

Adaptive Management Proposal for Night Access during Sea Turtle Nesting and Hatchling Season

Acknowledgement

Numerous factors may affect sea turtles, turtle behavior, and turtle habitat including natural factors (ocean water quality, water temperature, storm events, predators, etc.), general human activity on beaches, artificial lighting (stationary in particular), and ORVs. Though the scope and focus of this plan is ORV management, this is not to imply numerous other management actions are not necessary and important to maintain and improve turtle populations on CAHA.

General Goals of Night Driving, Seasonal Restrictions, and Turtle Management

- Protect the sea turtles and contribute to the recovery of the species. More specific goals include:
 - Reduce the potential for false crawls due to night activity on the beach;
 - Reduce the potential for female turtles not emerging onto the beach due to night activity on the beach;
 - Reduce the potential for hatchling disorientation, when attempting to return to the sea, due to night activity on the beach;
 - Reduce potential direct impact to hatchlings seeking to reach the ocean, especially those hatchlings emerging from undiscovered/unmarked nests.
- Protect the opportunity to fish at night for recreational fishermen.

General Concepts

- Night driving on all routes and areas would occur without any nighttime restrictions from September 15 until April 30.
- Night driving on all routes and areas (not otherwise subject to bird closures) would occur with nighttime restrictions from 1 May to 21 May and with NPS monitoring. *QUESTION: Do we need to limit this to more specific geographies to ensure adequate night-time monitoring?*
- In general, night driving would be prohibited from 22 May, until 14 September, from ½ hour after sunset until 7 AM, unless otherwise noted below.
- Specifically, in four areas of the Park (key points and spits), limited access for appropriate nighttime parking and appropriate stationary recreational activity, with significant restrictions, would be permitted from 21 May until 14 September. At designated location(s), drivers would have to park and stay parked at night, with lighting restrictions, fishing or other appropriate recreation (i.e., stargazing), and remaining stationary until a time specified time in the morning.
- Night driving on all routes and areas (not otherwise subject to bird closures) would occur with nighttime restrictions from 15 September until 15 November from ½ hour after sunset until sunrise and with appropriate NPS monitoