit and conducted by the qualified individual or authorized personnel designated by the qualified individual.

- **tag turtles**
- **transfer or transport turtles into or out of Florida**
- **hold turtles for any reason other than that specifically stated on the permit**
- **conduct research on turtles held for rehabilitation or educational display**
- **conduct educational presentations using live turtles**
- **conduct dive/snorkel programs in tanks holding marine turtles**
- **collect or maintain and display educational specimens**
- **use turtles held for rehabilitation for educational displays or presentations**

Activity Description
The following conditions shall be met for all facilities offering scheduled tours that allow guided access to areas otherwise inaccessible to the public. These conditions have been developed by the FWC in consultation with the U.S. Fish and Wildlife Service and have been specifically designed to minimize the stress experienced by marine turtles housed in areas that will be visited during educational tours.

1. Unless specifically authorized on your marine turtle permit, tour participants may not be led through areas of tanks housing rehabilitating turtles; these turtles may be viewed remotely through the use of elevated walkways or decks, angled overhead mirrors, viewing windows, one-way glass and viewing cameras. Viewing windows must be able to be covered or blocked if an animal housed within exhibits stress related to public viewing. Turtles in critical care or particularly fractious turtles should be maintained in a location removed from visitor, display and tour areas.

2. The veterinarian responsible for the care of any turtle housed in an area that will be toured must deem that the turtle is stable and that the tours will not affect the turtle's health.

3. To minimize stress to turtles from the tours, tanks involved in the tours must be half covered or provide a hiding spot for turtles.

4. Travel corridors, display areas and staging locations should be designed such that visitors cannot touch or interact directly with the turtles, their tanks or life support/water quality systems.

5. Tours may only be conducted during hours when the turtles would normally be exposed to light.

6. The timing of tours must not interfere with the treatment and care of the turtle. Tours may be conducted while a turtle is receiving 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.

7. Each tour must have at least one (1) Authorized Personnel guide (e.g., staff, volunteer) present for every fifteen (15) guests.

8. Visitors must be instructed to minimize disturbance and stress to turtles, including no touching of turtles or their tanks, minimal noise, and no flash photography that could stress the animals.

9. The release of any captive turtle may not be delayed to facilitate tours.

Reporting Requirements

Any injury to a turtle during an educational tour shall be reported to the FWC, Imperiled Species Management (MTP @ MyFWC.com) immediately. Additionally, facilities conducting educational tours involving captive turtles must submit an annual report that lists the total number of tours conducted during the calendar year with total number of tour participants. Annual reports shall be submitted to FWC by any of the following methods: upload to FWC's online permitting system (FWC Permit Portal); email (MTP @ MyFWC.com); mail to the Tequesta office (Imperiled Species Management, Tequesta Field Station, 19100 SE Federal Highway, Tequesta, Florida, 33469); or fax to the Tequesta office (561-743-6228).

EDUCATIONAL PRESENTATIONS USING LIVE TURTLES

Summary
If the permit authorizes the activity to **use live turtles in educational presentations**, the permit holder is also authorized to:

- **hold loggerheads for educational display**
- **allow the qualified individual or authorized personnel designated by the qualified individual to transport or transfer turtles within Florida**

Additional authorization and specific approval are required to conduct the following or any other activities while holding marine turtles. These activities must be specifically mentioned in the application, listed on the permit, and conducted by the qualified individual or authorized personnel designated by the qualified individual.

- **transport or transfer turtles into or out of Florida**
- **conduct educational tours involving captive turtles**
- **conduct dive/snorkel programs in tanks holding marine turtles**

Activity Description
The following conditions shall be followed regarding the use of live marine turtles in educational presentations. The phrase "educational presentation" refers only to the use of turtles away (i.e., offsite) from an FWC-authorized captive facility (e.g., at schools, festivals, fairs). These conditions have been developed by the FWC in consultation with the U.S. Fish and Wildlife Service and have been specifically designed to minimize the stress experienced by turtles used for educational presentations.

1. No turtle shall be used in an educational presentation unless its health will not be compromised by this activity. No underweight, rehabilitating or weak turtles are to be used. Turtles that exhibit signs of stress in conjunction with public presence are not to be used in these presentations.

2. Only juvenile loggerhead turtles being held for educational display may be used for offsite educational presentations.

3. During periods away from the captive facility (except during transport), the turtle is to be kept in a container of clean salt water. This container shall be large enough to allow the turtle to turn completely around (360°) and filled with enough clean salt water to allow complete submergence of the turtle. The container must be designed or incorporate barriers to prevent the public from reaching into the container.

4. During periods away from the captive facility, the container housing the turtle is to be kept shaded and protected from temperature extremes.

5. Turtles may not be handled or removed from the container by members of the public or by Authorized Personnel beyond what is necessary to transfer the turtle into or out of the transport container or maintain appropriate holding conditions.

6. Turtles must be transported in accordance with the transport guidance provided above (Page 4-12).

7. The longest period of time a turtle may be kept away from the captive facility for use in an educational presentation is twelve (12) hours. All turtles are to be returned to the facility within this time period.

Reporting Requirements

Facilities using marine turtles in educational presentations must submit an annual report on the Educational Presentations form (Appendix E-1). The Educational Presentations Using Live Turtles Reporting Form (FWC Form E-1, effective 6/16) is incorporated by reference in Rule 68E-1.004(14)(b)21 and available from mtp @ myfwc.com. Additionally, any injury to a turtle during transport to/from or participation in an educational presentation shall be reported to the FWC, Imperiled Species Management section (MTP @ MyFWC.com) immediately.

DIVE/SNORKEL PROGRAMS IN TANKS HOLDING MARINE TURTLES

Summary
If the permit authorizes the activity to **conduct dive/snorkel programs in tanks holding marine turtles,** the permit holder may house marine turtles for the following purposes as indicated on the permit.

- **hold non-releasable turtles for educational display**

Additional authorization and specific approval are required to conduct the following or any other activities while holding marine turtles. These activities must be specifically mentioned in the application, listed on the permit, and conducted by the qualified individual or authorized personnel designated by the qualified individual.

- **tag turtles**
- **transfer or transport turtles into or out of Florida**
- **hold turtles for any reason other than that specifically stated on the permit**
- **conduct research on turtles held for rehabilitation or educational display**
- **conduct educational tours involving captive turtles**
- **conduct educational presentations using live turtles**
- **collect or maintain and display educational specimens**
- **use turtles held for rehabilitation for educational displays or presentations**

Activity Description
The following conditions shall be met for all facilities offering programs that allow the public to enter and become immersed in an exhibit housing marine turtles through SCUBA, snorkel, SNUBA or other method. These conditions are specifically designed to minimize stress that may occur to marine turtles kept in tanks where dive/snorkel programs are authorized. These conditions also provide instruction to minimize potential harm to persons participating in dive/snorkel programs. Please note that the FWC does not accept any liability for unpredictable behavior by marine turtles that may result in injury to participants.

The permit holder, qualified individual or authorized personnel designated by the qualified individual shall ensure the following requirements are strictly enforced.

1. Feeding, touching and/or handling turtles by dive/snorkel program participants is strictly prohibited.

2. Dive/snorkel programs may not be conducted in tanks housing rehabilitating or educational turtles. Only non-releasable turtles being held for educational purposes may be involved in dive/snorkel programs.

3. All dive/snorkel programs shall be closely monitored by facility staff; at least one (1) staff member must be in the tank with participants at all times.

4. Any participant observed harassing a turtle shall be required to exit the tank immediately.

The permit holder, qualified individual or authorized personnel designated by the qualified individual shall inform participants of the following information.

1. All species of marine turtles are protected under State and Federal laws. Under the Endangered Species Act, it is illegal to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect any marine turtle or its nest at any time".

2. The Florida Fish and Wildlife Conservation Commission permits facilities to hold marine turtles for education, research and/or rehabilitation purposes.

3. Marine turtles (captive or wild) should never be approached. Marine turtles are very mobile under water; they are powerful creatures and can cause serious injury. It is illegal and potentially dangerous to attempt to interact with them.

4. Feeding, touching and/or handling turtles by dive/snorkel program participants is strictly prohibited.

5. Any participant observed harassing a turtle shall be required to exit the tank immediately.

Reporting Requirements
Any injury to persons or turtles occurring during participation in a dive/snorkel program shall be reported to the FWC, Imperiled Species Management section (MTP @ MyFWC.com) immediately.

Additionally, facilities conducting dive/snorkel programs must submit an annual report that lists the total number of programs conducted during the calendar year with total number of participants and a listing of all turtles involved in programs including SID number, species, and status. Annual reports shall be submitted to FWC by any of the following methods: upload to FWC's online permitting system (FWC Permit Portal), submit electronically to (MTP @ MyFWC.com), mail to the Tequesta office (Imperiled Species Management, Tequesta Field Station, 19100 SE Federal Highway, Tequesta, Florida, 33469); or fax to the Tequesta office (561-743-6228).

SECTION 5 - TAGGING TURTLES

Marking a turtle so it can be recognized as a known individual is a valuable conservation and research tool. Temporary marking can be used for short term identification of specific individuals during stranding response, within facilities, or as a part of research activities. More permanent marking techniques, such as flipper or PIT tagging, enables identification of an individual turtle if it is encountered in the future, providing valuable information on movements, habitat usage, growth rates, diet, and reproductive biology (Eckert et al., 1999). The University of Florida's Archie Carr Center for Sea Turtle Research (ACCSTR) oversees the Cooperative Marine Turtle Tagging Program (CMTTP), a centralized tagging program developed to distribute flipper tags and tag applicators in the Atlantic Region, manage tagging data, and facilitate exchange of tag information. This program is funded by the National Marine Fisheries Service Southeast Fisheries Science Center which can be contacted for information on acquiring tags, reporting requirements, data policies and other materials related to tagging.

Application of any tag (i.e., non-temporary marking) is an invasive procedure. To minimize harm during and after tag applications, appropriate handling and application techniques, including sterilization and disinfection, are critical to prevent introduction or transmission of disease among turtles. Only qualified individuals and authorized personnel designated by the qualified individual and who have been trained in the authorized tagging technique may conduct tagging activities.

TEMPORARY MARKING

Summary
If the permit authorizes the activity to **conduct stranding and salvage activities** or **to conduct any tagging technique**, the qualified individual listed on the permit and authorized personnel designated by the qualified individual are authorized to conduct the following activities.

- **temporarily mark live turtles for the purpose of identification**
- **collect morphometric data (e.g., carapace length/width, tail length, weight)**

Additional authorization and specific approval are required to conduct the following or any other marking or tagging activities. These activities must be specifically mentioned in the application or proposal and listed on the permit. Any additional approved activities that involve direct interaction with a marine turtle must be conducted by the qualified individual or authorized personnel designated by the qualified individual.

- **hold or capture turtles**
- **mark turtles using any other technique (e.g., flipper tag, PIT tag, satellite tag, acoustic tag, radio tag, coded wire tag, carapace notching, living tag)**
- **photograph/document tagged turtles on the beach at night**
- **conduct research activities**
- **transfer or transport turtles into or out of Florida**

Activity Description
This activity involves marking a turtle's carapace with temporary, non-toxic material (e.g., livestock paint sticks, paint, non-toxic fingernail polish) for identification while housed in an authorized facility, during stranding response or for research activities. Marking materials should be temporary (i.e., remain visible on the carapace for no more than 4 weeks) and non-reflective if the turtle will be released back into the natural habitat soon. Do not use xylene or toluene-based paints; materials containing tributyl tin, cyanide or copper cyanide; or materials with an exothermic reaction (NMFS, 2008).

FLIPPER TAGGING

Summary
If the permit authorizes the activity to **tag turtles using external flipper tags**, the qualified individual listed on the permit and authorized personnel designated by the qualified individual are authorized to conduct the following activities.

- **handle turtles for the purpose of tagging/marking**
- **collect morphometric data (e.g., carapace length/width, tail length, weight)**
- **photograph/document tagged turtles on the beach during daylight hours only**
- **temporarily mark live turtles for the purpose of identification**
- **release tagged turtles**

Additional authorization and specific approval are required to conduct the following or any other marking or tagging activities. These activities must be specifically mentioned in the application or proposal and listed on the permit. Any additional approved activities that involve direct interaction with a marine turtle must be conducted by the qualified individual or authorized personnel designated by the qualified individual.

- **hold or capture turtles**
- **mark turtles using any other technique (e.g., PIT tag, satellite tag, acoustic tag, radio tag, coded wire tag, carapace notching, living tag) unless specifically authorized by FWC**
- **photograph/document tagged turtles on the beach at night**
- **conduct research activities**
- **transfer or transport turtles into or out of Florida**

Activity Description
This activity involves attaching permanent metal tags to the trailing edge of the front or rear flippers using a customized applicator. In hard-shelled turtles (all but leatherbacks), flipper tags may be applied to trailing edge of either the front or the rear flippers. Tags applied to the rear flippers may be retained longer than those applied to the front flippers and may cause less discomfort. All tags should be cleaned prior to use. On the rear flippers, tags should be inserted in the first large scale closest to the body or adjacent to the first or second large scale. On front flippers, place tags along the back edge of the flipper close to the body, on or adjacent to the first or second large scale. Place the tag to allow for free movement of the flipper, with approximately 1/3 of the tag hanging from the flipper's trailing edge. In leatherback turtles, because the trailing edge of the front flippers of

leatherbacks are easily torn or ripped, flipper tags are placed in the skin between the tail and the rear flippers.

For any tagging technique, appropriate handling and application techniques, including sterilization and disinfection of equipment, are critical to prevent introduction or transmission of disease among turtles. Flipper tags should not be placed within abnormal skin, including into or immediately adjacent to fibropapillomatosis tumors. Turtles with an injury that may interfere with range of motion or functionality of the flipper should not be tagged in the affected flipper.

When marking turtles on nesting beaches, markings or tags may not be deployed until the turtle has deposited approximately ¾ of the clutch into the nest cavity or has completed egg-laying. Tagging activities shall cease if the turtle appears disturbed and begins to abandon nesting or covering activities. Researchers or qualified individuals may not tag injured or compromised turtles that will be transferred to a rehabilitation facility; these turtles may be temporarily marked. If the researcher is interested in ensuring the turtle is included in their data set, he/she may provide tags to the rehabilitation facility receiving the turtle to be applied prior to release.

Turtles housed at a captive facility prior to release should be tagged as close to the time of release as practical and medically appropriate. Release of turtles from a captive facility may not be delayed solely for the purpose of tag application (transmitting or non-transmitting).

Considerations for Turtle Size and Flipper Tagging Locations

Generally, external flipper tags are appropriate for turtles that are at least 30 cm straight carapace length notch to tip (SCLst) or larger. Flipper tags may not be appropriate for turtles less than 12 inches (30 cm) if they have little trailing edge flesh, have damaged or restricted use of flippers, or fibropapilloma tumors. Therefore, only qualified individuals that FWC has determined are experienced in flipper tagging turtles less than 12 inches (30 cm) SCLst and authorized personnel designated by the qualified individual may tag this size animal with flipper tags (either one or two tags). For smaller turtles (less than 12 inches (20 cm) SCLst), a veterinarian may apply tags when specifically authorized by FWC in writing using an approved protocol.

Activity Conditions

The following conditions must be met when tagging turtles using external flipper tags.

1. Flipper tagging must be conducted or directly supervised by a qualified individual experienced in flipper tagging.

2. Turtles must not be tagged if an animal cannot be adequately immobilized for tag application or conditions on the boat or beach preclude the safety and health of the turtle.

3. Live, injured or compromised turtles that will be transferred to a rehabilitation facility may not be tagged prior to transfer. Researchers who intend to include the turtle in their study after rehabilitation may send project tags to the facility with the turtle.

4. Prior to application, all flipper tags should be cleaned with hot soapy water to remove any oily residue, then soaked for a minimum of 10 minutes in either isopropyl alcohol or 10% povidone-iodine solution (e.g., Betadine®). Cleaned tags should be dried prior to application.

If tags are cleaned and dried well in advance of application, they should be stored in sealed plastic bags or containers.

5. Flipper tag applicators should be disinfected by soaking in 10% dilute bleach or comparable broadcide disinfectant (e.g. Wex-Cide-128) for at least 10 minutes between turtles. Applicators should be subsequently rinsed with clean fresh water prior to tag application.

6. Whenever possible, new sterile disposable gloves should be worn when conducting tagging activities, changing gloves between animals.

7. After identifying the area where the tag will be applied, the skin should be inspected to ensure the area is visually clean. The skin at the tagging site, the tag and applicator tips should be swabbed with Betadine® solution. The skin at the tagging site should be subsequently swabbed with 70% isopropyl alcohol.

8. For hard shell turtles, use the correct applicator for a particular tag to attach it to the trailing edge of the flipper. Attach the tag on the flipper so that approximately 1/3 the length of the tag extends beyond the edge of the flipper once closed. For leatherbacks, attach the tag to the area between the rear flippers and the tail.

9. Once the tag has been attached, check the tag to be sure the tip has properly cinched. Visually inspect the ventral side of the tag to confirm that it is fully secured. The tag tip should overlap the edge of the hole by at least 1/10 of an inch (3 mm). If the overlap is insufficient, either carefully fit the tag back into the applicator and apply greater pressure or attempt to lock it using needle-nose-pliers. If this is still unsatisfactory, remove the tag and apply another tag following all disinfection processes again. This is important; improperly cinched Inconel tags are shed quickly.

10. Fill out all information on the Cooperative Marine Turtle Tagging Program Tagging ~~release~~ Data Form (Appendix C-1) including the turtle's measurements (see Section 3 of this Handbook for more information on protocols for measuring turtles). The Cooperative Marine Turtle Tagging Program Tagging Data Form (Appendix C-1, FWC Form TAG-1, effective 6/16) is incorporated by reference in Rule 68E-1.004(14)(b)18. and available from MTP @ myfwc.com. Submit all completed forms as required. If the turtle is being released from a captive facility, a copy of the tagging form should be submitted to FWC as outlined in Section 4 of this Handbook.

11. Tag applicators should be disinfected as described above after each use. Frequent application of a light lubricant (e.g., WD-40®) to the spring and pivotal surface is recommended when storing equipment. Excess lubricant should be wiped from the applicators and care taken to ensure cleaned tags are not contaminated with lubricant.

PIT TAGGING

Summary

If the permit authorizes the activity to **tag turtles using PIT tags**, the qualified individual listed on the permit and authorized personnel designated by the qualified individual are authorized to conduct the following activities.

- **handle turtles for the purpose of tagging/marking**
- **collect morphometric data (e.g., carapace length/width, tail length, weight)**
- **photograph/document tagged turtles on the beach during daylight hours only**
- **temporarily mark live turtles for the purpose of identification**
- **release the tagged turtle**

Additional authorization and specific approval are required to conduct the following or any other marking or tagging activities. These activities must be specifically mentioned in the application or proposal and listed on the permit. Any additional approved activities that involve direct interaction with a marine turtle must be conducted by the qualified individual or authorized personnel designated by the qualified individual.

- **hold or capture turtles**
- **mark turtles using any other technique (e.g., flipper tag, satellite tag, acoustic tag, radio tag, coded wire tag, carapace notching, living tag)**
- **photograph/document tagged turtles on the beach during nighttime**
- **conduct research activities**
- **transfer or transport turtles into or out of Florida**

Activity Description

Passive integrated transponder (PIT) tags have become a common marking technique for marine turtles in recent years. While this type of tag is more expensive than flipper tags, PIT tags are retained longer, providing a more reliable method for identification of individuals over time. Unlike flipper tags that are visible if present, PIT tags require a specialized tag scanner for detection. FWC does not recommend the use of encrypted tags (i.e., AVID) as not all scanners can read these tags. The application of PIT tags is more invasive than applying flipper tags and must be done only by qualified individuals experienced with the technique or authorized personnel designated by the qualified individual.

Considerations for Turtle Size and PIT Tagging Locations

Generally, turtles that are 10 inches (25 cm) straight carapace length notch to tip (SCLst) or larger may receive PIT tags. Only qualified individuals experienced in PIT tagging turtles less than 10 inches (25 cm) SCLst may PIT tag animals or designate and oversee authorized personnel to do so. For smaller turtles (less than 8 inches (20 cm) SCLst), a veterinarian may apply tags when specifically authorized by FWC in writing.

PIT tags are typically applied in the muscles of one of the front flippers. For turtles less than 12 inches (30 cm) SCLst, PIT tags should be inserted into the mid-triceps muscle (NMFS 2008) to minimize

tag migration (Wyneken et. al. 2010). PIT tags may also be inserted in the posterior aspect of the flipper immediately distal to the second large scale. Experienced qualified individuals may utilize either of these sites or other locations, depending on their familiarity and comfort with PIT tagging there, after conferring with FWC staff.

PIT tags should not be placed within abnormal skin, including into or immediately adjacent to fibropapillomatosis tumors. Turtles with an injury to a flipper that may interfere with range of motion or functionality should not be tagged in the affected flipper.

ACTIVITY CONDITIONS

The following conditions must be met when **tagging turtles using PIT tags.**

1. PIT tagging must be conducted or directly supervised by the qualified individual experienced in PIT tagging or authorized personnel designated by the qualified individual.

2. Turtles must not be tagged if the animal cannot be adequately immobilized for tag application or conditions on the boat or beach preclude the safety and health of the turtle.

3. Live injured or compromised turtles that will be transferred to a rehabilitation facility may not be tagged prior to transfer to the rehabilitation facility. Researchers who intend to include the turtle in their dataset, if successfully rehabilitated, may send their project tags to the facility with the turtle.

4. A new, sterile tag applicator (needle) must be used for each tag insertion. FWC recommends the use of sterile-packaged single-use PIT tags.

5. Prior to PIT tag insertion, thoroughly scan both dorsal and ventral sides of all four flippers and the neck of the turtle with an appropriate tag reader. Place the scanner directly on the turtle's skin and move it slowly over all areas multiple times. PIT tag scanners cycle through multiple radio frequencies attempting to detect the tags, and multiple passes over each area will provide the best opportunity for detection.

6. Using a PIT tag scanner, scan the new PIT tag prior to insertion to ensure that it is functional.

7. Whenever possible, new sterile disposable gloves should be worn when conducting tagging activities.

8. After identifying the area where the tag will be inserted, the skin should be inspected to ensure the area is visually clean. The skin at the tagging site should be swabbed with Betadine® solution then subsequently swabbed with 70% isopropyl alcohol. This process (Betadine® solution then 70% isopropyl alcohol) should be repeated at least once more.

9. The applicator needle should be inserted, with the opening facing upward, at an acute angle (i.e., nearly parallel with the skin of the flipper) and with the needle directed proximally (toward the turtle).

10. The flipper must be firmly secured (with assistance if necessary) so that the flipper cannot move. After inserting the needle an appropriate depth (based upon the size of the turtle being tagged), the plunger should be depressed to insert the tag through the needle. It is important that you depress the plunger prior to any movement to withdraw the needle to minimize potential for the PIT tag to exit the flipper.

11. When withdrawing the needle, apply gentle pressure via a clean cotton or gauze pad over the insertion site. Keep pressure on the insertion site with the cotton or gauze pad for approximately one minute whenever possible.

12. If bleeding from the insertion site occurs, reapply Betadine® using a clean cotton or gauze pad and maintain pressure until the bleeding stops. An antiseptic clotting agent (e.g., styptic powder) may also be used to stop bleeding.

13. Using the PIT tag scanner, scan the tagged flipper and record the tag number. We recommend that you scan the flipper a second time and verify the recorded number is accurately recorded.

14. The individual conducting the tagging should remove and discard the previously used gloves and replace with a fresh pair.

12. Fill out all information on the Tagging Data Form (Appendix C-1) including the turtle's measurements (see Section 3 of this Handbook for more information on protocols for measuring turtles). Submit all completed forms as required. If the turtle is being released from a captive facility, a copy of the tagging form should be submitted to FWC as outlined in Section 4 of this Handbook.

DEPLOYMENT OF ANIMAL-BORNE DEVICES

Summary

If the permit authorizes the activity to **tag turtles using satellite tags**, **conduct satellite tagging/tracking, or outfit turtles with satellite tags**, the qualified individual listed on the permit and authorized personnel designated by the qualified individual are authorized to conduct the following activities.

- **handle turtles for the purpose of tagging/marking**
- **collect morphometric data (e.g., carapace length/width, tail length, weight)**
- **photograph/document tagged turtles on the beach during daylight hours only**
- **temporarily mark live turtles for the purpose of identification**
- **release the tagged turtle**

Additional authorization and specific approval are required to conduct the following or any other marking or tagging activities. These activities must be specifically mentioned in the application or proposal and listed on the permit. Any additional approved activities that involve direct interaction with a marine turtle must be conducted by the qualified individual or authorized personnel designated by the qualified individual.

- **hold or capture turtles**
- **mark turtles using any other technique (e.g. flipper tag, PIT tag, acoustic tag, radio tag, coded wire tag, carapace notching, living tag)**
- **photograph/document tagged turtles on the beach during nighttime**
- **conduct research activities**
- **transfer or transport turtles into or out of Florida**

Activity Description
Application of animal-borne devices (e.g., satellite tags, pop-up archival tags, GPS tags, radio tags, acoustic tags, data-loggers, cameras) has become increasingly common as a research, management and educational tool in marine turtle conservation activities. While this type of tag is much more expensive than other types of tags, these devices can provide data that other tools cannot, including relatively fine-scale information regarding an individual turtle's movements, behavior and interaction with threats. As with other tagging techniques, application of any animal-borne device must be conducted only by or under the guidance of a qualified individual experienced with the technique and who is listed on the permit or by authorized personnel designated by the qualified individual.

Considerations for Turtle Size and Device Locations
The application of animal-borne devices has been documented to impact the natural behavior of turtles carrying these devices (Watson and Granger, 1998; Wilson and McMahon, 2006; Godley et al., 2008; Sherrill-Mix and James, 2008; Jones et al., 2013). These tags are heavier and require additional materials to fasten the device to the turtle, resulting in a greater energetic cost to the turtle than flipper or PIT tags. Researchers and facilities should carefully evaluate the drag costs of outfitting a turtle with an animal-borne device and make every effort to minimize the impact of the device to the individual turtle.

Activity Conditions
The following conditions must be met when outfitting any turtle with an animal-borne device**.**

1. Nesting turtles may not be removed from the beach for the purposes of attachment of a device unless specifically approved in writing by FWC.

2. Any nesting turtle that will be outfitted with a device must be allowed to complete the nesting process (i.e., eggs have been deposited and the turtle has completed nest camouflaging activity). Turtles that did not nest (i.e., non-nesting emergence) may not be detained for device attachment.

3. Nesting turtles may not be detained for more than four (4) hours for the purpose of device attachment unless specifically approved in writing by FWC.

4. The release of a turtle housed in a facility may not be delayed to facilitate device attachment. Medical clearance for release may not be delayed for the purpose of acquiring authorization to deploy a device, acquisition of a device or attachment of a

device to a turtle that is ready for release from a captive facility.

5. Animal-borne devices may not be deployed on any injured or compromised turtle or on any turtle that would be handicapped by the attachment or presence of the device.

6. No more than one (1) device may be attached to an individual turtle unless specifically approved in writing by FWC.

7. Devices shall be streamlined and have a low profile. Any device antenna shall be of minimal length and diameter to reduce drag and risk of entanglement.

8. Total weight of all device attachments (i.e., device + attaching materials) must not exceed 5% of the animal's body mass.

9. Devices must not be placed at the peak height of the carapace.

10. Each device attachment (i.e., device + attaching materials) must be made so that there is no risk of entanglement. The device attachment must either contain a weak link (where appropriate) or have no gap between the device and the turtle that could result in entanglement.

11. All device attachments (i.e., device + attaching materials) must be as hydrodynamic as possible and cover as small of an area on the turtle as possible.

12. Adequate ventilation around the head of the turtle must be provided during the attachment of devices if attachment materials produce fumes. Turtles must not be held in water during application to prevent skin or eye contact with harmful chemicals. Note: any material (e.g., epoxy, fiberglass) used to attach the device to a turtle's carapace must be cool-setting and provide no risk for thermal injury to the turtle. If a material has not been previously utilized for attachment of devices to marine turtle, it should be tested by mock application and temperature monitored and evaluated prior to use on marine turtles.

13. When drilling through marginal scutes to affix a device, procedures must follow aseptic technique with two (2) alternating applications of medical disinfectant (e.g., Betadine® solution, Chlorhexidine-alcohol solution) followed by 70% alcohol.

14. When drilling through marginal scutes to affix a device, a separate drill bit must be used for each turtle. Bits may be reused if sterilized by autoclave or cold sterilization (e.g., gluteraldehyde) before reuse.

15. Nighttime beach-based photography, with or without flash, for documentation of animal condition following device attachment is not authorized unless specifically approved in writing by FWC.

Reporting Requirements

The Tagging Data Form is to be completed for each marine turtle tagged by any means and submitted to FWC either by e-mail (to MTP @ myfwc.com) or by mail to the FWC Tequesta Field Laboratory at 19100 SE Federal Highway, Tequesta, Florida 33469. See Appendix C-1 for a copy of the Tagging Data Form, which is available from MTP @ myfw.com.

SECTION 6 - RESEARCH ACTIVITIES

If your permit authorizes you to conduct activities associated with an **Authorized Research Project**, you or your authorized personnel may

- implement all "**Authorized Research Projects"** and "**Authorized Activities**" listed on your FWC Marine Turtle Permit (permit).

Additional authorization and specific approval are required to conduct the following or any other activities during research. These activities must be specifically mentioned in the proposal and listed on your permit.

- Conduct nesting surveys.
- Mark or relocate nests.
- Outfit nests with self-releasing screen/cage.
- Outfit nests with restraining cage.
- Excavate a nest prior to 70 days after the date of egg deposition (90 days in the case of a leatherback nest) or 72 hours after the first signs of emergence, whichever occurs first.
- Remove hatchlings from the nest prior to emergence.
- Hold hatchlings.
- Utilize or allow white lights.
- Operate a vehicle on the beach at night.
- Utilize white lights or flash photography.

Summary
FWC is authorized to permit research with threatened and endangered marine turtles under Florida Statute 379.2431 (1) and, for work on the nesting beach or in rehabilitation facilities, through a Cooperative Agreement with the U. S. Fish and Wildlife Service (USFWS) under Section 6 of the federal Endangered Species Act. In accordance with this agreement and state statute, FWC must ensure all research conducted under its authority is designed to provide specific information about marine turtle biology, recovery and conservation, is scientifically and statistically valid and includes justified and humane treatment of all experimental animals.

All authorized research projects, associated activities and conditions shall be listed on an FWC Marine Turtle Permit issued to an individual primary investigator (PI). If a permit holder is collecting samples for a collaborator, the sample collection must be authorized on the permit of the permit holder collecting the samples and receipt and analyses of samples must be listed on the permit issued to the PI. The PI and authorized personnel are allowed to implement all activities that are specifically described in the approved research proposal and listed as an authorized activity on the permit. Modifications of any aspect of an approved research project require written approval from FWC.

Studies involving the sacrifice of live animals or eggs or that involve the holding of species listed as endangered under the Endangered Species Act in excess of 45 days may also require a federal permit from the Atlanta, Georgia U.S. Fish and Wildlife Service office (http:// www. fws. gov/ permits/; (404) 679-4176).

Any studies involving in-water research also require a federal permit from the National Marine Fisheries Service (contact NMFS - Office of Protected Resources - Endangered Species Division). The Office is located in Silver Spring, Maryland, and can be reached at (301) 713-1401. Information about endangered species permits can also be obtained via the NMFS web site at: http:// www. nmfs. noaa.gov/pr/permits/.

When a NMFS permit is necessary for work that FWC is considering for a permit, FWC will allow a copy of the applicant's NMFS permit application to be substituted for the format given below. The applicant needs only to complete the NMFS permit application and provide FWC with a copy. FWC must also be copied on correspondence between NMFS and the applicant so that FWC may follow any concerns indicated by NMFS and how those concerns are resolved.

Conservation is best accomplished through partnerships, and FWC is committed to treating all partners fairly and with a high degree of transparency and thorough communication. Working with scientists involved in marine turtle research in Florida, FWC developed a set of Guiding Principles for all research involving threatened and endangered marine turtles in Florida (http:/ /myfwc. com/license/wildlife/marine-turtle-permit/guiding-principles/).

Unpublished or preliminary data collected as part of an FWC-permitted research project will not be presented by FWC without the written consent of the principal investigator. If data from an FWC permitted research project is published by the PI, it will not be used or referenced by FWC without proper citation. However, all data submitted to FWC is considered a public record and must be provided if requested as part of a public records request. Data collected as part of the index and state-wide nesting surveys, the marine turtle standing network and state-required monitoring are considered property of the state and FWC may summarize, analyze, use, and report this information.

Eligibility Criteria

To qualify to receive a permit to conduct research with threatened and endangered marine turtles, an individual applicant must either have received an FWC Marine Turtle Permit for similar research or meet the following criteria.

- Be a properly accredited person in accordance with Florida Statute 379.2431 (1) (c).
- Have experience in the methodologies being requested either as a PI, a student, or authorized personnel within or outside of Florida. For novel methodologies, the applicant must either have a record of proficiency in similar techniques or collaborate with others with such experience.
- Provide at least one (1) reference who has specific knowledge of the applicant’s experience and qualifications to conduct the research successfully.
    - Personnel supervised by the applicant should not be used as a reference.
    - Complete addresses, telephone numbers, and e-mail addresses should be provided for each reference.
- Submit a proposal as outlined in this section prior to beginning the project. State statute allows 90 days for review and approval of a permit request.
- If required, obtain a federal permit from the U.S. Fish and Wildlife Service (contact USFWS Region 4 - Division of Endangered Species) for studies involving the sacrifice of live animals

or eggs or the holding of species listed as endangered under the Endangered Species Act for more than 45 days (permits4es@fws.gov).

- Obtain a federal permit from the National Marine Fisheries Service for any in-water research (NMFS, (301)713-1401 or http:// www. nmfs. noaa. gov/pr/permits/).

SUBMITTING REQUESTS FOR NEW RESEARCH PROJECTS

To request to conduct a new research project, the PI must submit the following information either through the FWC permitting portal (FWC Permit Portal), via email at MTP @ myfwc. com, or via ground mail to the Imperiled Species Management Section (ISM), 19100 SE Federal Highway, Tequesta, Florida 33469. Joint projects involving several investigators should be submitted as one proposal, with each component and the personnel involved in that component identified. The proposal must be detailed, specific and include the following sections.

- PI's without an existing marine turtle permit must submit a Marine Turtle Permit Application either through the online system or hard copy. PI's with an existing Marine Turtle Permit can amend their permit through the online system, submit an electronic request to mtp @ myfwc. com, or send a hard copy to ISM, 19100 SE Federal Highway, Tequesta, Florida 33469.
- Curriculum Vitae (CV) for the PI (PI's with existing FWC research permits are not required to submit a CV for each proposal)
- A research proposal with the following information
  - title of the project
  - name of the principal investigators (PI)
  - a narrative outlining his/her qualifications and experience relative to the proposed research
  - a list of relevant research experience for all personnel involved with the project
  - all publications pertinent to the specific project if cited in the proposal or that provide background for the study and summarize knowledge to date
  - an explanation of whether the proposal is submitted as undergraduate thesis work or graduate thesis work
  - description of how the proposed research will contribute to understanding of the general biology and ecology of marine turtles and the recovery of marine turtle populations
  - a list of the specific tasks in the U.S. Fish and Wildlife Service Recovery plans relevant to the research

- The proposal must describe the experimental methods in detail, including:
  - species of marine turtle involved;
  - number of individual animals, samples – including volume or size, and nests, eggs, or hatchlings;
  - methods for capturing, handling, tagging, sampling, conducting surveys and/or holding animals, or other activities associated with the proposed research;
  - expected fate of all experimental animals, eggs, or parts;
  - experimental design and statistics, including number of replicates;
  - specific study site(s);
  - time frame for the study;
  - justification for proposed methodology including possible alternative methodologies; and

- literature cited.

- A copy of the applicant's FWS or NMFS permit application or permit. NOTE: *FWC will accept a copy of the federal permit application in lieu of the information above. FWC should also be copied on correspondence between NMFS and the applicant so that FWC may follow any concerns indicated by NMFS and how those concerns are resolved. All reports submitted to NMFS must also be copied to FWC (MTP @ myfwc. com)*
- A copy of the Institutional Animal Care and Use Committee (IACUC) approval if pertinent and available
- A copy of any permits required and issued by the managing entity if work will be conducted on land managed by another entity, such as a state or federal park, reserve, national seashore, or refuge

SUBMITTING REQUESTS FOR MODIFICATIONS TO PREVIOUSLY APPROVED PROJECTS

To request to amend an Authorized Research Project, the PI must submit an amendment request either through the FWC permitting portal, via email to MTP @ myfwc. com, or via ground mail to Imperiled Species Management Section (ISM), 19100 SE Federal Highway, Tequesta, Florida 33469, with a detailed description of any proposed changes to the previously approved project and activities including:

- proposed changes to the methodologies and reason for the changes;
- proposed increases to the number, type or size/volume of samples;
- proposed expansion or addition of study sites;
- time frames; and
- proposed changes to the number or species of animals to be included in the research activities.

PEER REVIEW

All proposals will be reviewed by FWC staff and may be submitted for external peer review. Research proposals that include a new or novel technique for which the PI has not been previously approved by FWC, a technique that has not been previously approved for use on a particular species, or requests that include lethal take shall be submitted for external peer review in accordance with Chapter 68E-1 and this section. FWC staff will request additional information from the applicant based on the peer review and provide recommendations to the applicant for inclusion in the proposal at their discretion. Requests to utilize hatchlings will be reviewed using the Checklist for Pre-emergent Hatchling Collection in Appendix D-1 if appropriate. The Checklist for Pre-emergent Hatchling Collection (FWC Form Res-1, effective 6/16) is incorporated by reference in Rule 68E-1.004(14)(b)22. and available from mtp @ myfwc. com.

Requests to amend an existing research project to include methods that are minimally invasive, have negligible impacts to the animals or study design, or that propose the addition of a technique that the applicant is currently approved to utilize in other FWC-authorized research projects will not require external peer review. Amendments that include a technique that the applicant has not been previously authorized to conduct with marine turtles or requests that include lethal take may be submitted for external peer review in accordance with Chapter 68E-1 and as outlined above.

Peer reviewers shall be selected based on specific expertise, experience, or publication in the proposed methodology, procedure, species, or issue being investigated. Each peer reviewer shall receive complete copies of research proposals, all PI's curriculum vitae, pertinent materials provided in response to FWC's request for additional information and any relevant publications submitted with the proposal. Peer reviewers shall be asked to identify any conflicts-of-interest with the applicant. Peer reviewers are asked to respond within a specific timeframe consistent with statutory time clocks; however, all comments submitted prior to final agency action will be considered during FWC staff's review of the research request. External peer reviewers shall be asked to comment on:

- research objectives;
- methodology:
- study duration;
- potential for impacts to the experimental animals;
- investigator's experience in the proposed technique; and
- the potential for the research to add to scientific knowledge about marine turtle biology and to promote the recovery of marine turtle populations.

CONSIDERATIONS FOR CONDUCTING RESEARCH ACTIVITIES

- The PI is expected to be actively involved in implementing or overseeing the authorized activities or analyzing and interpreting the data. (NOTE: *Research projects that have been inactive for more than two years will not be maintained on the Permit. Inactive projects can be re-authorized without resubmitting provided there are no modifications to approved activities, locations, and methods.*)
- If research will occur on the beach, the PI must coordinate closely throughout the study with the Nesting Beach Permit Holder(s) and other Research Permit Holder(s).
- If lighting is necessary to conduct research activities, Permit Holders and authorized personnel should avoid use of flashlights and utilize a red LED light source or red filters that eliminate short wavelength light when absolutely necessary.
- The PI may need to obtain permission from the local government to operate a vehicle on the beach. Permit holders and authorized personnel are expected to operate vehicles in accordance with FWC's beach driving BMPs (http: //myfwc. com/ conservation/you-conserve/wildlife/beach-driving/).
- Permit holders are expected to comply with FWC's BMPs regarding shorebirds (http: //www. myfwc. com/shorebirds).

Reporting Requirements

Annual Report(s): Renewal of an authorized research project is contingent upon receipt and approval of an annual report for each project. The annual report is due by the end of each calendar year and should be submitted with the permit renewal. See Appendix D-2 for a copy of the Annual Research Report Form (available by request from MTP @ myfwc.com) which can be uploaded to the online permit system, submitted to FWC by e-mail (MTP @ myfwc.com), or sent by mail to the FWC Tequesta Field Laboratory at 19100 SE Federal Highway, Tequesta, Florida 33469. The FWC Marine Turtle Annual Research Reporting Form (FWC Form Res-2, effective 6/16) is incorporated in Rule

68E-1.004(14)(b)23. A separate form with the following information should be submitted for each Authorized Research Project:

- The title of the project [as it appears on the FWC marine turtle permit].
- A detailed description of activities conducted, including the species and total number of animals collected/used, and the manner of collection/use.
- Any preliminary analyses of the data.
- A description of any problems and/or unforeseen effects which may have arisen during the research activities.
- If mortality occurs, a brief narrative of the circumstances surrounding each injury or death and a description of the measures taken to correct the problem that caused the injury or death.
- Steps that have been and will be taken to coordinate the research with that of other researchers.

Final Report(s): Within ninety (90) days of completion of the project, the permit holder must submit three (3) copies of the final report to ISM (in Tequesta) summarizing the results and success of the research relative to its goals. The final report due at the completion of the research project should have a title that matches the original title in the proposal, and sections for introduction, methods, results, discussion, and literature cited. A reprint of a published paper may be submitted in lieu of the final report if it covers all aspects of the research, methods attempted, and impacts to marine turtles associated with the project, including collection of specimens.

All forms are available upon request from MTP @ myfwc. com

SECTION 7 - EDUCATIONAL ACTIVITIES

PUBLIC TURTLE WATCHES

Summary

If the permit authorizes the activity to **conduct public turtle watches,** the qualified individual listed on the permit and authorized personnel designated by the qualified individual are authorized to conduct the following activities.

- **Traverse a designated area of beach on foot or via an ATV or other light weight vehicle (< 10 psi vehicle to ground pressure) with no headlights or red filtered lights.**
- **Use night vision technology to locate a nesting loggerhead turtle.**
- **Lead a group of no more than 40 participants onto the beach to observe a loggerhead turtle deposit and cover eggs.**
- **Oversee turtle watch participants positioned no closer than 1 m (~3 feet) in proximity to the posterior of a nesting loggerhead during egg deposition and covering and during return to the water.**
- **Allow participants to photograph the nesting female on the return to the water provided no flash or light is utilized.**

Additional authorization and specific approval are required to conduct the following or any other activities while conducting public turtle watches. These activities must be specifically requested in the application, listed on the permit, and conducted only by the qualified individual or authorized personnel designated by the qualified individual.

- *** conduct nesting surveys**
- *** mark or relocate nests**
- *** protect nests with self-releasing screen/cage**
- *** protect nests with restraining cage**
- *** conduct nighttime public hatchling releases**
- *** conduct public hatch success evaluations**

Activity Description

During a public turtle watch, the permit holder or their authorized personnel first present an interpretive program on marine turtle biology and conservation issues at an off-beach location. The qualified individual or authorized personnel designated by the qualified individual then leads the group to the beach to observe a nesting loggerhead turtle depositing eggs. The group is led onto the beach only after egg deposition has begun, and may remain through the end of the nesting process (i.e., nesting turtle returns to the water).

Public turtle watches provide a unique opportunity to educate the public about marine turtle conservation; however, it is important to remember that these watches involve a sensitive and highly critical behavior—the nesting process. Turtles observed by groups spend less time camouflaging the nest, which can increase the vulnerability of that nest to predators (Johnson et al., 1996). Groups of people on the beach may also impact other nesting turtles, causing them to abandon their nesting attempts or to shorten different stages of the nesting process. As such, it is

critical that all persons authorized by FWC to conduct turtle watches adhere to the parameters outlined in this Chapter.

Activity Conditions
The following conditions shall be met when conducting public turtle watches.

1. Only one permitted organization may conduct watches in any one area. The watch location must be approved by the FWC prior to the first watch of the season.

2. If the permit holder authorized to conduct a turtle watch does not also hold the permit to conduct nesting surveys on that beach, they must coordinate with the nesting survey permit holder early in the nesting season but no later than one (1) week prior to the commencement of turtle watches. Areas of coordination and communication should include: location of turtle watch survey area; scheduled turtle watch dates; and timing, content and preferred method of delivery of any data to be exchanged between the two groups.

3. All participants in turtle watches must be informed of the federal and state laws protecting marine turtles and their nests and that an FWC Marine Turtle Permit is required to conduct turtle watches. Participants must be informed that conducting turtle watches, touching marine turtles, and handling marine turtle eggs without a permit is unlawful.

4. Turtle watches may only be conducted with loggerhead turtles. Should any other species be encountered on the nesting beach, the group is not to be guided near that turtle.

5. The permit holder, qualified individual or authorized personnel shall present an interpretive program (lectures, slide presentations, etc.) with accurate, updated information on marine turtle conservation and biology prior to the actual watch and explain the procedures to be followed on the beach. At least four (4) of the topics listed below should be included in the presentation.

6. Scheduled group size per each qualified individual or authorized personnel designated by the qualified individual must not exceed 20 participants; total scheduled group size must not exceed 40 individuals. All qualified individuals and authorized personnel must be thoroughly trained in the requirements listed here and included on the FWC Marine Turtle Permit.

7. Public turtle watches may not be commercialized (conducted for profit) or exploited for commercial endeavors. Fees may only be charged by non-profit organizations to cover legitimate costs incurred in marine turtle conservation efforts including costs associated with hosting turtle watches. Do not accept reservations made by commercial enterprises that may charge a fee for services. Please remember that if you charge a fee, you may be subject to litigation and should carry liability or other applicable insurance.

8. Age limitations for participants are left to the discretion of the permit holder.

9. The qualified individual may designate authorized personnel as scouts to search for a nesting loggerhead; groups of five participants or fewer may access the beach with the qualified

individual to locate a nesting loggerhead turtle.

a. If an all-terrain vehicle (ATV) is used for scouting, it must have a red LED light source or red filters that eliminate short wavelength light over the headlight(s). The headlight(s) may only be used if absolutely necessary.
b. An FWC Marine Turtle Permit does not authorize use of an ATV or other vehicle on the beach; it is the responsibility of the permit holder to acquire all necessary local authorizations for operating a vehicle on the beach.
c. The beach may only be accessed/exited at designated access points. All lateral (north-south) travel shall be on the hard-packed sand at or below the daily high tide line.
d. Drive slowly (<10 M.P.H.) and, to the extent possible, avoid the wrack line or areas of dense seaweed, which may contain marine turtle hatchlings or shorebird chicks.

10. Participants may not use flashlights, flash photography or other light sources while on the beach. Remember any light can deter females emerging nearby or disorient emergent hatchlings.
    a. The qualified individual and authorized personnel serving as scouts may use low intensity flashlights with a red LED light source or red filter that eliminates short wavelength light while gaining access to the beach but not while scouting for a turtle or guiding participants to the nesting site.
    b. After the group arrives at the turtle, the qualified individual or scout may use one (1) red LED light to illuminate the egg chamber so that participants can observe egg deposition.
    c. No light should be used to illuminate the head of the turtle.

11. The qualified individual and scouts are encouraged to invite persons who are on their own looking for turtles to join the group. This is an opportunity to educate persons who might otherwise disturb nesting turtles.

12. To avoid disturbing the turtle, the qualified individual or scout should expose the nest cavity prior to the group's arrival near the nesting turtle. At no time should sand be allowed to fall into the nest chamber.

13. Participants must be instructed to stay with the group and remain quiet at all times. During the entire watch, the group must remain together. The group may not approach the turtle until egg deposition is well underway. The qualified individual, scouts, and participants must approach from the rear and remain behind the nesting turtle during egg deposition. Scouts are responsible for keeping participants behind the turtle. Eggs may NOT be removed from the nest.

14. The qualified individual and scouts shall direct all participants to avoid walking on the turtle's crawl so that the nesting surveyors can interpret and document the crawl the following morning.

15. The qualified individual and scouts shall ensure that all nesting turtles have a secure path clear of all people from the nest location extending to the water line. Turtle watch participants may not stand directly in front of or seaward of the turtle as it is returning to the water and shall be

directed not to enter the water to ensure human and turtle safety. Contact (i.e., touching) with the nesting female is not permitted.

16. Flash photography is not permitted.
    a. Participants with infrared cameras (with or without additional infrared lights) or low-light cameras may photograph or film egg deposition or the turtle returning to the water.
    b. Participants should be informed that any photographs or video produced, distributed or posted on the internet should specify that the image or footage was collected using infrared lighting or no lighting during a FWC-permitted turtle watch, list the name of the organization conducting the walk and the date of the walk.

17. Only one (1) nesting turtle is to be observed by the group each night.

18. To minimize the impact of turtle walks in a specific location, FWC recommends no more than five (5) turtle watches per seven (7) days/week occur in the selected beach area.
    a. If more than three (3) watches per week are conducted, then two (2) of the watches must be conducted on Friday and Saturday nights when there are more people on the beach in most locations.
    b. The FWC may further limit turtle watch activities in certain areas because of the sensitivity of the area or because of permitted research activities that may be disturbed by the watches.

19. Turtle watches shall be conducted during June and July (peak of loggerhead nesting season) in order to increase the potential for groups to encounter a nesting female. In certain cases, FWC may authorize turtle watches to occur during the later portion of May or early portion of August in order to facilitate training of personnel or to meet public demand.

Current Issues to Discuss during Public Turtle Watch Presentations - Each presentation should address at least the first four (4) of the following topics; other suggested topics are included.

- Impacts caused by human nighttime activity on the beach
- Beachfront lighting impacts
- Impacts from objects, such as beach furniture, left on the beach at night
- Non-nesting turtles (false crawls)
- Marine debris impacts
- Poaching
- Natural and exotic predators
- Propeller/boat injury impacts
- Beach armoring impacts
- TEDs (Turtle Excluder Devices) and the shrimp fishery
- Impacts by other fisheries (e.g., gill net, longline)
- International trade (CITES)
- Significance of Florida's nesting population
- How the public can help

Reporting Requirements

A schedule of planned watches is to be completed on the turtle watch schedule form (Appendix E-2) and submitted to the FWC (Tequesta office) prior to the first scheduled watch for the season and no later than May 25th. The FWC Public Marine Turtle Watch Schedule (FWC Form E-2, effective 6/16) is incorporated by reference in Rule 68E-1.004(14)(b)24 and is available from MTP @ myfwc.com. In addition, a summary of each watch is to be completed on the turtle watch summary form (Appendix E-3) and submitted after the last watch of the season is conducted. The FWC Public Turtle Watch Summary (FWC Form E-3, effective 6/16) is incorporated by reference in Rule 68E-1.004(14)(b)25 and is available from MTP @ myfwc.com. Annual reports shall be submitted to FWC by any of the following methods: upload to FWC's online permitting system (FWC Permit Portal); email (MTP @ MyFWC.com); mail to the Tequesta office (Imperiled Species Management, Tequesta Field Station, 19100 SE Federal Highway, Tequesta, Florida, 33469); or fax to the Tequesta office (561-743-6228). All forms are available from MTP @ myfwc.com.

NIGHTTIME PUBLIC HATCHLING RELEASES

Summary
If the permit authorizes the activity **to conduct public nighttime hatchling releases,** the qualified individual listed on the permit and authorized personnel designated by the qualified individual are authorized to conduct the following activities.

- **Temporarily hold (<12 hours) "straggler" hatchlings - hatchlings collected by qualified individuals during recent nest hatch success evaluations (see Section 2).**
- **Lead participants onto the beach to observe release of the hatchlings after dusk.**
- **Allow participants to photograph the hatchlings as they move to the water provided no flash or light is utilized.**

Additional authorization and specific approval are required to conduct the following or any other activities in conjunction with conducting public hatchling releases. These activities must be specifically mentioned in the application, listed on the permit, and conducted only by the qualified individual or authorized personnel designated by the qualified individual.

- **conduct nesting surveys**
- **relocate nests**
- **protect nests with self-releasing screen/cage**
- **protect nests with restraining cage**
- **protect nests with self-releasing screen/cage**
- **excavate a nest prior to 70 days after the date of egg deposition (80 days in the case of a leatherback nest) or 72 hours after the first signs of emergence, whichever occurs first**

Activity Description
During a public hatchling release, the permit holder or their authorized personnel first present an interpretive program on marine turtle biology and conservation issues at an off-beach location. Then the qualified individual or authorized personnel designated by the qualified individual leads a group to observe the release of hatchlings that were found during hatch success evaluations (see Section 2). Under natural conditions, marine turtle hatchlings emerge in darkness; therefore, all public hatchling releases must occur after sunset on a dark beach.

Activity Conditions
The following conditions shall be met when conducting nighttime public hatchling releases.

1. Only one (1) permitted organization may conduct nighttime public hatchling releases in any one area of beach. The release location(s) must be approved by the FWC prior to the first release of the season.

2. All participants must be informed of the State and Federal laws protecting marine turtles and their nests. Participants must be informed that housing or handling hatchlings and conducting hatchling releases without a permit is unlawful.

3. Interpretive programs (lectures, slide presentations, etc.) that which incorporate accurate, updated information on marine turtle conservation and biology are mandatory. Programs shall be presented prior to the hatchling release and must include an explanation of procedures to be followed during the experience. If desired, FWC staff will provide assistance in developing interpretive programs.

4. Nests may not be inventoried early or hatchlings retained after the morning nest inventory solely for the purpose of ensuring hatchlings are available for a scheduled nighttime hatchling release. FWC recommends that guests be advised when making a reservation that there is no guarantee that they will observe hatchlings being released.

5. When choosing a release location, select a location that is as close to the original nest site as possible. It is also important to evaluate the lighting conditions at the potential release location. Any release location should be a relatively dark beach without light sources directly visible from the beach and where disorientation events are not documented regularly.

6. Healthy hatchlings are to be released at night on the day they were collected and allowed to crawl to the water on their own. Lorne and Salmon (2007) suggest a release distance of approximately 40 feet (13m) from the surf zone for loggerhead turtles on Florida's East coast. Weaker hatchlings may be held on moist sand in the container for 1-2 days until they are ready for release. If, after 1-2 days, the hatchlings are still not ready for release, they should be transported to an FWC-permitted rehabilitation facility.

7. Only the qualified individual and authorized personnel listed on the permit and designated by the qualified individual may handle hatchlings. Hatchlings shall be held on moist sand in a near-dark container – never in water – in a quiet, temperature-controlled room. The lid of the container should be placed loosely over the top of the container. Once placed in a holding container, hatchlings should not be handled or disturbed until the release. Activity causes increased expenditure of limited energy stores.

8. Nighttime public hatchling releases may not be conducted at dusk or at dawn as these are times when predatory birds and fish are particularly active.

9. The qualified individual, authorized personnel and participants may not use flashlights, flash photography or other light sources while on the beach. Remember any light can deter females emerging nearby or disorient emergent hatchlings.

10. The qualified individual and authorized personnel may use low intensity flashlights with a red LED light source or red filter that eliminates short wavelength light while gaining access to the beach.

11. A quick check of the release area with a flashlight fitted with a red filter a short time after release will ensure that all hatchlings have reached the water. Individual hatchlings that require assistance in reaching the water should be moved closer to the water's edge or placed in the shallows and allowed to swim off on their own. Any hatchlings that have not successfully departed the surf zone or nearshore waters 10-15 minutes after release should be recaptured and

transported to the local rehabilitation facility.

12. Participants with infrared cameras (with or without additional infrared lights) or low-light cameras without any flash may take photographs or film the hatchling release. Any photographs or video produced, distributed or posted on the internet should specify that the image or footage was collected using infrared lighting or no lighting during a FWC-permitted nighttime hatchling release, that otherwise photographing marine turtles on the beach at night is not lawful, list the name of the organization conducting the walk and the date of the release.

13. Hatchling releases may not be commercialized (conducted for profit) or exploited for commercial endeavors. Fees for attendance at a hatchling release may only be charged by FWC Marine Turtle Permit Holders affiliated with non-profit organizations to cover legitimate costs incurred in marine turtle conservation efforts, including costs associated with hosting hatchling releases. Do not accept reservations made by commercial enterprises that may charge a fee for membership or services. If you charge a fee, you may be subject to litigation and should consider carrying liability or other applicable insurance.

14. Age limitations for participants are left to the discretion of the permit holder. FWC recommends all minors be accompanied by an adult or legal guardian.

15. The qualified individual and authorized personnel shall ensure that all hatchlings have a secure path clear of all people from the point of release on the beach extending to the water line. Participants may not interact with or stand directly seaward of the hatchlings as they are returning to the water and shall be directed not to enter the water to ensure human and turtle safety.

Reporting Requirements

The permit holder shall report the number of public hatchling releases held each year on the Public Hatchling Release Form (Appendix E-4). The FWC Nighttime Public Hatchling Release Form (FWC Form E-4, effective 6/16) is incorporated by reference in Rule 68E-1.004(14)(b)26 and available from MTP @ myfwc.com. Please explain any problems encountered during releases (e.g. hatchlings becoming disoriented during the release). The hatchling release form is to be submitted no later than December 1st. Annual reports shall be submitted to FWC by any of the following methods: upload to FWC's online permitting system; email to MTP @ myfwc. com; mail to the Tequesta office (Imperiled Species Management, Tequesta Field Station, 19100 SE Federal Highway, Tequesta, Florida, 33469); or fax to the Tequesta office (561-743-6228). Forms are available from MTP @ myfwc.com.

PUBLIC HATCH SUCCESS EVALUATIONS

Summary
If the permit authorizes the activity **to conduct public hatch success evaluations,** the qualified individual listed on the permit and authorized personnel designated by the qualified individual are authorized to conduct the following activities.

* **hatch success evaluations**
* **recover and release hatchlings**

Additional authorization and specific approval are required to conduct the following or any other activities in conjunction with obtaining and releasing hatchings. These activities must be specifically requested in the application, listed on the permit, and conducted only by the qualified individual or authorized personnel designated by the qualified individual.

* **conduct nesting surveys**
* **relocate nests**
* **mark nests**
* **protect nests with self-releasing screen/cage**
* **protect nests with restraining cage**
* **conduct public turtle watches**
* **conduct nighttime public hatchling releases**

Activity Description
During a public hatchling release, the qualified individual or authorized personnel designated by the qualified individual leads a group of people to a marked nest to observe excavation and inventory during daylight hours only. Public hatch success evaluations afford an opportunity to communicate important conservation messages. It is important to remember that these evaluations involve collecting key data that contributes vital information for FWC and other resource managers. Therefore, permit holders must strive to preserve the quality of the data being collected while still offering an effective educational message. All public hatch success evaluations must be conducted as outlined in Section 2 – Nest Inventory.

Activity Conditions
The following conditions shall be met when conducting public hatch success evaluations.

1. All participants must be informed of the State and Federal laws protecting marine turtles and their nests. Participants must be informed that digging into nests, "helping" hatchling out of the nesting, handling hatchlings and conducting hatchling releases without a permit is unlawful.

2. Educational information on marine turtle conservation and biology shall be presented prior to or during the hatch success evaluation and must include an explanation of procedures to be followed during the experience. If desired, FWC staff will provide assistance in developing interpretive programs.

3. Nests may not be inventoried early for the purpose of conducting a public hatch success evaluation. FWC recommends that guests be advised when making a reservation that there is no guarantee that they will observe hatchlings.

4. Only the qualified individual or authorized personnel designated by the qualified individual may dig into nests and handle unhatched eggs and hatchlings. Nests where 10 or more hatchlings are encountered at the top of the nest cavity during excavation should be reburied immediately and the hatchlings allowed to emerge naturally.

5. To limit expenditure of the hatchling's limited energy stores, animals shall not be handled beyond what is necessary to transfer the hatchling from the egg chamber to the holding container until ready for release. The qualified individual or authorized personnel may show participants hatchlings in the container and may allow participants to handle empty egg shells that are then buried with other nest contents after inventory.

6. Public hatch success evaluations should not be conducted at dusk or at dawn as these are time periods when predatory birds and fish are particularly active.

7. Public hatch success evaluations may not be commercialized (conducted for profit) or exploited for commercial endeavors. Fees for attendance at a public hatch success evaluation may only be charged by FWC Marine Turtle Permit Holders affiliated with non-profit organizations to cover legitimate costs incurred in marine turtle conservation efforts. Do not accept reservations made by commercial enterprises that may charge a fee for membership or services. If you charge a fee, you may be subject to litigation and should consider carrying liability or other applicable insurance.

8. Age limitations for participants are left to the discretion of the permit holder. FWC recommends all minors be accompanied by an adult or legal guardian.

9. The qualified individual and authorized personnel shall ensure that all hatchlings being released in accordance with Section 2 – Hatchling Rescue and Release- have a secure path clear of all people from the point of release on the beach to the water line. Participants may not interact with or stand directly seaward of the hatchlings as they are returning to the water.

Reporting Requirements

The permit holder shall report the number of public hatch success evaluations conducted each year on the Public Hatch Success Evaluation Form (Appendix E-5). The FWC Public Hatch Success Evaluation Form (FWC Form E-5, effective 6/16) is incorporated by reference and available from MTP @ myfwc.com. Please explain any problems encountered during evaluations. The Public Hatch Success Evaluation Form is to be submitted no later than December 1st. Annual reports shall be submitted to FWC by any of the following methods: upload to FWC's online permitting system; email to MTP @ myfwc.com; mail to the Tequesta office (Imperiled Species Management, Tequesta Field Station, 19100 SE Federal Highway, Tequesta, Florida, 33469); or fax to the Tequesta office (561-743-6228). Forms are available from MTP @ myfwc.com.

MAINTAIN AND DISPLAY PRESERVED SPECIMENS

Summary
If the permit authorizes the activity **to maintain and display preserved specimens,** the qualified individual listed on the permit and authorized personnel designated by the qualified individual are authorized to conduct the following activities.

- **transport or transfer preserved specimens within Florida**

Additional authorization and specific approval are required to conduct the following or any other activities with marine turtle specimens. These activities must be specifically requested in the application, listed on the permit, and conducted only by the qualified individual or authorized personnel designated by the qualified individual.

- **transport or transfer preserved specimens into or out of Florida**

Activity Description
This activity covers museums and educational facilities and allows the permit holder to maintain and/or display whole preserved marine turtles or marine turtle body parts for educational or scientific research purposes. Specimens displayed for educational purposes are to be accompanied by appropriate interpretive verbiage. Specimens may not be displayed for strictly decorative purposes.

You are not authorized to import/export turtles or turtle parts outside the state of Florida (foreign or domestic) without prior written approval from FWC.

Each permit holder is expected to keep a written inventory of all preserved specimens. FWC may ask for a copy of this list at any time. Annual reporting is not required.

You may coordinate with FWC or other permit holders to acquire specimens. Additionally, certain organizations conducting educational programs about marine turtles may be eligible to obtain marine turtle parts and products from the U. S. Fish & Wildlife Service's National Wildlife Property Repository (Repository). Due to the overwhelming numbers of requests and limited wildlife supplies, the Repository typically limits its supplies to Federal and State agencies, schools, and aquariums involved in wildlife rehabilitation and/or education.

To obtain turtle parts and/or products, please send a request to the U.S. Fish and Wildlife Service at http://www.fws.gov/le/national-wildlife-property-repository.html.

U.S. Fish & Wildlife Service
National Wildlife Property Repository
6550 Gateway Road, Bldg. 128
Commerce City, CO 80022
Telephone: (303)287-2110
FAX: (303)287-1570

Please be sure to provide your name, organization, address, and that you intend to use the supplies for educational purposes. Also, please specify the type of materials you would like to receive: marine

turtle carapace, stuffed marine turtle, mounted turtle head, or a product (e.g. tanned marine turtle skin, marine turtle leather shoe or boot, hawksbill jewelry or comb, turtle cream). The Repository has limited supplies so if you receive anything, you may not receive exactly what you request and may be limited to a very few items.

APPENDIX A – NESTING FORMS

Appendix A-1

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION
FISH AND WILDLIFE RESEARCH INSTITUTE
ANNUAL REPORT FOR THE STATEWIDE NESTING BEACH SURVEY

NOTES

1. **Note to Mac users:** Please complete the form using Adobe Reader not Preview. It seems that the program called Preview is the default PDF viewer on Macs and this causes problems when entering into and saving the file.

2. **Please complete pages 2 - 4 in their entirety.** Fill in all blanks even if the answer is zero or it is not applicable. If the question does not apply, please enter N/A (except for date fields-these can be left blank if it doesn't apply). If you have any questions, please contact Beth Brost at **beth.brost@MyFWC.com** (727-502-4738).

3. **Please do not change the form's format.** If the information in red text is incorrect, there are spaces available to note corrections.

4. **To get started**, the first thing you want to do is save this form onto your computer. To do this, go to: File, Save As. **Once you have saved the file**, go to page 2 and click on the "Organization" field. From there, you can use the tab key to move from one entry field to the next. Once the form is complete, you will need to save the file again to include your data. **Note:** for each fill in blank, do not exceed the visible space.

5. **Additional Comments**. If you need additional space for comments, please go to the last page.

6. **Submittal deadline** is 30 November. Please email the completed report to **beth.brost@MyFWC.com** .

7. The **statewide annual report** is not available online but will be sent directly to each permit holder by FWC/FWRI. For questions regarding the annual report, please contact Beth Brost at 727-502-4738 or Beth.Brost@MyFWC.com

DEFINITIONS

Self-Releasing: A screen, cage, or hatchery through which hatchlings escape unaided.

Restraining: A screen, cage, or hatchery that does not allow hatchlings to escape unaided.

Hatchery: A fenced or caged area where many nests are reburied.

Relocated: Clutch was moved from the original site of deposition. Nests are only considered relocated if this is the initial treatment.

FWC STATEWIDE NESTING BEACH SURVEY INSTRUCTIONS, 6/16, FAC Rule 68E-1

Appendix A-2

Permit Holder Initials | Year | Month | Day | Dis # by Day | County Code

FWC MARINE TURTLE DISORIENTATION REPORT

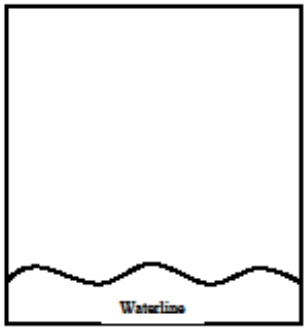
If you have any questions, please contact FWC at the Tequesta Field Laboratory (561) 882-5975
Fax reports to: (561) 743-6228 or Email reports to: SeaTurtleLighting@MyFWC.com
Send reports to: Disorientation Reports, FWC, 19100 SE Federal Highway, Tequesta, FL 33469

Marine Turtle Permit #: _____ Date of Incident: _____
Observer's Name: _____
Telephone (include area code): _____ E-mail address: _____

Location of Disorientation Event: (address, beach name and/or nearest landmark): _____
_____
City: _____ County: _____
Local nest ID#: _____ Zone nest was located in: _____
Nest GPS Coordinates (***use decimal degrees: i.e., Lat 26.845412 Long -80.458796***):
Latitude: _____ Longitude: _____

SPECIES: (check one)	TYPE OF EVENT: (check one)	NEST TREATMENT: (check all used)
☐ Cc = Loggerhead ☐ Cm = Green Turtle ☐ Dc = Leatherback ☐ Un = Unidentified ☐ O = Other _____	☐ Adult – Nesting Emergence ☐ Adult – False Crawl ☐ Hatchling	☐ Restraining Cage ☐ Self-releasing Screen/Cage ☐ Light Barrier (i.e., silt screen)* ☐ Relocated *Must be specifically authorized by FWC

Incident was documented during: (check one) ☐ Morning Survey ☐ Night Survey ☐ Daytime



Was the incident photographed? ☐ YES ☐ NO
Was the source nest found? ☐ YES ☐ NO
Was the nest excavated? ☐ YES ☐ NO
If "YES" report date of excavation: _____

Number of turtles disoriented:	Disoriented turtles reaching the water:
☐ 1 ☐ 2-10 ☐ 11-50 ☐ >50	☐ All ☐ Some ☐ None ☐ Not investigated
Were any disoriented turtles found dead? ☐ YES ☐ NO *If "YES" indicate the number:* _____	

Addresses/landmarks turtle(s) disoriented towards: _____
_____

Were probable/possible light source(s) identified? ☐ YES ☐ NO
If "NO" indicate why: (check one) ☐ No lights present ☐ Too many lights ☐ Other:
Indicate categories of light(s) identified as probable/possible lighting sources: (check all that apply)

☐ parking lot	☐ street light	☐ condominium (interior)
☐ dune crossover	☐ single family home (interior)	☐ condominium (exterior)
☐ restaurant/bar	☐ single family home (exterior)	☐ sky glow/urban glow
☐ pier	☐ sign	☐ other: _____

Additional comments (use back if necessary): _____
_____
_____
_____

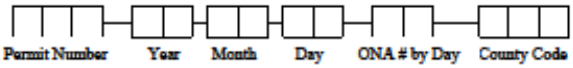
Local authority provided a copy of this report: ☐ City ☐ County ☐ FWC ☐ Other: _____

_____ Signature of Observer

_____ Date

FWC Form DIS-1, FWC Marine Turtle Disorientation Report, 6/16, FAC Rule 68E-1

Appendix A-3



FWC MARINE TURTLE
OBSTRUCTED NESTING ATTEMPT (ONA) REPORT FORM

If you have any questions please contact FWC at the Tequesta Field Laboratory (561) 882-5975
Fax reports to: (561) 743-6228 or Email reports to: SeaTurtleLighting@MyFWC.com
Send reports to: ONA Reports, FWC, 19100 SE Federal Highway, Tequesta, FL 33469

Turtle Permit #: _____ Date of Incident: _____
Observer's Name: _____
Telephone (include area code): _____ E-mail address: _____
Species: ☐ Loggerhead ☐ Green ☐ Leatherback ☐ Other: _____

Crawl resulted in: Nest ☐ False Crawl ☐
Location of nest or false crawl (address, beach name and/or nearest landmark): _____
_____
_____
GPS Coordinates of nest or false crawl location:
(in the WGS projection in decimal degrees i.e., Lat 26.845412 Long -80.458796):
Latitude _____ Longitude _____
City: _____ County: _____
Local nest ID#: _____ Zone nest/false crawl was located in: _____
Obstruction(s) encountered: (please circle)

Beach furniture	Dune Crossover	Escarpment	Rock Outcropping	Special Events Equipment
Boat	Groins	Marine Debris	Rock revetment	Tent
Cabana	Geotube/Sandbags	Nourishment Equipment	Seawall	Umbrella

Other Obstruction (please describe): _____
Describe Event: _____
_____
_____
_____ _____
Signature of Observer Date

☐ Event photograph attached

FWC Form ONA-1, FWC Marine Turtle Obstructed Nesting Attempt Form, 6/16, FAC Rule 68E-1

APPENDIX B – STRANDING FORMS

*NOTE: Forms are available online at http:// ocean.floridamarine. org SeaTurtle/flstssn/ flStssnResources.htm or by request from mtp@myfwc.com

Appendix B-1

SEA TURTLE STRANDING AND SALVAGE NETWORK – STRANDING REPORT

OBSERVER'S NAME
First _____ M.I. ___ Last _____
E-mail _____
Affiliation _____
_____
(Area code) Phone number _____

STRANDING DATE:
Year 20☐☐ Month☐☐ Day☐☐
Turtle number by day☐☐

State coordinator must be notified within 24 hrs; this was done by ☐ *phone (561)575-5407*
☐ *email* ☐ *fax (561)743-6228*
☐ *FWC Alert Hotline 1-888-404-3922*

SPECIES: (check one)
- ☐ CC = Loggerhead
- ☐ CM = Green turtle
- ☐ DC = Leatherback
- ☐ EI = Hawksbill
- ☐ LK = Kemp's ridley
- ☐ LO = Olive ridley
- ☐ UN = Unidentified

Check unidentified if not positive. Do not guess.

Photos taken? ☐Yes ☐No
Species verified by state coordinator? ☐Yes ☐No

SEX: (check one)
☐ Immature, undetermined
☐ Female ☐ Male
How was sex determined?
☐ Necropsy
☐ Tail length (adult only)
Length of tail beyond carapace _____ cm/in

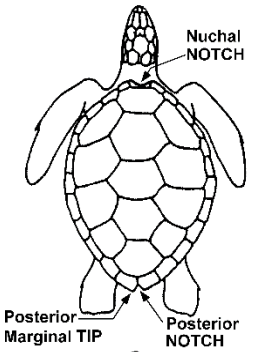
STRANDING LOCATION: ☐Offshore (Atlantic or Gulf beach) ☐Inshore (bay, river, sound, inlet, etc)
State _____ County _____
Descriptive location (be specific)_____
_____
_____
Latitude _____ Longitude _____

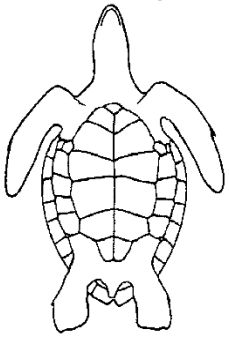
CONDITION: (check one)
- ☐ 0 = Alive
- ☐ 1 = Fresh dead
- ☐ 2 = Moderately decomposed
- ☐ 3 = Severely decomposed
- ☐ 4 = Dried carcass
- ☐ 5 = Skeleton, bones only

FINAL DISPOSITION: (check one)
- ☐ 1 = Left on beach where found; painted? ☐Yes* ☐No(5)
- ☐ 2 = Buried: ☐on beach / ☐off beach; carcass painted before buried? ☐ Yes* ☐ No
- ☐ 3 = Salvaged: ☐all / ☐part(s), what/why?_____
- ☐ 4 = Pulled up on beach/dune; painted? ☐Yes* ☐No
- ☐ 6 = Alive, released
- ☐ 7 = Alive, taken to rehab. facility, where? _____
- ☐ 8 = Left floating, not recovered; painted? ☐Yes* ☐No
- ☐ 9 = Other, explain_____

**If painted, what color?*_____

TAGS: ***Contact state coordinator before disposing of any tagged animal!!***
Flipper tags present at stranding? ☐Yes ☐No
If so, has CMTTP been notified? ☐Yes ☐No
Check all 4 flippers. If found at stranding, record tag number(s)/tag location/return address
_____
_____
PIT tag scan? ☐Yes ☐No
Check all 4 flippers. If PIT tag found at stranding record id/tag location
_____
_____
Checked for living tag? ☐Yes ☐No
If found, record location (scute number & side)
_____
_____





Fibropapilloma-like tumors present? ☐Yes ☐No
FP documentation form attached? ☐Yes ☐No

CARAPACE MEASUREMENTS: (*see drawing*)

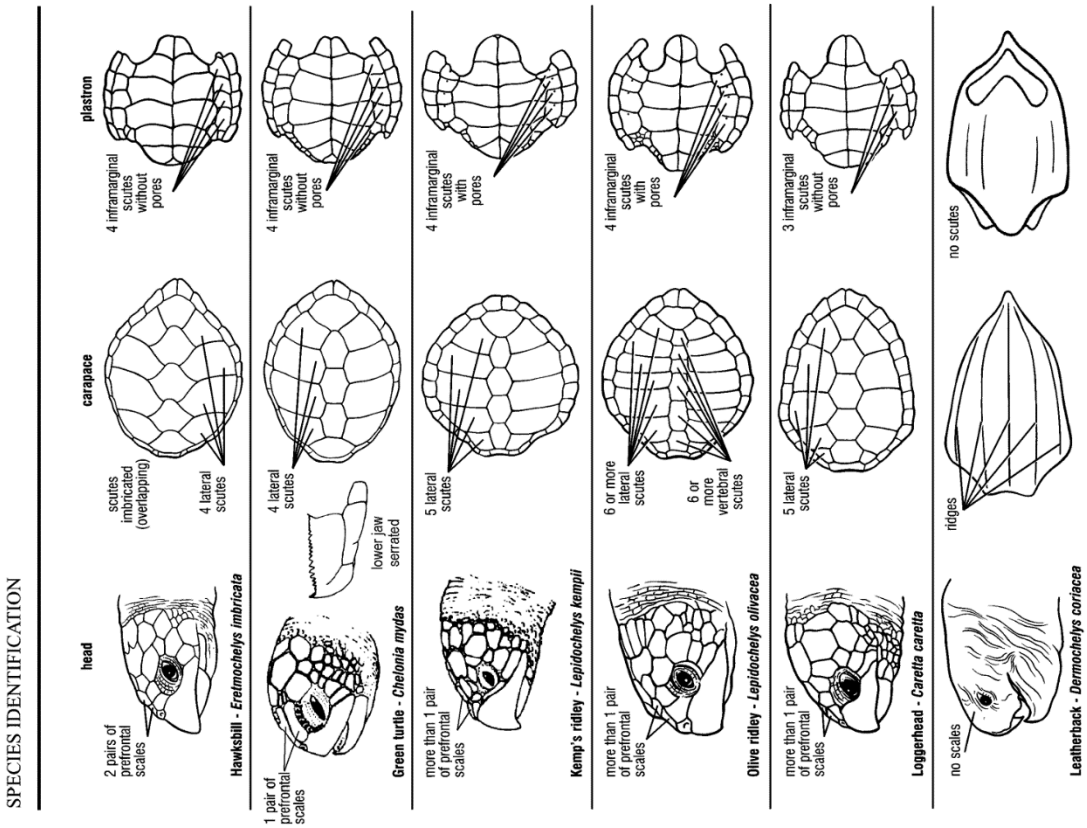
Using calipers		**Choose unit**
Straight length (NOTCH-TIP)	_____	cm/in
Minimum length (NOTCH-NOTCH)	_____	cm/in
Straight width (Widest Point)	_____	cm/in
Using non-metal measuring tape		**Choose unit**
Curved length (NOTCH–TIP)	_____	cm/in
Minimum length (NOTCH-NOTCH)	_____	cm/in
Curved width (Widest Point)	_____	cm/in
		Choose unit
Weight ☐actual / ☐est.	_____	kg/lb

Mark wounds or abnormalities on diagrams at left and describe below (note tar or oil, gear or debris entanglement, propeller damage, epibiota, papillomas, emaciation, etc.). **Please note if no wounds or abnormalities were found.** If released, note if new tags were applied.

_____
_____
_____
_____
_____
_____

FWC Form STSSN-1, Sea Turtle Stranding and Salvage Network Stranding Report, 6/16, FAC Rule 68E-1

Appendix B-1



PLEASE E-MAIL ELECTRONIC COPY TO STSSNFORM@MYFWC.COM, OR FAX COMPLETED FORM TO (561)743-6228. IF FAXED, ALSO PLEASE USE AN ENVELOPE AND MAIL ORIGINAL FORM TO:

FLORIDA STSSN COORDINATOR
FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
FISH AND WILDLIFE RESEARCH INSTITUTE
19100 SE FEDERAL HIGHWAY
TEQUESTA, FL 33469

Appendix B-2

FIBROPAPILLOMA DOCUMENTATION FORM

Please complete for every turtle exhibiting fibropapillomas and submit with the STSSN report form.

Observer:_____ Stranding Date:_____

Stranding Number by Day:_____ Species:_____

1. Please select sites where tumors are present:

☐ Left Eye ☐ Right Eye ☐ Inside Mouth ☐ Neck

☐ Base Front Flippers ☐ Base Rear Flippers ☐ Along Front Flippers ☐ Along Rear Flippers

☐ Around Tail ☐ On Carapace ☐ On Plastron Other_____

2. How many fibropapillomas are less than 1 cm in diameter? (select one)

◯ 0 ◯ 1 - 5 ◯ greater than 5

3. How many fibropapillomas are between 1 cm and 4 cm in diameter? (select one)

◯ 0 ◯ 1 - 5 ◯ greater than 5

4. How many fibropapillomas are between 4 cm and 10 cm in diameter? (select one)

◯ 0 ◯ 1 - 3 ◯ greater than 3

5. How many fibropapillomas are greater than 10 cm? (select one)

◯ 0 ◯ 1 - 3 ◯ greater than 3

6. Do you believe that vision was blocked by fibropapillomas? (select all that apply)

☐ No ☐ Yes, in Left Eye ☐ Yes, in Right Eye ☐ Yes, in Both Eyes

7. Please describe the size and exact location of any fibropapillomas inside the mouth.

_____

_____

_____

Please be sure to take photographs showing all ventral and dorsal surfaces. Please also take one "head-on" photograph of the turtle. If there is a fibropapilloma inside the mouth, please take a photograph of it. *If the turtle is not a green turtle, or if it has a fibropapilloma inside the mouth, please salvage the turtle and contact the FWC turtle staff through a text message to SeaTurtleStranding@myfwc.com or by calling the FWC Wildlife Alert Hotline at 1-888-404-3922.*

FWC Form STSSN-2, Fibropapilloma Documentation Form, 6/16, FAC Rule 68E-1

Appendix B-3

COLD STUN EVENT TURTLE DATA

DATE FOUND: Month___ ___Day___ ___Year 20___ ___ **COUNTY FOUND:** _____

SPECIFIC LOCATION FOUND: _____

SPECIES: (Check one.)	**CONDITION AT INTAKE: (Check one.)**	**FIBROPAPILLOMA? (Check one.)**
☐ Loggerhead	☐ Responsive	☐ Yes (If yes, please fill out back of this sheet.)
☐ Green Turtle	☐ Unresponsive	☐ No
☐ Hawksbill		
☐ Kemp's Ridley	**PHOTO TAKEN?** ☐ **YES** ☐ **NO**	**RECORDER NAME:**

EXISTING FLIPPER TAG(S)? ☐ **YES** ☐ **NO** **NEW FLIPPER TAG(S) APPLIED?** ☐ **YES** ☐ **NO**

(When recording tag numbers below, circle E for existing tag and N for new tag. Also, please note if an existing tag was removed. Positions refer to the placement of the tag in one of the first three trailing scales beginning at the body.)

TAG # (LEFT) Existing (E) or New (N) _____ **POSITION: 1 2 3** PLACE PIT

TAG # (RIGHT) Existing (E) or New (N) _____ **POSITION: 1 2 3**

PIT TAG ALREADY PRESENT? ☐ **YES** ☐ **NO** **PIT LOCATION: RF LF RR LR**

PIT TAG NUMBER: _____ (If PIT tag applied, please also put sticker in the box above.)

(****Only if*** calipers are available.) (*****Only if*** calipers are ***not*** available.)

***Straight Carapace Length** (notch to notch)_____**cm** ****Curved Carapace Length** (notch to notch)_____**cm**

Flipper Damage? ☐ **NO** ☐ **YES If yes, describe:**_____

_____

Carapace Damage? ☐ **NO** ☐ **YES If yes, describe:**_____

_____

SAMPLES TAKEN (Check all that apply.)

GENETIC TISSUE SAMPLE ☐ **STABLE ISOTOPE TISSUE SAMPLE** ☐

OTHER ☐ Describe: _____

FATE OF TURTLE

FOUND DEAD/NEVER RESPONSIVE ☐ YES ☐ NO **If yes, disposition of carcass:**_____

TAKEN TO HOLDING FACILITY? ☐ YES ☐ NO **DATE TAKEN:** Month☐☐ Day☐☐ Year 20☐☐

Name of Facility (also note any subsequent transfers): _____

DIED AT HOLDING FACILITY? ☐ YES ☐ NO **If yes, disposition of carcass:**_____

RELEASED? ☐ YES ☐ NO **RELEASE DATE:** Month☐☐ Day☐☐ Year 20☐☐

Release Location: _____

OTHER NOTES:

FWC Form STSSN-3, Cold Stun Event Turtle Data Form, 6/16, FAC Rule 68E-1

Appendix B-4

SEA TURTLE STRANDING AND SALVAGE NETWORK – GROSS NECROPSY REPORT

IDENTIFICATION

1. STSSN #: **2.** Other identifier(s)#: **3.** Rehab: ☐

4. Found dead: ☐ **5.** If no, date of death (leave blank if unknown) (Use mm/dd/yyyy for dates)

6. Euthanized: ☐ **7.** Frozen/Thawed: ☐ **8.** Condition at necropsy: ☐1 ☐2 ☐3 ☐4 ☐5

9. Date necropsied: **10.** Examiner: **11.** Affiliation:

12. Necropsy description: ☐External & internal examination ☐External examination only ☐Incomplete carcass

13. Disposition of carcass: ☐Buried on beach ☐Buried off site ☐Rendered ☐Incinerated ☐Other

14. Species: ☐CC ☐CM ☐DC ☐LK ☐EI ☐LO ☐HYBRID ☐JNK **15.** Sex: ☐Male ☐Female ☐Undetermined

EXTERNAL EXAMINATION

16a. Body weight: ☐kg ☐lb 16b. ☐actual ☐est. **17.** Eyes sunken: ☐ **18.** Skeletal features prominent: ☐

19. Heavily encrusted w/epibiota: ☐ **20.** Leeches: ☐ **21.** Gooseneck barnacles: ☐

22. Epibiota coverage: **22a.** Head/appendages: % **22b.** Carapace: % **22c.** Plastron: %

23. External Trauma/evidence of Human Interaction (T/HI): ☐Yes ☐CBD (If yes, complete 25) Use STSSN scale

24. Other anomalies: ☐Yes ☐CBD (If yes, complete 26) CBD - Cannot Be Determined/Evaluated ☐ PHOTOGRAPHS TAKEN

ANATOMIC LOCATION CODES: Head(H) Neck(N) Eyes(E) Mouth(M) Carapace(C) Plastron(P) Tail(T) Vent(V)
Use for 25a & 26a Front flipper - Right(R) Left(L) Rear flipper - Right(F) Left(G) All appendages(Y) Pectoral girdle(J) Pelvis(I)

25a. T/HI-Type: (check all that apply and diagram in 25c)
Enter anatomic codes in blanks: (Example: ⊗ Parallel slicing wounds(1) C)

- ☐Parallel slicing wounds(1)
- ☐Non-parallel/single linear wounds(3)
- ☐Partial/complete amputation(5)
- ☐Fractures/Broken bones(7)
- ☐Bite wound/probable bite wound(9)
- ☐Ligature/entanglement type(11)
- ☐Entangling material attached(13)
- ☐Hook and/or line present(14)
- ☐Other(15) describe under 26a
- ☐Blunt/crushing(2)
- ☐Dislocations(4)
- ☐Paint transfer(6)
- ☐Puncture(8)
- ☐Tar in mouth(10)
- ☐Incised/mutilation(12) a
- a If yes, complete 25d

25b. T/HI- Description: (check all that apply)
Enter 25a. + anatomic codes: (Example: ⊗ Exudate/fibrin 1C)

- ☐Exudate/fibrin
- ☐Bone formation/remodeling
- ☐Encapsulated sand/debris
- ☐Completely healed
- ☐Fibrous tissue formation
- ☐Hemorrhage
- ☐Blood clots
- ☐Other describe under 26a

Diagram wounds/measurements 25c

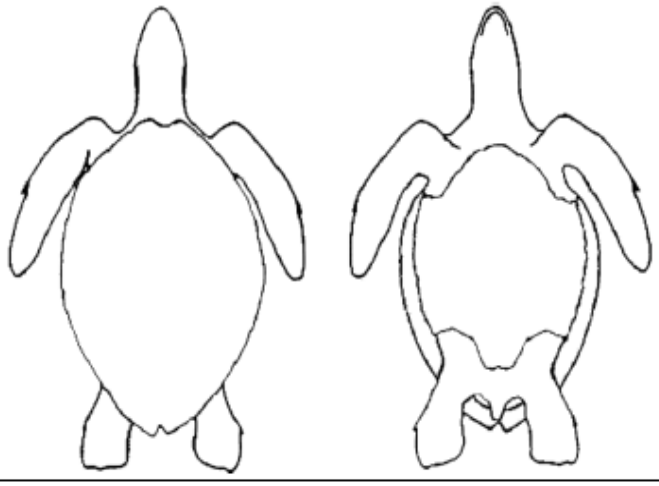
☐ PHOTOGRAPHS TAKEN Use STSSN scale in photos

3 Standard photos with scale:
1. Perpendicular to wound(s)
2. Wound margins (close-up)
3. Head, neck, shoulder region

25c. T/HI-Comments & External Diagram (cont. pg 4):

Parallel slicing wounds (cm):
Straight (chord) cut length
Maximum:
Minimum:
Example: 1C

Single linear wounds (cm):
Wound length:
Width: Depth:



FWC Form STSSN-4, Gross Necropsy Report, 6/16, Rule 68E-1.004

Appendix B-4

EXTERNAL EXAMINATION (CONT.)

25d. T/HI-Fisheries/Entanglement data: (Fisheries gear, other restangling materia) ☐ Material removed prior to necropsy

Gear type:

☐Line & pot ☐Line & buoy ☐Line, buoy & pot ☐Unknown gear/line

☐Netting ☐Hook ☐Monofilament ☐Braided line ☐Other

Number of wraps around body part: , location: [1] (use anatomic codes)

Additional areas: , [2]; , [3]; , [4]; , [5] (Example: 4 , R)

Ligature injury: (additional comments under 26c)

☐ Ligature – mild, non-penetrating

☐ Ligature – skin incised/ulcerated

☐ Ligature – full thickness (deep tissue/bone exposed)

☐ Ligature – partially/completely healed

T/HI-Material collected*: ☐ Disposition of material:

Gear description (color, shape, size):

Gear identification information:

26a. External anomalies-Type: (check all that apply and diagram in 26c)

Enter anatomic code in blanks: (Example: ⊗ Ulcers (16) Y)

☐Fibropapillomas (FP)(16) ☐Masses (non-FP or unknown)(17)

☐Ulceration/dermatitis(18)

☐Other(19) (describe under 26c)

☐ P HOTOGRAPHS TAKEN

26b. Other anomalies-Description: (check all that apply)

Extent of observation: *(Refer to Pap Map for FP turtles)*

Enter 26a. + anatomic code: (Example: ⊗ 10-25% affected 10Y)

☐ <5 % surface affected ☐5-25 % affected

☐ >25-50 % affected ☐>50 % affected

☐ Visual field involved ☐Both eyes

☐ Mouth obstructed ☐ Cloaca obstructed

26c. Anomalies-Comments (cont.pg 4):

INTERNAL EXAMINATION (comments extended to page 4 – optional)

NUTRITIONAL CONDITION - INTERNAL

27. Muscle status: ☐Well-muscled/No atrophy ☐Mild to moderate atrophy ☐Severe atrophy ☐CBD

28. Fat status: ☐Abundant/No atrophy ☐Mild to moderate atrophy ☐Severe atrophy ☐CBD ☐P HOTOGRAPHS TAKEN

29a. MUSCULOSKELETAL (Internal) – ☐EXAMINED ☐CBD 29b. Joint Fluid: ☐No findings ☐Cloudy/solid material ☐Bloody

29c. Skeletal Findings: ☐No findings ☐Fractures ☐Dislocation ☐Avulsions ☐Deformities ☐Other (note location(s) in comments)

29d. Musculature findings: ☐No findings ☐Trauma ☐Hemorrhage ☐Pallor ☐Necrosis ☐Other

29e. MUSCULOSKELETAL-Findings/Comments:

30a. COELOMIC CAVITY – ☐EXAMINED ☐CBD 30b. Coelomic Fluid Volume: ml 30c. ☐actual ☐est.

30d. Coelomic Fluid: ☐No findings ☐Cloudy/solid material ☐Blood-tinged ☐Blood clots ☐Fibrin ☐Other

30e. Coelomic Lining: ☐No findings ☐Masses (≤2mm) ☐Masses (>2mm) ☐Hemorrhage ☐Adhesions ☐Other

30f. COELOMIC CAVITY-Findings/Comments:

31a. CARDIOVASCULAR SYSTEM (heart/major vessels) – ☐EXAMINED ☐CBD 31b. Blood in Heart chambers: ☐

31c. Pericardial Fluid: ☐No findings ☐Cloudy/solid material ☐Blood-tinged ☐Blood clots ☐Fibrin ☐Other

31d. CV Findings: ☐No findings ☐Trauma ☐Endocarditis/arteritis ☐Blood clot(s) ☐Vessels thickened ☐Adhesions ☐Other

31e. CV-Findings/Comments:

32a. HEPATOBILIARY SYSTEM (liver and gall bladder) – ☐EXAMINED ☐CBD

32b. Liver Findings: ☐No findings ☐Pallor ☐Atrophy (shrunken, black) ☐Trauma ☐Masses (≤2mm) ☐Masses (>2mm) ☐Other

32c. Biliary Findings: ☐No findings ☐Gall bladder thickened ☐Bile ducts thickened ☐Ulcers ☐Exudate ☐Stones ☐Other

32d. HB-Findings/Comments:

Appendix B-4

INTERNAL EXAMINATION (CONT.)

ANATOMIC LOCATION CODES: Mouth(O) Esophagus(Es) Stomach(St) Small intestine(Si) Colon(Co) Cloaca(Cl)

33a. ALIMENTARY SYSTEM – ☐EXAMINED ☐CBD

33b. GI-Findings: (check all that apply) Enter anatomic code in blanks: (Example: ⊗ Ulcers(20) Co)

☐Ulcers/exudate(20) ☐Trauma (21) ☐Masses(22) ☐Impaction(23) ☐Fluke eggs(24)
☐Obstruction(25) ☐Intussusception(26) ☐Plication(27) ☐FP(28) ☐Other(29)

33c. GI-percentage of affected area: Enter 33b. + anatomic code: (Example: ⊗>25-50 affected 20 Co)

☐<5% ☐5-25% ☐>25-50% ☐>50% ☑N/A

33d. GI-Foreign material: ☐ (If "yes, complete 33k)

33e. Injury/lesion associated with foreign material: ☐ If yes, give entry for 33b: (Example: 21,St)

GI-Contents (include & note any biotic impacted material):

33f. Esophagus: ☐Empty ☐Contents, describe:

33g. Stomach: ☐Empty ☐Contents, describe:

33h. Intestine (first ½): ☐Empty ☐Contents, describe:

33i. Intestine (second ½): ☐Empty ☐ Contents, describe:

33j. GI-Findings/Comments:

33k. GI-Foreign material - type: ☐PHOTOGRAPHS TAKEN

☐Hook(29) ☐Line(30) ☐Hard plastic(31) ☐Plastic bag(33) ☐Misc soft plastic(33) ☐Balloon(34) ☐Tar(35) ☐Other(36)

Material/lesion location(s): (use anatomic codes)

Material collected*: ☐ Disposition of material:

Foreign material- Description of material & comments:

34a. SPLEEN – ☐EXAMINED ☐CBD 34b. Spleen Findings: ☐No findings ☐Trauma ☐Enlarged ☐Masses ☐Other

34c. PANCREAS – ☐EXAMINED ☐CBD 34d. Pancreas Findings: ☐No findings ☐Trauma ☐Masses ☐Congested ☐Other

34e. SPLEEN/PANCREAS-Findings/Comments:

35a. UROGENITAL SYSTEM (kidneys, reproductive, urinary bladder) – ☐EXAMINED ☐CBD

35b. Kidneys Findings: ☐No findings ☐Trauma ☐Enlarged ☐Asymmetrical ☐Masses ☐FP ☐Other

35c. Gonads identified as: ☐Testes (complete 35d-f) ☐Ovaries (complete 35g-f) ☐Unknown (Indicate sex on Page 1, Field 15)

35d. Testes–characterization: ☐Cylindrical ☐Ellipsoidal ☐Flat 35e. Testes-size: length x width (cm)

35f. Epididymis–characterization: ☐Not expanded from wall ☐Distinct ridge ☐Pendulous ☐Obvious white coils

35g. Ovaries–characterization: ☐All follicles <4mm ☐Developing follicles (4-24mm) ☐Corpus luteum (>7mm) ☐Corpus albicans

35h. Ovary length: (cm)

35i. Oviduct–characterization: ☐White, straight (<3mm diameter) ☐Partially convoluted (3-15mm diameter)
☐Very convoluted (>15mm diameter) ☐Contains eggs (>24mm) †Optional fields by state

35j. UG-Findings/Comments:

36a. RESPIRATORY SYSTEM – ☐EXAMINED ☐CBD 36b. Foam/froth in airway: ☐

36c. If froth present: ☐Anterior to bifurcation ☐Posterior to bifurcation 36d. Froth amount: ☐Small ☐Moderate ☐Copious

36e. Sand/sediment in airway: ☐ 36f. Trachea/bronchi: ☐No findings ☐Exudate ☐Masses ☐Ulceration ☐Other

36g. Lungs Findings: ☐No findings ☐Wet/frothy ☐Hemorrhage ☐Trauma ☐Exudate ☐FP
☐Masses (≤2mm) ☐Masses (>2mm) ☐Aspirated debris ☐Other

36h. RESP-Findings/Comments:

Appendix B-4

INTERNAL EXAMINATION (CONT.)

37a. CENTRAL NERVOUS SYSTEM – ☐ Brain EXAMINED ☐ CBD 37b. ☐ Spinal Cord EXAMINED ☐ CBD

37c. Brain findings: ☐ No findings ☐ Trauma ☐ Hemorrhage ☐ Necrosis ☐ Exudate ☐ Blood fluke eggs ☐ Other

37d. Spinal cord findings: ☐ No findings ☐ Trauma ☐ Hemorrhage ☐ Necrosis ☐ Exudate ☐ Blood fluke eggs ☐ Other

37e. CNS-Findings/Comments:

38. Other Comments (include any continuation from previous sections & label notes by data field number (e.g. 25c):

Specimen (label w/ ID#)	Fixed	Frozen-bagged	Frozen-Foil	Other (specify)	Location
	☐	☐	☐	☐	
	☐	☐	☐	☐	
	☐	☐	☐	☐	
	☐	☐	☐	☐	
	☐	☐	☐	☐	
	☐	☐	☐	☐	
	☐	☐	☐	☐	

*All fisheries gear should be submitted to Pascagoula (SE) or North Kingston (NE) NOAA laboratories for ID

APPENDIX C – CAPTIVE FACILITY FORMS

Appendix C-1

COOPERATIVE MARINE TURTLE TAGGING PROGRAM (CMTTP)
TAGGING DATA FORM

SPECIES:_____	**DATE CAPTURED:**	DAY__	MO____	YR____	**DATE RELEASED:**	DAY____	MO____	YR____

TAG NUMBERS (LIST ALL NUMBERS AND LETTER PREFIXES; CIRCLE TAG NUMBERS ALREADY ON THE TURTLE [="OLD TAGS"]):

LEFT FRONT: _____	**RIGHT FRONT:**_____	**LEFT REAR:**_____	**RIGHT REAR:**_____

PIT TAG#:_____ **LOCATION OF PIT TAG:**_____

WAS TURTLE CARRYING TAGS WHEN ENCOUNTERED?:	YES	NO	IF YES, THEN CIRCLE CORRECT STATEMENT:

1. RECAPTURE OF SAME PROJECT TURTLE (EITHER WITHIN SEASON OR BETWEEN SEASONS)
2. RECAPTURE OF DIFFERENT PROJECT TURTLE (NOT A TAG YOUR GROUP APPLIED)

TAG RETURN ADDRESS:

ORGANIZATION TAGGING AND/OR RELEASING TURTLE (INCLUDE AREA CODE/PHONE NUMBER; AND EMAIL):

PROJECT TYPE (CIRCLE ONE):

[NESTING BEACH]	[TANGLE NET]	[POUND NET]	[HAND CATCH]	[STRANDING]	[OTHER, DESCRIBE]

IF NESTING BEACH: DID TURTLE NEST?	YES	NO	UNDETERMINED

FACILITY WHERE TURTLE WAS BEING HELD:

DESCRIBE CAPTURE LOCATION. BE SPECIFIC, INCLUDE COUNTY AND LAT/LONG IF AVAILABLE

DESCRIBE RELEASE LOCATION. BE SPECIFIC, INCLUDE COUNTY AND LAT/LONG IF AVAILABLE.

TURTLE MEASUREMENTS:

STRAIGHT CARAPACE LENGTH (SCL MINIMUM):	_____ CM	_____ INCHES
STRAIGHT CARAPACE LENGTH (SCL NOTCH-TIP):	_____ CM	_____ INCHES
STRAIGHT CARAPACE WIDTH (SCW):	_____ CM	_____ INCHES
CURVED CARAPACE LENGTH (CCL MINIMUM):	_____ CM	_____ INCHES
CURVED CARAPACE LENGTH (CCL NOTCH-TIP)	_____ CM	_____ INCHES
CURVED CARAPACE WIDTH (CCW):	_____ CM	_____ INCHES
WEIGHT:	_____ KG	_____ LBS

TURTLE WAS INSPECTED AND/OR SCANNED FOR:

TAG SCARS:	YES	NO	WHERE LOCATED?
PIT TAGS:	YES	NO	WHAT FREQUENCY?
MAGNETIC WIRES:	YES	NO	WHERE LOCATED?
LIVING TAGS:	YES	NO	WHERE LOCATED?

ADDITIONAL REMARKS OR DATA ON BACK OF FORM:	YES	NO

MAIL COMPLETED FORM TO:
ARCHIE CARR CENTER FOR SEA TURTLE RESEARCH, DEPARTMENT OF BIOLOGY, PO BOX 118525
UNIVERSITY OF FLORIDA, GAINESVILLE, FL 32611 USA

FWC Form Cooperative Marine Turtle Tagging Program (CMTTP) Tagging Data Form, 6/16, Rule 68E-1.004

FWC MARINE TURTLE HOLDING FACILITY QUARTERLY REPORT

ORGANIZATION AND PERMIT NUMBER

MONTHS AND YEAR OF REPORT

SECTION I. Marine turtles maintained during the quarter. Instructions: List all marine turtles held during the quarter using the codes below. Be sure to complete/update information for each animal each quarter.

SID #: This is a State Identification number assigned to each turtle held at your facility (excluding hatchlings undergoing rehabilitation which are listed as a total number on the hatchling report form). Each time you receive a new turtle contact the FWC office in Tequesta at (561) 882-5975 or MTP@MyFWC.com to obtain an SID # for that animal.

SPECIES CODES: **CC** = *Caretta caretta*, **CM** = *Chelonia mydas*, **LK** = *Lepidochelys kempi*, **EI** = *Eretmochelys imbricata*, **LO** = *Lepidochelys olivacea*, **DC** = *Dermochelys coriacea*

DATE ACQUIRED: Report the date that your facility received the turtle. Under one of the last two columns indicate where the turtle came from (e.g., stranding, received from another facility, dropped off anonymously, etc.)

SIZE CODES:
H (Hatchling) = < 5cm carapace length (CL) for CC, CM, LK, EI and LO
PH (Post-hatchling) = > 5cm CL and < 10cm CL for CC, CM, LK, EI and LO
J (Juvenile) = > 10cm CL and (1) < 45cm CL for LK and LO, (2) < 50cm CL for EI, (3) < 60cm CL for CC and CM
SA (Sub-adult) = > 45cm CL and < 60cm CL for LK and LO, (2) > 50cm and < 70cm CL for EI, (3) > 60cm and < 90cm CL for CC and CM
A (Adult) = > 60cm CL for LK and LO, > 70cm CL for EI, and > 90 cm CL for CC and CM

STATUS CODES:
UR = undergoing rehabilitation
ED = educational display animal (only loggerheads can be held solely for educational display. If you list any other species (i.e., a green turtle) as an educational display you must list another code as the primary purpose for holding.
UO = unknown origin or other origin (i.e., turtles that are not from the Western Atlantic Ocean or the Gulf of Mexico)
PD = permanently disabled or non-releasable (indicate disability on initial report)
PREACT = pre-act animal (turtles that have been held in captivity since before 1978)
RESEARCH = turtles being held for research (requires pre-approval)
RFR = turtles that are ready for release
TSTR = an otherwise healthy turtle (i.e., juvenile educational loggerhead turtle) being held until it reaches the appropriate size class for release in Florida waters

DATE & FATE (RELEASED, DIED, EUTHANIZED, OR TRANSFERRED): In this column indicate the fate of the turtle: released, died, euthanized or transferred to another facility. The date of the fate must also be provided. If the turtle was released include the tag numbers if applicable. If the turtle was transferred to another facility indicate the facility it was transferred to.

SID #	SPECIES	DATE ACQUIRED	SIZE	STATUS (INCLUDE STSSN ID & TAG # IF APPLICABLE)	DATE & FATE: (RELEASED, DIED, EUTHANIZED, OR TRANSFERRED)

FWC Form CAP-1, FWC Marine Turtle Holding Facility Quarterly Report, 6/16, Rule 68E-1.004

Appendix C-2

FWC MARINE TURTLE HOLDING FACILITY QUARTERLY REPORT

SID #	SPECIES	DATE ACQUIRED	SIZE	STATUS (INCLUDE STSSN ID & TAG # IF APPLICABLE)	DATE & FATE: (RELEASED, DIED, EUTHANIZED, OR TRANSFERRED)

FWC Form CAP-1, FWC Marine Turtle Holding Facility Quarterly Report, 6/16, Rule 68E-1.004

FWC MARINE TURTLE HOLDING FACILITY QUARTERLY REPORT

SECTION 2. Water quality maintained in marine turtle holding tanks during the quarter. Instructions: Report the following information **each week** for every turtle holding tank with a separate water supply.

DATE	TANK	TEMPERATURE	SALINITY (in ppt)	pH	DATE	TANK	TEMPERATURE	SALINITY (in ppt)	pH

ACKNOWLEDGEMENT OF ACTIVITIES BY ATTENDING VETERINARIAN.

SIGNATURE OF VETERINARIAN _____ DATE _____

I DECLARE THE PRECEEDING INFORMATION TO BE CORRECT.

SIGNATURE OF PERMIT HOLDER _____ DATE _____

Every quarter, please complete and submit this form to FWC by: email (MTP@MyFWC.com); upload to the FWC online permit system; hard copy to the FWC – Tequesta Field Station, Marine Turtle Holding Facility Reporting, 19100 SE Federal Highway, Tequesta, Florida 33469; or fax at (561) 743-6228.

FWC Form CAP-1, FWC Marine Turtle Holding Facility Quarterly Report, 6/16, Rule 68E-1.004

FWC MARINE TURTLE HOLDING FACILITY QUARTERLY REPORT

HATCHLING TOTALS (no SID # required)

ORGANIZATION AND PERMIT NUMBER _____

MONTHS AND YEAR OF REPORT _____

SPECIES	BALANCE FROM PREVIOUS QUARTER	# OF HATCHLINGS ACQUIRED DURING QUARTER	# OF HATCHLINGS THAT DIED DURING QUARTER	# OF HATCHLINGS RELEASED DURING QUARTER	END OF QUARTER BALANCE	# OF RELEASES FROM BEACH VS. OFFSHORE*
LOGGERHEAD						
GREEN						
LEATHERBACK						
KEMP'S RIDLEY						
HAWKSBILL						
OTHER/UNKNOWN						

* Hatchlings recovered from excavated nests or found disoriented should be kept on moist sand until they can be released off the beach. Hatchlings that have washed in or have failed to release after multiple beach release attempts should be kept in water until they can be released offshore. ALL HATCHLINGS SHOULD BE RELEASED AS SOON AS POSSIBLE. If you need assistance with offshore release, please contact the Tequesta office at (561) 882-5975 or MTP@MyFWC.com.

COMMENTS: _____

FWC Form CAP-1, FWC Marine Turtle Holding Facility Quarterly Report, 6/16, Rule 68E-1.004

Appendix C-3

FWC MARINE TURTLE TRANSFER FORM

Instructions: This form must be filled out completely whenever a sea turtle is transferred from one FWC-authorized facility to another. A copy of each completed form should be submitted (by both the transferring and the receiving facility) with the quarterly report for the quarter in which the animal was transferred.

Turtle's State Identification Number (SID #): _____

Turtle's Stranding Identification Number: (If applicable) _____

Date of Transfer: _____

Transferring turtle **FROM** (name of facility): _____

Transferring turtle **TO** (name of facility): _____

Purpose of transfer: _____

Transfer is expected to be (check one): ☐ Temporary ☐ Permanent

Other Comments: _____

FWC Form CAP-2 - MARINE TURTLE TRANSFER FORM -12/2007, amended 2016, FAC Rule 68E-1

APPENDIX D – RESEARCH FORMS

Appendix D-1

Checklist for Pre-emergent Hatchling Collection

Item	Response	Explanation
Does the research require "naïve" hatchlings?		
Will early collection allow the hatchlings to be released that same night?		
Will the hatchlings be maintained in the lab longer than the day of collection?		
Has the researcher provided other justification directly related to the need to remove hatchlings from the nest prior to natural emergence that clearly promotes the conservation of sea turtles?		
Is the request to facilitate ease of collection with no increase in sea turtle conservation value relative to collecting hatchlings that emerge naturally?		

Applicant: _____

Permit #: _____

Project Title: _____

Species of turtles to be collected: ☐ Cc ☐ Dc ☐ Cm ☐ Other _____

Total number of turtles to be collected: _____

Number of nests hatchlings will be collected from: _____

Number of hatchlings to be collected per nest: _____

Who will be collecting the hatchlings: ☐ Beach PH ☐ Research PH ☐ Research PH students

Are the individuals to collect the hatchlings prior to emergence already trained/experienced in the collection technique? ☐ Yes ☐ No

Summary of project activities & research goals: _____

_____

_____

_____

_____

_____

FWC Form Res-1 – CHECKLIST FOR PRE-EMERGENT HATCHLING COLLECTION – 6/16, FAC Rule 68E-1

Appendix D-2

FWC RP # _____

FWC Marine Turtle Annual Research Reporting Form

This form may be submitted to satisfy standard reporting requirements. You may attach other reports if they address all categories below. Please submit the completed report:

- **By e-mail attachment to** MTP@MyFWC.com
- **By mail to FWC – Marine Turtle Permits, 19100 SE Federal Highway, Tequesta, FL 33469**
- **By fax to (561) 743-6228**

FWC Marine Turtle Permit # _____ **Year:** _____

Permit Holder Name: _____

PI Name (if other than Permit Holder): _____

Research Project Name (as it appears on FWC MTP):

Activities associated with project (check all that apply):

☐ Blood sampling	☐ Skin sampling	☐ Scute sampling
☐ Tissue sampling (not skin/scute)	☐ Stomach contents sampling	☐ Fecal sampling
☐ Flipper tagging	☐ PIT tagging	☐ Satellite (PTT/GPS) tagging
☐ PAT tagging	☐ Acoustic/sonic tagging	☐ VHF/radio tagging
☐ Hand capture (snorkel, rodeo, free-diving)	☐ Net capture (tangle, pound, dip, strike)	☐ SCUBA capture
☐ Trawl capture	☐ Flash photography after dark	☐ Relocating nests on beach
☐ Relocating nests to off-beach location	☐ Cage/screen nests	☐ Addled/unhatched egg collection
☐ Nest contents collection (post-hatch)	☐ Viable egg collection	☐ Deploy data loggers in nest
☐ Post-emergence hatchling collection	☐ Pre-emergence hatchling collection	☐ Holding turtles for research (<45 days)
☐ Holding turtles for research (>45 days)	☐ Gastric Lavage	☐ Laparoscopy
☐ Ultrasonography	☐ Necropsy	

Attach additional or separate pages if more space is needed

Appendix D-2

FWC RP # _____

FWC Marine Turtle Annual Research Reporting Form

Other instrumentation (please list):

Other marking (please list):

Other sampling (please list):

Other nest treatment (please list):

Other activities (please list):

Report the actual number of marine turtles or marine turtle nests involved in project during this reporting year:

Species *Cc, Cm, Dc, Ei, Lk, Lo*	Size Class *H, PH, J, SA, A*	Collection/capture/marking/ instrumentation/sampling technique authorized	Actual Number of Turtles/Nests

Was this graduate research? ☐ Yes ☐ No

Has all field work or sampling for this project been completed? ☐ Yes ☐ No

Has all data analysis for this project been completed? ☐ Yes ☐ No

Has this research been submitted for publication? ☐ Yes ☐ No

Provide copies of technical reports, conference abstracts, papers, or publications resulting from permitted research to FWC. Electronic copies may be sent to MTP@MyFWC.com. Hard copies may be sent to 19100 SE Federal Highway, Tequesta, Florida 33469.

Page 2 of 3

Attach additional or separate pages if more space is needed

Appendix D-2

FWC RP # _____

FWC Marine Turtle Annual Research Reporting Form

Describe any problems or unforeseen effects encountered during the permitted activities and any steps taken or proposed to resolve such problems.

If marine turtles were unintentionally injured or killed, describe the fate and circumstances. Describe how any marine turtle carcasses were disposed. Describe where injured turtles were taken for treatment and the outcome of rehabilitation efforts.

Describe activities associated with this project during the year. Describe any changes to the original methodology. If turtles were held describe where and for how long.

Provide a concise summary of any preliminary findings or final results associated with research activities completed during the year. Include hatch success data for any nests that were relocated or from which hatchlings were collected (prior to or post-emergence). Include any pertinent photographs or tracking maps. Please discuss how the conservation value identified in the original proposal was or was not achieved through the research activities conducted.

Indicate any additional findings, results or information you would like to report or provide.

Page 3 of 3

Attach additional or separate pages if more space is needed

FWC Form Res-2 – MARINE TURTLE ANNUAL RESEARCH REPORT FORM – 6/16, FAC Rule 68E-1

APPENDIX E – EDUCATIONAL FORMS

Appendix E-1

EDUCATIONAL PRESENTATIONS USING LIVE TURTLES

ORGANIZATION & PERMIT NUMBER _____ YEAR OF REPORT _____

Instructions. Please list all turtles used in educational presentations during the year. This includes only those turtles that are taken away from the captive facility for use in an educational presentation. For species, use the common name. For SID #, please include the turtle's state identification number. If yes, please give date of last use. For time away from facility, please state, in hours, the total length of time the turtle was away from the facility. For description of the educational presentation, please elaborate on the nature of the presentation.

SPECIES	DATE USED	SID #	TIME AWAY FROM FACILITY (HOURS)	DESCRIPTION OF EDUCATIONAL PRESENTATION

FWC Form E-1, EDUCATIONAL PRESENTATIONS USING LIVE TURTLES REPORTING FORM – 6/16, FAC Rule 68E-1

Appendix E-2

FWC PUBLIC MARINE TURTLE WATCH SCHEDULE

ORGANIZATION & PERMIT NUMBER _____ YEAR _____

PLEASE LIST EACH SCHEDULED WATCH FOR THE CURRENT NESTING SEASON. RETURN COMPLETED FORM TO THE FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION, IMPERILED SPECIES MANAGEMENT, 19100 SE FEDERAL HIGHWAY, TEQUESTA, FL 33469. PLEASE RETURN PRIOR TO YOUR FIRST SCHEDULED WATCH AND NO LATER THAN MAY 25th.

DATE	DAY OF WEEK	TIME	MEETING PLACE

FWC Form E-2, FWC PUBLIC TURTLE WATCH SCHEDULE FORM – 6/16, FAC Rule 68E-1

Appendix E-3

FWC PUBLIC TURTLE WATCH SUMMARY

ORGANIZATION & PERMIT NUMBER ______________________________ YEAR __________

DATE	LEADER	# IN GROUP	WAS A TURTLE OBSERVED (by the group)?	DID SHE NEST?	# OF OTHER TURTLES ENCOUNTERED (excluding the one observed by the group)	COMMENTS (species/nesting fate of other turtles encountered, hatchling emergences, tagged turtles, etc.)

Under comments, please explain whether or not the other turtles encountered nested (if known). Return completed form to the Florida Fish and Wildlife Conservation Commission, Imperiled Species Management, 19100 SE Federal Highway, Tequesta, FL 33469 after the completion of your last turtle watch of the season.

FWC Form E-3, PUBLIC TURTLE WATCH SUMMARY FORM – 6/16, FAC Rule 68E-1

Appendix E-4

FWC NIGHTTIME PUBLIC HATCHLING RELEASE FORM

ORGANIZATION & PERMIT NUMBER________________________ YEAR ____________

WHEN/WHERE WERE HATCHLINGS DISCOVERED?			WHEN WERE HATCHLINGS RELEASED?		# OF HATCHLINGS RELEASED				RELEASE LOCATION	How many people were present for the release?
DATE	TIME	LOCATION*	DATE	TIME	Cc	Cm	Dc	Other		

*LOCATION refers to either restraining hatchery, restraining cage, bottom of nest during excavation, or on the beach (misoriented or stranded). Return completed form to the Florida Fish and Wildlife Conservation Commission, Imperiled Species Management, 19100 SE Federal Highway, Tequesta, FL 33469 after the completion of your last hatchling release of the season.

FWC Form E-4, NIGHTTIME PUBLIC HATCHLING RELEASE REPORTING FORM – 6/16, FAC Rule 68E-1

FWC NIGHTTIME PUBLIC HATCH SUCCESS EVALUATION FORM

ORGANIZATION & PERMIT NUMBER_____ YEAR _____

DATE	TIME	NEST EXCAVATOR(S)	NEST INFO		HATCH DATA						LIVE HATCHLINGS RELEASED?		# PEOPLE PRESENT AT EVENT
			DATE LAID	SPECIES	# WHOLE EGGS	# HATCHED EGGS	# LIVE PIPPED	# DEAD PIPPED	# DEAD IN NEST	# LIVE IN NEST	AT EVENT	LATER SAME DAY	

Return completed form to FWC by: email (MTP@MyFWC.com); upload to the FWC online permit system; hard copy to the FWC – Tequesta Field Station, Marine Turtle Holding Facility Reporting, 19100 SE Federal Highway, Tequesta, Florida 33469; or fax at (561) 743-6228.

FWC Form E-5, FWC PUBLIC HATCH SUCCESS EVALUATION FORM – 6/16, FAC Rule 68E-1

APPENDIX F – NESTING INFORMATION

Appendix F-1

FWC FISH AND WILDLIFE RESEARCH INSTITUTE
STATEWIDE NESTING BEACH SURVEY (SNBS) PROTOCOL

1. **Survey Period:** Ideally, SNBS nest surveys should capture all nesting activity on a particular beach. Suggested minimum start/stop dates are as follows:

County Range	Suggested Latest Daily Nesting Survey Start Date	Suggested Earliest Daily Nesting Survey End Date
Nassau County through Flagler County	15 April	30 September
Volusia County through Miami-Dade County	1 March	31 October
Monroe County	15 April	31 August (30 September in portions of the county where green turtles nest)
Collier County through Pinellas County	15 April	30 September
Franklin County through Escambia County	1 May	31 August

2. **Survey Time:** Surveys must be conducted in the early morning hours, preferably beginning at dawn, in order to optimize crawl interpretation.

3. **Survey Frequency:** Most Statewide nesting beach surveys are conducted seven days a week, but some beaches, particularly remote ones, are surveyed on a less frequent basis. Ideally, survey frequency should remain constant. All crawls should be marked or "erased" daily to avoid duplicate counts on subsequent survey days. If surveys are not conducted seven days/wk, the strategy for counting tracks when the survey resumes (count all vs count only the new tracks) should remain the same throughout the season.

4. **Survey Boundaries:** Survey boundaries should remain the same from year to year. If changes are necessary, please contact FWC/FWRI well before the nesting season begins. Boundaries should be permanent physical features.

5. **Crawl Identification:** All fresh crawls (above and below the recent high tide) are identified to species and as either nests or false crawls based on visible crawl characteristics.

6. **Data Reporting:** Data are reported on annual report forms supplied by FWC/FWRI. The deadline for filing this report is 30 November. **Please submit annual SNBS report directly to FWRI, do not upload them to the FWC online permit system.**

7. **Significant Events:** If significant events occur that may affect turtles or their nests, please let FWC/FWRI know about them. Significant events include habitat alterations such as beach nourishment, the placement of armoring or beach-access ramps, or erosion due to storms. Indicate date(s) and type of event in the comments section of the data form.

8. **Assistance:** Should questions arise or problems occur, contact Beth Brost at 727-502-4738, Beth.Brost@MyFWC.com; Simona Ceriani at 727-892-4119, Simona.Ceriani@MyFWC.com; or Anne Meylan at 727-502-4740, Anne.Meylan@MyFWC.com.

YOUR EFFORTS ARE GREATLY APPRECIATED!

Revised: 9Feb2015

FWC STATEWIDE NESTING BEACH SURVEY PROTOCOL, 6/16, FAC Rule 68E-1

Appendix F-2

Florida Fish and Wildlife Conservation Commission (FWC)
Fish and Wildlife Research Institute (FWRI)
INDEX NESTING BEACH SURVEY (INBS) PROTOCOL

1. **Survey Consistency:** Standardized data collection is crucial to the long-term success of the program. Deviations from the protocol outlined here must be relayed to project leaders and explained in detail on the data report forms so that the data can be properly interpreted.

2. **Survey Period:** All index beaches are surveyed **15 May - 31 August** of each year.

3. **Survey Time:** Surveys must be conducted in the early morning hours, preferably beginning at dawn.

4. **Survey Frequency:** Index nesting beach surveys are conducted seven days a week on all beaches. All crawls are marked or "erased" daily to avoid duplicate counts on subsequent survey days.

5. **Survey Zones:** Crawl data are reported by beach zone (typically 1 km or 1/2 mile). Zones are identified with a unique numbering and marked with permanent markers. **Beach zones must remain the same from year to year, do not add or delete survey zones or change their length.** If you "lose" a zone boundary marker, it must be replaced in the exact location. Contact FWC/FWRI for help with this.

6. **Missed Survey Days:** If a morning survey is not completed (for whatever reason) the following protocol is to be followed. You may follow either "A" or "B", but "A" is the preferred method:

   A. All crawls present on the missed day are "erased" prior to sundown of the same day. Data are not reported from the missed survey day. "Fresh" crawl counts and data reporting resume the day following the missed survey day. This will result in 6 daily counts reported for the week.

   B. No one is able to "erase" crawls on the missed survey day. The following day the entire survey area is "erased". Data are not reported from the missed survey day or from the survey day when old crawls were erased. "Fresh" crawl counts and data reporting resume on the morning after crawls were erased. This will result in 5 daily counts reported for the week.

   Submit daily reporting forms, clearly indicate missed survey days, and explain in the remarks section how the situation was handled.

7. **Crawl Identification:** All fresh crawls are identified to species and as either nests or false crawls based on observable crawl characteristics. False crawls are counted only if they extend above the most recent high tide line.

8. **Data Reporting:** Data are recorded on Index Nesting Beach Survey Daily Report Forms provided by FWC/FWRI. Please enter "0" if no crawls were recorded in a zone. **Updated Excel (electronic) survey forms must be submitted on a monthly basis to: Beth.Brost@MyFWC.com. Submit updated forms by the first week of June, July, August, and September. Please submit INBS data directly to FWRI, do not upload them to the FWC online permit system**

9. **Significant Events:** If significant events occur that may affect turtles or their nests on an INBS beach, please let FWC/FWRI know about them. Significant events include habitat alterations such as beach nourishment, the placement of armoring or beach-access ramps, or erosion due to storms. Indicate date(s), type of event, and the zone location(s) in the comments section of the data form.

10. **Assistance:** Should questions arise or problems occur, contact Beth Brost at 727-502-4738, Beth.Brost@MyFWC.com; Simona Ceriani at 727-892-4119, Simona.Ceriani@MyFWC.com; or Anne Meylan at 727-502-4740, Anne.Meylan@MyFWC.com.

YOUR EFFORTS ARE GREATLY APPRECIATED!

Revised: 9Feb2015

FWC INDEX NESTING BEACH SURVEY PROTOCOL, 6/16, FAC Rule 68E-1

Appendix F-3

Rare Species Documentation Protocol

Why do we need documentation for rare species?
In addition to loggerheads, green turtles and leatherbacks, two other species of sea turtles occasionally nest on Florida's beaches: Kemp's ridleys and hawksbills. For these two occasional nesters and for green turtles on the west coast (where nesting by this species is less common than on the east coast), species documentation is required. Even if you have had these species nest on your beaches before, documentation is still required. This documentation is necessary to ensure that the data in the nesting databases (SNBS and INBS) are as accurate as possible. Management decisions, including permitting, often take into account whether the species that are nesting in an area are Endangered or Threatened and thus correct species identifications are essential.

Why are track images not considered adequate documentation for Kemp's ridley and hawksbill nests?
Loggerheads, Kemp's ridleys and hawksbills all have alternating gaits, and they overlap in nesting season and track width. This overlap makes track images unreliable for species identification.

Hawksbills (East and West coasts)
Documentation Accepted:

1. Genetic sample (must be collected even if images are available).

2. Images (useful but must be accompanied by genetic sample)
   - Nesting female
   - Crawl and nest
   - Hatchlings

Kemp's ridleys (East and West coasts)
Documentation Accepted:

1. Genetic sample (even if the nesting female is photographed, please collect a genetic sample)

2. Images
   - Nesting female (please additionally collect a genetic sample)
   - Crawl and nest (useful but must be accompanied by genetic sample)
   - Hatchlings (useful but must be accompanied by genetic sample)

Green Turtles (West coast only)
Documentation Accepted:

1. Genetic sample (not necessary if images of the **nesting female** are submitted immediately and verified by FWC, OR images of **hatchlings** found alive or dead in the nest at hatching are submitted to FWC)

2. Images (good-quality images of any of the following will suffice for species identification)
   - Nesting female
   - Crawl and nest
   - Hatchlings

FWC RARE SPECIES DOCUMENTATION PROTOCOL, 6/16, FAC Rule 68E-1

Appendix F-3

Instructions for Genetic samples

ORDER OF PREFERENCE OF GENETIC SAMPLES:

- Dead hatchling, dead embryo, or tissue sample (one flipper if fresh, flipper plus sloughed skin of flipper and sloughed scutes of carapace, if decomposed) stored in 95% ethanol buffer in vial provided by FWC.
  AND EITHER OF THE FOLLOWING
- One undeveloped egg stored in ethanol buffer in vial supplied by FWC (preferred over hatched egg shells)
- Two hatched egg shells stored in ethanol buffer in vial supplied by FWC

Call or email Beth Brost (Beth.Brost@myfwc.com, 727-502-4738) when you think you have had a rare species on the nesting beach, to consult about the necessary documentation and to arrange delivery of vials with buffer and shipping labels that permit the ethanol. Some vials will be stored at strategic sites around the state. BE SURE TO LABEL THE VIAL with the permit holder's name, the beach name, and the nest date (spell out the month). Use a permanent marker because ethanol can dissolve regular ink. Store a dead hatchling or flipper in a separate vial from undeveloped eggs or hatched eggshells. If you have genetic samples from more than one nest, the samples should be placed in separate vials. Do not freeze the sample, if at all possible. Samples can be held in the refrigerator or on ice for the short-term until placed in the vials with buffer.

Instructions for photographs. Please take several photos (dorsal and ventral views of entire hatchling or dorsal view of nesting female, and close-up of the head from above and from the side). It is important to use your camera's macro setting (usually a flower icon), to nearly fill the image frame with the hatchling, and to use the highest quality image setting. For crawls and nests, photograph the incoming and outgoing tracks, the nest, and any distinctive marks such as tail drags or pokes. Shoot into the sun early in the morning to get good shadow on the crawls.

- **Images of nesting females, tracks and nests of rare species should be emailed to FWC immediately.** Nests should be carefully marked so that they can be found for inventory. Images of hatchlings should be submitted after nest evaluations. Please email images to Beth.Brost@MyFWC.com. These records will be kept on file with the annual report.

Thank you for your assistance.

Appendix F-4

Tips and Tricks for Using a GPS Unit to Record Location Data

FWC GPS Protocol, 6/16, FAC Rule 68E-1

GPS units are valuable tools for mapping locations. Follow these three steps to ensure that your GPS is providing accurate information about your location.

First, confirm the settings of your GPS unit:

- ✓ **Format of coordinates:** Set the format of the coordinates so that the unit is collecting and displaying. Decimal degrees is recommended.
- ✓ **Datum:** Confirm the GPS unit's datum setting. This is typically set to NAD83 or WGS84. It is important to know what datum is being used by the GPS unit.
- ✓ **WAAS:** Many units are "WAAS enabled", which is a GPS signal correction system. Ensure that this feature is switched on, as it can significantly increase accuracy.
- ✓ **Units of measure:** Set units of measure (for distance, speed, elevation) to units that you are comfortable using.
- ✓ **Time:** Verify that the GPS unit has correct local time.

Next, collect GPS location information:

- ✓ **Ensure that the GPS antenna has an unobstructed view of the sky.**
- ✓ **Confirm that the unit is actively receiving signals from satellites.**
- ✓ **Remain still at the point of interest until the GPS unit determines a location.**
- ✓ **Record the latitude and longitude coordinate values in a simple format.**
- ✓ **Maintain written descriptions of important locations.**

Finally, record the information from your GPS:

- ✓ **Record a written description about the locations that you are mapping. Be sure to note the presence of permanent fixtures that are near the waypoint and could be used to confirm the location's coordinates. Buildings, intersections, dune crossovers or jetties make ideal reference points for noting positions along a shoreline.**
- ✓ **Most GPS units are capable of displaying latitude and longitude coordinates in three formats. The formats and their differences are highlighted below. The first, decimal degrees, is recommended as it is the simplest to record. The other formats require additional notation to indicate the minutes and seconds portions of the values. The inclusion of these special characters is critical when recording the data. No one format is "more accurate" than another. The critical point is that the user must be aware of the format of the data being provided by the GPS. Latitude and longitude values are typically reported in one of the following formats:**

Decimal Degrees (may be noted as DD or DDD.ddddd)

- Coordinates are recorded as degrees and parts of degrees (e.g., -86.27978).
- This is the simplest format to use, as no spaces or special characters are used in this numeric format.

Degrees Minutes (may be noted as DM or DDD MM.mmm)

- In this format, the first three digits are degrees, followed by a space, then minutes and parts of minutes. (e.g., -86° 16.7868')
- Degrees are followed by the degree (°) symbol, as well as a space. Minutes are followed by the minutes (') symbol.

Degrees Minutes Seconds (may be noted as DMS or DDD MM SS.ss)

- This format is similar to the previous, but parts of minutes are converted to seconds and parts of seconds (e.g., -86° 16' 47.208")
- Seconds are preceded by a space and distinguished by the seconds (") symbol.

- ✓ **In each example above, the same longitude value was used; note how the values changed as the format of the coordinates changed.**
- ✓ **Coordinates can be accompanied by direction (e.g., N or W) or preceded by a negative sign where appropriate. Southern latitudes and western longitudes are negative values.**
- ✓ **GPS units often provide coordinates with higher precision than necessary. For most uses, decimal degrees values recorded to the nearest 5 or 6 decimal places are sufficient.**

Revised: 31 October 2014, Florida Fish and Wildlife Conservation Commission

Appendix F-5

FWC FISH AND WILDLIFE RESEARCH INSTITUTE

NEST PRODUCTIVITY ASSESSMENT (NPA) PROTOCOL

1. **Reporting Requirements.** The spreadsheet for reporting data for NPA will be provided by FWC/FWRI.

a. As outlined in the section "Hatch Success Evaluations (Nest Inventory)" of the Handbook (page 2-18), you are required to provide NPA data if you: (1) conduct nest inventories on any of your nests; (2) relocate nests; and/or (3) restrain-cage nests.

b. Nest inventories conducted as part of beach construction projects must be reported on the monitoring spreadsheet, which is incorporated by reference on page 1-4 of the Handbook and can be downloaded at http://www.myfwc.com/wildlifehabitats/managed/sea-turtles/beach-activities/.

2. **Measuring Seasonal Productivity:** The following guidelines describe how to determine the percentage of eggs that hatch on your beach by measuring hatchling production in a sample of nests that represent your beach. It is not necessary to inventory all of your nests. Instead, you mark a representative sample of nests (130 – 150 nests by species) and monitor these nests throughout the season to provide a statistically valid subsample to represent your beach. This will allow comparisons among beaches and among years.

a. **Choosing sample nests to mark:** If you choose to provide data for measuring seasonal productivity, you will need to select a sufficient number of sample nests of each species that represents your entire beach and nesting season. A sample of nests that is not properly representative can over-or under- represent certain zones on the beach or certain portions of the season. If you have more than 130 nests of any species annually, a sampling strategy will be provided by FWC/FWRI (Beth Brost, 727-502-4738 or Beth.Brost@myfwc.com).

b. **Sampling Period:** It is important to ensure hatchling production for the entire nesting season (March to October). For all species, please begin nest marking as soon as you start your nest surveys and continue to the end of the season.

c. **Nest Marking:** Sample nests should be marked in such a way that you can locate the egg chamber 72 hours after the first hatchling emergence or 70 days of incubation, whichever is shorter. Nest marking methods include triangulation, as described in the Handbook under the heading, "Marking nest sites to determine hatching success", as well as marking the nest with stakes, signs, and ribbons. The method you choose should be able to withstand waves, wind, and vandalism.

d. **Monitoring of Marked nests:** Observe each marked nest every morning during the incubation period until three days after the first hatchling emergence or 70 days of incubation, whichever is shorter. <u>IMPORTANT</u>: Give marked sample nests the same treatment as other nests.

    1. Make decisions to relocate, screen, or cage the nest before it is chosen as a sample nest.
    2. Treat sample nests like other nests, that is, 'clean up' depredated sample nests only if this practice is carried out for all other nests. NOTE: Caging, screening, and nest relocation must be in compliance with the FWC/FWRI Handbook.

FWC NEST PRODUCTIVITY ASSESSMENT PROTOCOL, 6/16, Rule 68E-1

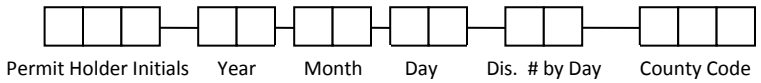
e. Monitoring Frequency: Each marked nest should be monitored no less than every other day. Checking on the nest this frequently allows: (1) for the collection of important nest-fate information (e.g., predation), (2) for the timely replacement of lost flags/stakes, and (3) for the identification of hatchling emergence date(s).

f. Nest Inventory: Record the observation of hatchling emergence sign (if emergence occurs) and emergence date(s) for each sample nest. At three days after the first hatchling emergence or at 70 days incubation, whichever is shorter, inventory the contents of each marked nest and record the information on the FWC/FWRI NPA Spreadsheet, which is incorporated by reference on page 2-18 of the Handbook. To determine egg fates (hatched, unhatched, etc.), follow the instructions for "Hatch Success Evaluations (Nest Inventory)" on page 2-18 of the Handbook. Sample nest inventories for loggerhead and green turtle nests should occur no later than 5 days after the last hatchling emergence or 70 days after the eggs were laid.

Appendix F-6

Directions for Disorientation Report Form

1.



Boxes should be filled using **Primary Permit Holder's Initials,** year, month, day (of the disorientation event), the disorientation # of that day, and the County Code.

The disorientation # of that day is determined by the number of events that occur in one day within the **county** under that **permit holder**. Permit holders that span across counties should number reports based on the # of events that occurred that day within a specific county.

The county codes are listed below:

Bay	=	BAY	Franklin	=	FRK	Okaloosa	=	OKA
Brevard	=	BVD	Gulf	=	GLF	Palm Beach	=	PBC
Broward	=	BRO	Hillsborough	=	HLB	Pinellas	=	PIN
Charlotte	=	CHA	Indian River	=	IRC	Santa Rosa	=	STR
Collier	=	COL	Lee	=	LEE	Sarasota	=	SAR
Dade	=	DAD	Manatee	=	MTE	St. Johns	=	STJ
Duval	=	DUV	Martin	=	MAR	St. Lucie	=	STL
Escambia	=	ESC	Monroe	=	MON	Volusia	=	VOL
Flagler	=	FLG	Nassau	=	NAS	Walton	=	WAL

2. **Marine Turtle Permit #:** Turtle Permit # observer is conducting activities under. Marine turtle permit number should be three digits unless it is a state park (state parks use 147- and the two digit state park sub-permit number).

3. **Date of Incident:** Month, Day and Year disorientation occurred (MM/DD/YY).

4. **Observer's Name:** Name of individual recording the event.

5. **Telephone (include area code):** Phone number of individual recording the event (555-555-5555).

6. **E-mail address:** E-mail address of individual recording the event.

7. **Location of Disorientation Event: (address of source, beach name and/or nearest landmark):** This field is used to best describe the location of the disoriented nest. Please use the street address that best corresponds to the location of the nest or use the best description of where the nest is located using beach names, and/or nearby landmarks.

8. **City:** Identify City where disorientation took place.

9. **County:** Identify County where disorientation took place**.**

10. **Local nest ID#:** Report local # used for nest identification.

11. **Zone nest was located in:** Report the local zone where the disorientation took place.

12. **GPS Coordinates of nest location: Latitude _____ Longitude _____**
This field is used to obtain the latitude and longitude of the nest. The information may not be available to all observers. If available, GPS coordinates should be reported in WGS projection in decimal degrees. WGS is the commonly used projection on most GPS devices. Please specify on the form if you are unable to use a WGS projection. GPS devices may be set to report in decimal degrees

(38.8898341, -77.0088651). Please specify if you are unable to report in decimal degrees, and report the GPS coordinates as they appear on your GPS with all specified symbols.

13. Species: (check one) ☐ **Cc = Loggerhead** ☐ **Cm= Green** ☐ **Dc=Leatherback** ☐ **Un = Unidentified** ☐ **O= Other.**

Check the box that corresponds to the species involved in the event. "Unidentified" should only be marked if the individual recording was not able to determine what species was involved. Every effort should be made to identify the species and "unidentified" should only be used when all efforts to identify the species have been inconclusive. "Other" should be marked for Hawksbill and Kemp's Ridley, with the species indicated in the space provided.

14. Type of Event: (check one) ☐ **Adult – Nesting Emergence** ☐ **Adult – False Crawl** ☐ **Hatchling**

Check the box corresponding to the turtle(s)' appropriate age/class. "Adult - Nesting Emergence" should be checked for adult disorientations that resulted in a nest, while "Adult - False Crawl" should be checked for non-nesting emergences involving a disoriented adult. "Hatchling" should be indicated for any disorientation event involving hatchlings.

15. Nest Treatment: (check all used) ☐ **Restraining Cage** ☐ **Self-releasing Screen/Cage** ☐ **Light Barrier (i.e., silt screen)*** ☐ **Relocated**

Check the boxes corresponding to the treatments applied to the nest. Please check all that apply. "Restraining Cage" should be indicated for all types of restraining devices which prevent hatchlings from dispersing the immediate area without human intervention. "Self-releasing Screen/Cage*" should be indicated for all types of self-releasing tools used for predator protection (cages; screens; flat screens, etc.). "Light Barrier" should be indicated any time a light blocking device is employed. This includes but is not limited to silt screen, umbrellas, trenches, human barriers, etc. "Relocated" should be indicated any time the nest involved in the disorientation event was relocated from its original location prior to the disorientation event in accordance with all FWC Guidelines.
*Must be specifically authorized by FWC.

16. Incident was documented during: (check one) ☐ **Morning Survey** ☐ **Night Survey** ☐ **Daytime**

Check the box corresponding to the time of day the disorientation event was observed and documented. "Morning Survey" should be indicated if the disorientation was documented during the daily morning nesting survey. "Night Survey" should be indicated when the disorientation was documented from sunset to sunrise. The discovery of the disorientation event may be associated with a nighttime nesting survey, lighting survey, or in response to an emergency call. "Daytime" should be indicated if the disorientation is documented at any point during daylight hours, but is not associated with the daily morning nesting survey. The discovery of daytime disorientations is typically associated with an emergency call.

17. Was the incident photographed? **YES** ☐ **NO** ☐

Check the box indicating whether or not the incident was photographed. If the incident was photographed we would appreciate a copy of photos taken. Please label any photographs of disorientation events with the disorientation ID (information listed in the string of boxes located in the top right corner of the Disorientation Report).

18. Was the source nest found? **YES** ☐ **NO** ☐

Check the box corresponding to whether or not the nest site hatchlings emerged from was located. This question applies only to hatchling disorientation events.

19. Was the nest excavated? YES ☐ NO ☐

***If yes, provide date of excavation*:**

Check the box corresponding to whether or not the nest was excavated. If the nest was excavated please provide that date (MM/DD/YY) on which the excavation took place. Please note: per the FWC Sea Turtle Conservation Guidelines nests may not be excavated early due to disorientation events.

20.

Number of turtles disoriented:	Disoriented turtles reaching the water:
☐ 1 ☐ 2-10 ☐ 11-50 ☐ >50	☐ All ☐ Some ☐ None ☐ Not investigated
Were any disoriented turtles found dead? ☐ YES ☐ NO *If "YES" indicate the number* _____	

This table is in reference to **DISORIENTED TURTLES ONLY** (The numbers should never include turtles that were not astray from "normal" orientation associated with nesting or hatching patterns.

Number of turtles disoriented: 1 ☐ 2-10 ☐ 11-50 ☐ >50 ☐

Check the box that corresponds to the number of turtles that were observed as disoriented. This number should be based on visual evidence in the sand (tracks). This number should not be determined by conducting a hatch success evaluation. The box for "1" should only be used for adult disorientation events; events involving only one hatchling do not need to be reported.

Disoriented turtles reaching the water: All ☐ Some ☐ None ☐ Not Investigated ☐

Check the box that corresponds to the number of **disoriented** turtles in the event that reached the water, with or without human intervention. "All" should be indicated if all disoriented turtles reached the water. "Some" should be indicated if a portion of the disoriented turtles reached the water. "None" should be indicated if none of the disoriented turtles reached the water. "Not investigated" should be indicated if the observer did not attempt to determine if any of the disoriented hatchlings reached the water.

Were any disoriented turtles found dead? YES ☐ NO ☐

If "YES" indicate the number: _____

Check the box corresponding to whether or not disoriented turtles were found dead. If disoriented turtles were found dead, indicate the number of turtles that were found. This number should not include hatchlings that never left the nest (pipped dead or dead in nest).

21. Address/landmark hatchlings disoriented towards:

This field is used to determine the area, location, or direction the turtle(s) were orienting towards. Please use the street address that best corresponds to the location of the disoriented turtle(s) were traveling towards or use the best description of where the disoriented turtle(s) were located using beach names and/or nearby landmarks.

22. In the Sketch box please record the disorientation evidence, include nest site, turtle tracks, compass directions, distances and relevant structures, such as buildings**.**

23. Were probable/possible light source(s) identified? YES ☐ NO ☐

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If "NO" indicate why: (check one) **No lights present ☐ Too many lights ☐ Other: ☐**
Check the box that corresponds to whether the individual documenting the disorientation event was able to determine whether there was a probable/possible light source that was involved in the disorientation. Lights **do not** need to be illuminated at the time the disorientation event is being documented in order to have potentially contributed to an event. Please use your best judgment based on the turtle tracks and the lighting present in the area to make this determination. "No lights present" should be indicated if there are no light sources observed in the area. "Too many lights" should be indicated if there are such a large number of light sources in the area that it is impossible to determine which lights actually may have contributed to the light source. This may also be indicated if hatchlings traveled in multiple directions in the presence of numerous lights sources. "Other" should be indicated if light sources were not able to be identified but the reason does not correspond with either of the other categories. If "other" is selected, describe why light sources were not able to be identified.

24. Indicate categories of light(s) identified as probable/possible lighting sources: (check all that apply)

parking lot	☐	street light	☐	condominium (interior)	☐
dune crossover	☐	single family home (interior)	☐	condominium (exterior)	☐
restaurant/bar	☐	single family home (exterior)	☐	sky glow/urban glow	☐
pier	☐	sign ☐	☐	other:_____	

This section is used to indicate lights that **may have** contributed to the disorientation event. There may be multiple sources checked, especially if the observer finds that there are "too many lights present to determine." If the light source is not described as above please describe the light source under other. The observer does not have to be doing a night survey to describe lights that may have contributed to the disorientation event. If unshielded lights are recognizable in daylight conditions the observer may check the corresponding light source(s). This information is useful for follow-up purposes for code enforcement, but is not the deciding factor in violation notices.

25. Additional comments (use back if necessary):
The comments section is an opportunity for the observer to describe the disorientation event or any other information that may be pertinent. Especially useful is information regarding light sources, direction turtles may have traveled, locations that live/dead turtles were found, and other circumstances that may have contributed to disorientation (lawn/beach furniture, domestic animals, people, etc.).

26. Local authority provided a copy of this report? ☐ City ☐ County ☐ FWC ☐ Other:
Check the corresponding box to indicate what local the authority/authorities were provided a copy of the report. Copies of reports should be forwarded to FWC and the local authorities. Copies of reports and questions regarding disorientations may be emailed to SeaTurtleLighting@MyFWC.com. **Remember lighting violations are not enforced by FWC, local authorities must be contacted about lighting problems for ordinances to be enforced.** The following website may be used as a reference for contact information: http://myfwc.com/conservation/you-conserve/lighting/ordinances/.

27. Signature of Observer
The observer should sign the form.
You may digitally sign the form using the following steps:
1. Click on the signature box.
2. If you have an existing digital ID already stored on your computer, select that option and select "next".

a. Identify the location of your signature file (insert name or locate using the "browse" option).
3. If you do not have an existing digital ID already stored on your computer, select "a new digital ID I want to create now" and select "next"
a. Select whichever storage option you prefer, then select "next"
b. Enter the requested information, then select "next".
c. Enter additional information for ACSII, if you wish, then select "next".
d. Verify the location that your signature will be stored or select a new location.
e. Enter & confirm your password, then select "finish".
4. A pop-up window titled "Sign Document" should appear. Enter your password, then select "sign".
5. A pop-up window will appear asking you to save the file. Choose a name and location and save the file.
6. Your signature should appear in the signature box.
7. If you experience any problems, please ensure that your Adobe program is up to date.

28. Date

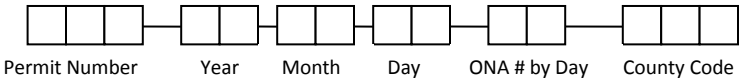
The observer should date the form (MM/DD/YY).

Remember that each disorientation event requires a separate report. If hatchlings emerge from the same nest over multiple days and disorient, a report should be completed and submitted for each day. If disorientations occur from separate nests a report should be made for each nest.

Appendix F-7

Reporting an Obstructed Nesting Attempt (ONA) Instructions

An Obstructed Nesting Attempt is any event in which a female turtle came across an obstacle in her attempt to nest. The event can be considered an obstructed nesting attempt regardless of whether or not the incident resulted in a false crawl or a nest.
Please fill out the form according to the directions below:



1. Boxes should be filled with the **turtle permit number,** year, month, day (of the ONA), the ONA # of that day, and the County Code.

   The ONA # of that day is determined by the number of events that occur in one day within the **county** under that **permit number**. Permit numbers that span across counties should number reports based on the number of events that occurred that day within a specific county. ***Note:** This is different from disorientations, which are numbered by **permit holder.**

   The county codes are listed below:

Bay	=	BAY	Franklin	=	FRK	Okaloosa	=	OKA
Brevard	=	BVD	Gulf	=	GLF	Palm Beach	=	PBC
Broward	=	BRO	Hillsborough	=	HLB	Pinellas	=	PIN
Charlotte	=	CHA	Indian River	=	IRC	Santa Rosa	=	STR
Collier	=	COL	Lee	=	LEE	Sarasota	=	SAR
Dade	=	DAD	Manatee	=	MTE	St. Johns	=	STJ
Duval	=	DUV	Martin	=	MAR	St. Lucie	=	STL
Escambia	=	ESC	Monroe	=	MON	Volusia	=	VOL
Flagler	=	FLG	Nassau	=	NAS	Walton	=	WAL

2. **Turtle Permit #:** Turtle Permit # under which observer is conducting activities.
3. **Date of Incident:** Month, Day and Year ONA occurred.
4. **Observer's Name:** Name of individual recording the event.
5. **Telephone (include area code):** Phone number of individual recording the event.
6. **Species:** Check the box that corresponds with the species of turtle involved in the obstructed nesting attempt.
7. **Crawl resulted in:** Check nest if the turtle nested. Check false crawl if the turtle did not nest.
8. **Location of Nest or False Crawl (address, beach name and/or nearest landmark):** This field is used to describe the location of the event. Please use the street address that best corresponds to the location of the nest/false crawl or use the best description of where the nest/false crawl is located using beach names and or nearby landmarks.
9. **GPS Coordinates of nest or false crawl location:** Latitude_____ Longitude_____
   This field is used to obtain the latitude and longitude of the nest/false crawl. The information may not be available to all observers. If available, GPS coordinates should be reported in WGS projection in decimal degrees (38.889341, -77.008651). WGS is the commonly used projection on most GPS devices. Please specify on the form if you are unable to use a WGS projection. GPS devices may be set to report in decimal degrees. Please specify if you are unable to report in decimal degrees and report the GPS coordinates as they appear on your GPS with all specified symbols.
10. **City:** Identify City where ONA took place.

FWC OBSTRUCTED NESTING ATTEMPT INSTRUCTIONS, 6/16, Rule 68E-1

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11. **County:** Identify County where ONA took place**.**
12. **Local nest ID#:** Report local # used for nest identification.
13. **Zone nest or false crawl was located in:** Report the local zone where the nest/false crawl was located.
14. **Obstruction(s) encountered: (please circle)**

Beach Furniture	Dune Crossover	Escarpment	Rock Outcropping	Special Events Equipment
Boat	Groins	Marine Debris	Rock Revetment	Tent
Cabana	Geotube/Sandbag	Nourishment Equip.	Seawall	Umbrella

Other Obstruction (please describe):_____
Circle the obstruction that was encountered or describe the obstruction.

15. **Describe Event:** Please give details describing the event. Use as much space as needed.
16. Observer should sign and date form.
17. Check the box if you have included pictures of the event with the form.

Data from Obstructed Nesting Attempts will be compiled to guide management's efforts to address the issue of obstructions on sea turtle nesting beaches.

Please record the observations and return the forms to FWC at the Tequesta Field Laboratory.

Email: SeaTurtleLighting@MyFWC.com
Mail: ONA Reports, FWC
19100 SE Federal Hwy
Tequesta, FL 33469
Fax: (561) 743-6228

APPENDIX G – STRANDING INFORMATION

Appendix G-1

Overarching Goals:

- Ensure safety of people and sea turtles.
- Ensure humane treatment of sea turtles.
- Strive for highest sea turtle survivorship possible.
- Strive for fastest possible release of sea turtles in best possible place given all considerations at hand. Balance the necessity for short captivity periods with requirements for minimal re-stranding risk and return to original habitat.
- Collect high-priority biological information.
- Facilitate the timely and accurate release of information.

Pre-Event Preparation (General)

- Identify places other than sea turtle rehabilitation facilities where large numbers of sea turtles can be temporarily held in heated saltwater. Reduce transportation needs by selecting facilities as close to sites of previous cold-stunning events as possible. Work to create a situation where sea turtle rehabilitation facilities will only need to hold cold-stunned sea turtles in need of regular medical attention.
- Create a list of equipment and supplies needed during cold-stunning events and stockpile items that are not readily available.
- Identify agencies/groups/individuals that may be able to help search for and retrieve cold-stunned sea turtles from the water. Identify those that would help during minor, moderate, and severe cold-stunning events (need progressively larger groups).
- Identify potential for strategic, aerial support for searches.
- Identify agencies/groups/individuals that may be able to help transport cold-stunned sea turtles from water drop-off sites to staging sites, from staging sites to holding or rehabilitation facilities, and from holding or rehabilitation facilities to release sites. Identify those that would help during minor, moderate, and severe cold-stunning events (need progressively larger groups).
- Identify a core group of personnel (known as the Core Sea Turtle Cold-Stunning Team or CST) who might play key roles in coordinating response to sea turtle cold-stunning events.
- Identify companies that may be able to provide transport trucks or freezer trucks. Resolve any potential renting or use problems.
- Determine areas to be searched for cold-stunned sea turtles during various alerts. Minor alert areas will be core cold-stunning areas where the largest numbers of turtles are found and where initial searches will begin. These will be areas where cold-stunned sea turtles might be found even during minor events. Moderate alert areas will be more widespread than minor alert areas and will be where cold-stunned sea turtles have been found during moderate events. Severe alert areas will be more widespread than moderate alert areas and will be areas where cold-stunned sea turtles have been found during severe events.
- Create maps of minor, moderate, and severe alert search areas and make an adequate number of copies to provide a copy for each search team each day. The searchers will mark their daily search areas and make notes regarding where sea turtles were recovered.

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- Identify the most appropriate sites for each search area where sea turtles recovered from the water can be dropped-off for transport to staging areas or holding facilities.
- Identify staging areas as needed where sea turtles from many drop-off sites can be taken for processing or temporary holding until transported to a holding or rehabilitation facility.
- Establish the ability to remotely monitor water temperatures in southern Mosquito Lagoon and in southwestern St. Joseph Bay (hourly ideal but at least daily).
- Develop an easy and appropriate way to immediately mark cold-stunned sea turtles with a unique identifier (possibly using a flipper band). Determine a standardized way to create identifiers.
- Develop an easy and appropriate way to mark dead turtles that are not collected by searchers.
- Develop standardized methodologies for flipper tagging and PIT tagging cold-stunned sea turtles before release.
- Develop standardized cold-stunning data collection strategies. Create a cold-stunning event data form. Put the FP documentation form on the back of this data form. Use lightly-colored waterproof paper to help identify originals from copies. Create enough copies of these to use during events.
- Develop release strategies. Should loggerheads and larger green turtles be released first? Identify easy ways to determine water temperatures at potential release sites. Check with FWC, NMFS, and local authorities for ongoing activities at release sites that may impact releases (such as dredging or other construction or other activities). No releases conducted after dark. Need sufficient personnel at release sites, including LE when a large number of the public may be present. Threshold water temperature for release (> 12° C with forecast stable or warming for release of green turtles and > 10° C with forecast stable or warming for release of loggerheads). Decide on potential release sites and preferences beforehand. Notify public information staff for media coverage of releases.
- Investigate the availability of satellite phones to use as aids to communication in remote areas during cold-stunning events. Determine how these would be obtained during an event and where and when they would be used.
- Investigate the possibility of using stackable containers to hold and transport sea turtles. Purchase and stockpile containers if suitable.
- Investigate the possibility of using a rolling winch to move heavy turtles and other carts to move turtles.
- Recruit veterinarians with the necessary expertise that would be willing to help during sea turtle cold-stunning events.
- Develop plans for holding up to 1,000 Dead Sea turtles for necropsy or sample processing.
- Prepare pre-made kits for processing turtles – calipers, tagging supplies, data form, clipboard, pens.
- Identify cameras so that each staging area has a single camera dedicated for photographs of cold-stunned sea turtles. Prepare for adequate storage space for photographs.
- Develop standardized logs that will be used to record turtles being delivered, transported, received, and released.

- Develop a list of daily jobs that volunteers may perform. Expect last-minute volunteers to show-up during event. Identify volunteer leaders or organizers at each site who will be able to review available volunteer resources, define the skills of volunteers, and track the efforts of specific volunteers (to later recognize efforts).
- Investigate the possibility of renting large tents for use at staging area and some holding or rehabilitation facilities. Need to be able to heat the tent.
- Address data issues. Need high-speed copier at staging areas and holding facilities with large numbers of sea turtles. Need bins to hold data sheets. Need people dedicated at each site to oversee data collection and management. Investigate the possibility of entry of data into a computer database in real-time. Develop spreadsheet that would be updated at the end of each day to summarize how many turtles are at each facility and at staging areas and whether they are in water or dry. Develop a simple reporting sheet for each facility to submit to event coordinators at the end of each day (via fax or phone). This report would also include how much additional space is available at each facility.
- Address transport issues. Identify vehicles needed for minor, moderate, and severe events. Consider transport from boat drop-off locations to staging areas, from boat drop-off locations to holding or rehabilitation facilities, from staging areas to holding or rehabilitation facilities, and from holding or rehabilitation facilities to release sites. Vehicles must be covered and heated vehicles are preferable. Consider using stackable containers to keep sea turtles separate and to maximize use of space. Padding will be need in containers and on the floor for large turtles. Create maps beforehand that show directions to holding or rehabilitation facilities and release sites.
- Consider permit issues beforehand for those who will receive samples from cold-stunned sea turtles or whole turtles.

Pre-Event Preparation (Specific)

- Communicate with sea turtle rehabilitation facilities every November to evaluate their likely ability to hold cold-stunned sea turtles during the following December and January. Update contact information as needed.
- Communicate with primary searchers and transporters every November to confirm availability during the following December and January. Update contact information and recruit replacements as needed.
- Communicate with CST and veterinarians every November to confirm availability the following December and January. Update contact information and recruit replacements as needed. Discuss the possibility of needing additional staffing in the event of a severe cold-stunning event. Possible needs are veterinarians and veterinarian assistants with sea turtle expertise, sea turtle biologists, good sea turtle data organizers, and marine mammal stranding response personnel. Identify potential staffing and decide how they would be mobilized, and how their travel and time would be covered.
- Coordinate with NMFS and FWC Imperiled Species Management every November to update list of samples wanted from cold-stunned sea turtles and protocols for collection. Have qualified veterinarian review and approve protocols for collection of samples from live turtles. Determine if and when independent teams are needed to collect samples. Need plan for holding and transporting whole carcasses.

- Check holding capability at Gulf World in Panama City. This is the primary holding facility for cold-stunned sea turtles from the Panhandle (primarily St. Joseph Bay). Move one trailer with two MASH units to Gulf World if additional holding capabilities are needed.
- Moved one trailer with two MASH units to the Brevard Zoo (to serve as the primary holding facilities for sea turtles from Brevard County (primarily Mosquito Lagoon). Have four other MASH units in ready reserve.

Pre-Event Monitoring

- Monitor water temperatures on a daily basis (ideally on an hourly basis) in southern Mosquito Lagoon and southwestern St. Joseph Bay during December–March.
- Use 10-day extended weather forecast to estimate the 10-day future trend of water temperatures in southern Mosquito Lagoon and southwestern St. Joseph Bay.
- Begin alert status when water temperatures drop to 12°C and are forecast to drop below 10°C.

Minor Alert – Water temperatures expected to drop below 10°C within 48 hours and stay below 10°C for up to 3 days. Cold-stunning of about 100 sea turtles possible.

Moderate Alert – Water temperatures expected to drop below 10°C within 48 hours and stay below 10°C for 3-6 days. Cold-stunning of hundreds of sea turtles possible.

Severe Alert - Water temperatures expected to drop below 10°C within 48 hours and stay below 10°C for 6-10 days. Cold-stunning of thousands of sea turtles possible.

Alert Status Actions (All alerts)

- Communicate with the FWC dispatch supervisor to ensure that all dispatchers in all districts know how to handle reports of cold-stunned sea turtles. Notify FWC LE commanders in each district regarding alert status and expectation of activity.
- Communicate with FWC Public Information Coordinators regarding alert status and expectation of activity.
- Communicate with sea turtle rehabilitation facilities regarding alert status and expectation of activity.
- Be prepared to use specially designated holding facilities for cold-stunned sea turtles.

Minor Alert Status Actions

- Contact minor event searchers to begin looking for cold-stunned sea turtles in minor alert search areas within 48 hours.
- Contact minor event transporters to coordinate with searchers. Prepare to transport up to 50 turtles per day over a 2-3 day period.

- Confirm availability of space for up to 100 cold-stunned sea turtles at Gulf World if Panhandle cold-stunning event is expected. Set-up two MASH units at the Brevard Zoo and have two in ready reserve if east coast cold-stunning event is expected. Determine which rehabilitation facilities can take turtles in need of medical care.
- Contact the veterinarians that may be needed to help with a minor cold-stunning event.
- Prepare to hold or process up to 50 Dead Sea turtles.

Moderate Alert Status Actions

- Contact moderate event searchers to begin looking for cold-stunned sea turtles in minor alert search areas within 48 hours and to begin looking for cold-stunned sea turtles in moderate alert search areas within 72 hours.
- Contact moderate event transporters to coordinate with searchers. Prepare to transport several hundred sea turtles over a 3-6 day period.
- Confirm availability of space for up to 500 cold-stunned sea turtles at Gulf World if Panhandle cold-stunning event is expected. Set-up four MASH units at the Brevard Zoo and have two in ready reserve if east coast cold-stunning event is expected. Determine which rehabilitation facilities can take turtles in need of medical care.
- Contact the veterinarians that may be needed to help with a moderate cold-stunning event.
- Prepare to hold or process up to 100 Dead Sea turtles.

Severe Alert Status Actions

- Contact severe event searchers to begin looking for cold-stunned sea turtles in minor alert search areas within 48 hours, to begin looking for cold-stunned sea turtles in moderate alert search areas within 72 hours, and to begin looking for cold-stunned sea turtles in severe alert search areas within 96 hours.
- Contact severe event transporters to coordinate with searchers. Prepare to transport several thousand sea turtles over a 6-10 day period.
- Confirm availability of space for up to 1500 cold-stunned sea turtles at Gulf World if Panhandle cold-stunning event is expected. Use MASH units if needed. Set-up eight MASH units at the Brevard Zoo and have two in ready reserve if east coast cold-stunning event is expected. Determine which rehabilitation facilities can take turtles in need of medical care and which can hold extra turtles not in need of medical care.
- Contact the veterinarians that may be needed to help with a severe cold-stunning event.
- Prepare to hold or process up to 1,000 Dead Sea turtles.

Search and Collection of Turtles on Water

- Search in pre-defined areas and use provided maps to mark search areas and areas where turtles were found (and numbers if possible).
- Collect all sea turtles that are immobilized, cannot dive, or that can be easily captured by hand.

- Bring in all immobilized sea turtles (dead or alive) if possible. If space on the search vessel is limited, the order of priority (from highest to lowest) for the collection of sea turtles is as follows: those that are definitely alive (responsive), those that are unresponsive but are not in rigor mortis (perhaps alive, perhaps dead), and those that are definitely dead (in rigor mortis or decomposing).
- Mark collected sea turtles using the three-digit location code and the day of the month (three letters and one number). Green turtles, Kemp's ridleys, and hawksbills will be marked (in duplicate) on the carapace with a water-proof marker (after cleaning and drying an area on the carapace as much as possible). Use a capital "P" after the day of the month to designate a turtle with fibropapillomatosis. Loggerheads will be marked (in duplicate) using flipper bands. The three-digit location and day of the month will be written on the band. Use a different color band for each day. Use one red band to identify loggerheads with fibropapillomatosis (FP).
- Mark dead turtles using the same system but with a capital "D" after the day of the month.
- Transport live sea turtles right-side-up and on a padded surface if possible. Sea turtles may be held upside down for short periods (< 30 minutes) if necessary. Be sure to right turtles in the same direction they were turned upside-down (do not rotate a turtle in this manner 360 degrees – only 180 degrees). Do not place sea turtles on abrasive surfaces. Protect sea turtles from wind as much as possible.
- Maintain regular communications with associated drop-off location and staging location to advice of search status, number of sea turtles being brought in, and estimated time of arrival.
- Conduct briefings with search teams every morning to review search areas and specific strategies and to provide search maps and sea turtle marking supplies.
- Conduct debriefings with search teams every afternoon to collect data on work conducted that day, to evaluate search effort methodology, and to discuss search strategy for the following day.

Transport of Turtles from Boat Drop-off Location to Staging Location or Holding or Rehabilitation Facility

- Transport live sea turtles right-side-up and on a padded surface if possible. Sea turtles may be held upside down for short periods (< 30 minutes) if necessary. Be sure to right turtles in the same direction they were turned upside-down (do not rotate a turtle in this manner 360 degrees – only 180 degrees). Do not place sea turtles on abrasive surfaces. Protect sea turtles from wind as much as possible. Covered vehicles preferable and necessary for long (> 30 minute) transports.
- If taking sea turtles from boat drop-off locations, the transport vehicle operator needs to know the general location where each load of sea turtles was collected. If taking turtles from a staging location to a holding facility, the transport vehicle operator needs to have any original data sheets on any of the turtles that are being transported to give to the holding facility.

- Maintain regular communications with associated search boat to coordinate pick-up of sea turtles and to minimize wait for search boat and for sea turtles at boat drop-off location.
- Maintain regular communications with associated staging location or holding facility to advice of number of sea turtles being brought and estimated time of arrival.

Handling of Sea Turtles at Staging Location

- Evaluate each sea turtle as it is removed from the transport vehicle. This evaluation is to be conducted by a sea turtle biologist.
- Check to make sure each sea turtle is appropriately marked or banded. Apply marks or bands as needed (consult with the vehicle driver to get the location where the turtles were found).
- Segregate sea turtles by those that have FP and those that don't have FP. Make sure each turtle with FP has the appropriate mark or flipper band color. Set-up separate area for turtles with FP and make area clearly defined with signage and dividers such as sand fencing.
- Segregate sea turtles that are non-responsive from those that are responsive. Set-up a separate area for non-responsive turtles and make area clearly defined with signage and dividers such as sand fencing. Place non-responsive turtles on pads that elevate the posterior end (so that the head is lower) to allow any fluids to flow out of the lungs.
- Segregate sea turtles with injuries that may require medical treatment from those without such injuries. Set-up separate area for injured turtles and make area clearly defined with signage and dividers such as sand fencing. Make injured turtles a priority for transport to a rehabilitation facility.
- Maintain a daily log of all sea turtles that arrive at the staging area. Count the number by search area and note how many were dead and how many had FP.
- Hold sea turtles on padded, non-abrasive surfaces in a building with an air temperature between 60 and 70°F. Apply triple antibiotic ointment to the eyes of every turtle each day the turtle is held out of the water. Do not cover the turtles and do not place turtles directly in front of heaters. Clean all holding areas at least once a day (preferably twice a day). Clean turtles that are held overnight. Wet turtles held overnight with clean freshwater.
- Provide inspection of staging area at least once a day by a veterinarian. Maintain a veterinarian on-site as much as possible.
- If time allows, if appropriate personnel are available, and if turtles can be maintained separately in clean conditions during transport, apply external flipper tags and an internal PIT tag. Do not tag turtles with FP or that are injured.
  Ideally, a team of three people is needed to tag. There should be a data recorder who stays clean, an assistant who prepares tags and cleans tagging site, and a tagger/measurer. These teams should try to stay together as much as possible to promote continuity.
- If time allows, begin a data form for each turtle. This data form will be sent with the turtle wherever it goes. Use the cold-stun event data form.
- If time allows, complete an FP documentation form for each turtle that has FP. This form is on the back of the cold-stunning event data form and will be sent with the turtle wherever it goes.

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- If time allows, take a dorsal and ventral photograph of each turtle with the camera that is dedicated for this purpose. Make an ID card to be placed in each picture that has the unique identifier code and location code or the external flipper tag numbers (if present).
- Maintain a daily log of all sea turtles that leave the staging area for holding or rehabilitation facilities. Note destination of each turtle.
- Any sea turtle that remains non-responsive after being held overnight can be declared dead (barring any other indication of life).
- Clearly mark all dead turtles and place in a separate area. As time allows, complete data forms for and take photographs of each dead turtle. Ideally, one processing team will be dedicated to working with dead turtles. Freeze dead turtles as necessary.

Handling of Sea Turtles at Holding or Rehabilitation Facility

- Check to make sure each sea turtle is appropriately marked or banded. Apply marks or bands as needed (the vehicle driver should have the data on where and when the turtles were found).
- Maintain a daily log of all sea turtles that arrive at the holding facility. Note the number of dead turtles and the number with FP.
- As time and circumstance allow, make sure that all turtles eventually get an external flipper tag and an internal PIT tag. Begin a data form for each turtle that does not already have one. Use the cold-stunning event data form. If not already done, complete an FP documentation form for each turtle that has FP. This form is on the back of the cold-stunning event data form and will be sent with the turtle wherever it goes. Take a dorsal and ventral photograph of each turtle that has not already been photographed with the camera that is dedicated for this purpose. Make an ID card to be placed in each picture that has the flipper tag numbers.
- Maintain a daily log of all sea turtles that leave the holding facility for the release site using tag numbers. Note the release site for of each turtle.

Transport of Turtles from Holding or Rehabilitation Facility to Release Site

- Transport live sea turtles right-side-up and on a padded surface if possible. Sea turtles may be held upside down for short periods (< 30 minutes) if necessary. Be sure to right turtles in the same direction they were turned upside-down (do not rotate a turtle in this manner 360 degrees – only 180 degrees). Do not place sea turtles on abrasive surfaces. Protect sea turtles from wind as much as possible. Covered vehicles preferable and necessary for long (> 30 minute) transports.
- The transport vehicle operator needs to have a list of the turtles (with tag numbers) being taken for release.
- The transport vehicle operator needs to be able to communicate with the holding facility to advice on arrival time at the holding facility and to communicate with personnel at the release site to advice on arrival time at the release site.
- Transport needs to be coordinated so turtles arrive at the release site at least one hour before sunset.

APPENDIX H – GLOSSARY OF TERMS

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Archie Carr National Wildlife Refuge (ACNWR): The nation's only refuge specifically designated to protect marine turtles. The ACNWR, established in 1990 in honor of Dr. Archie F. Carr, Jr. for his contribution and dedication to the conservation of marine turtles, stretches approximately 20 miles along Florida's central Atlantic coast (in Brevard and Indian River Counties). This area attracts more marine turtle nesting than any other place in the U.S.

Armoring: The use of structures such as sea walls, rock revetments, sandbags/sand tubes, and other rigid structures to protect coastal property from erosion.

Artificial Lighting: Light sources that are produced by humans.

Authorized Personnel: All individuals listed under a permit holder, named on their permit, and who are authorized to conduct marine turtle conservation activities at the direction of the permit holder or the lead qualified individual.

Backstop: An approximately 45o incline made in the sand as sand is pushed back with the rear flippers during the excavation of the primary body pit. Such a steeply inclined backstop is not present in the secondary body pit.

Beach Nourishment: Beach nourishment is a process involving the mechanical dumping or pumping of sand onto an eroded beach. Although beach nourishment is a preferred alternative to armoring, the suitability of the renourished beach for marine turtle nesting is dependent on the quality of sand being placed on the beach and the method used to deposit it.

CITES: The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), is a multinational agreement that regulates international trade in certain plant and animal species in order to prevent their overexploitation.

Clutch: The number of eggs laid in a single nest, excluding 'yolkless' eggs (yolkless eggs should be counted and reported separately). Extra large and multi-yolked (double or chain-form) eggs can actually contain viable embryos and should be counted as part of the clutch.

CMTTP: Cooperative Marine Turtle Tagging Program, a centralized tagging program developed to distribute tags, manage tagging data, and facilitate exchange of tag information managed by the Archie Carr Center for Sea Turtle Research (ACCSTR) at the University of Florida.

Crawl: Tracks and other signs left on a beach by a marine turtle.

Disorientation: Loss of orientation. Being unable to maintain constant directional movement. For hatchling and adult marine turtles on the beach, travel in random directions due to orientation to artificial lighting along or on the beach.

Egg (normal): Spherical, white and comprised of a pliable shell, a capsule of albumen and a yolk...

Egg (abnormal): Extra large (greater than ¼ larger in diameter than normal eggs of that species, multi-yolked (double or chain-form) or very small (less than ½ the diameter of normal eggs of that species) when compared to the other eggs in the clutch. Extra-large diameter eggs typically contain

two yolks. The very small eggs are commonly termed 'yolkless' eggs that contain mostly albumen and a few granules, or more, of yolk encapsulated by a shell but no embryonic disc.

Egg Chamber: The vase-shaped cavity excavated by the rear flippers of a nesting turtle into which the turtle deposits a clutch of eggs.

Emergence: A female turtle exiting the water onto the beach, or hatchlings exiting the nest.

Escarpment: The perimeter of the secondary body pit where the front flippers have cut away a small cliff into the surrounding sand.

False Crawl: An aborted nesting attempt (emergence onto a beach) by a marine turtle. A more correct term is "non-nesting emergence".

Fibropapillomatosis (FP): Tumor-like growths commonly found on green turtles but observed on all species of marine turtle. FP can result in reduced vision, disorientation, blindness, physical obstruction to normal swimming and feeding, an apparent increased susceptibility to parasitism by marine leeches, and an increased susceptibility to entanglement in monofilament fishing line.

Hatch Success: The proportion of eggs in a nest that produce live hatchlings.

Marine Turtle: Any marine-dwelling reptile of the families Cheloniidae or Dermochelyidae found in Florida waters or using the beach as nesting habitat, including the species: *Caretta caretta* (loggerhead turtle), *Chelonia mydas* (green turtle), *Dermochelys coriacea* (leatherback turtle), *Eretmochelys imbricata* (hawksbill turtle), and *Lepidochelys kempii* (Kemp's ridley turtle) or hybrids of these species. For purposes of this rule, marine turtle is synonymous with sea turtle.

Monitoring: means either gathering information using a predetermined sampling plan to collect baseline information on marine turtle distributions, nesting, and productivity or assessing impacts from a state-authorized activity as required by a state or federal regulatory permit.

Nest: An area where marine turtle eggs have been naturally deposited or subsequently relocated.

Nest relocation: The practice of collecting eggs or excavating a nest following deposition and reburying all intact eggs.

Misorientation: Orientation in the wrong direction. For hatchling marine turtles on the beach, travel in any direction other than the general vicinity of the ocean.

Nesting Crawl: A crawl resulting from a nesting attempt in which eggs were deposited.

Nest Success: The portion of nesting attempts by a marine turtle (emergences onto the beach) that result in eggs being deposited.

Non-Manipulation or "hands off" Management Strategy: This is a proactive type of management strategy used to protect a resource from potential threats by eliminating or minimizing the threat. For example, on beaches where artificial lighting is a problem, instead of moving the nests to a darker beach (and potentially harming eggs during the relocation process or placing them in a less suitable site), attempts should be made to have offending lights shielded, redirected or turned off.

Permit Holder: The individual, firm or corporation authorized to conduct marine turtle conservation activities under the provisions of this chapter.

Post-Emergent Nest: A nest in which the majority of hatchlings have emerged through the surface of the sand.

Primary Body Pit: The excavation made by a turtle on the beach just prior to digging the egg chamber.

Principal Officer: An individual listed on the permit who is duly authorized to make legally binding decisions for the applicant, who is independently responsible for ensuring that all activities are conducted in accordance with all terms and conditions of the permit, and who ensures that all reports are submitted by the deadlines identified in the permit or the Handbook.

Pipped Egg: An egg that has been pierced by the turtle embryo initiating the hatching process. Eggs are considered pipped from the time that the first tear is made in the shell [by the embryo] until it has completely escaped its eggshell (when it becomes a hatchling).

Qualified Individual: The individual who has been approved by FWC as having the appropriate experience and knowledge as specified in this Chapter for the authorized activity.

Secondary Body Pit: An excavation made by a nesting turtle primarily using the front flippers following the deposition of eggs. The spoil from the secondary body pit covers the primary body pit and the egg chamber with sand.

Take: An act that potentially harasses, injures or kills a protected species.

TED (Turtle Excluder Device): TEDs are used on commercial shrimping vessels to allow marine turtles the ability to escape the trawl net. The TED is a grid of metal bars with an opening either at the top or the bottom. The grid fits into the narrow part of the shrimp trawl. When a large animal like a turtle hits the grid bars they will flow through the opening. Smaller animals like shrimp will pass through the bars and be caught in the net. Today, all U.S. shrimpers are required to put TEDs in their trawl nets.

Yolkless eggs: [Usually smaller than normal] eggs that do not contain yolk. Yolkless eggs are commonly deposited with yolked eggs by leatherback, hawksbill and occasionally loggerhead turtles.

APPENDIX I – REFERENCES

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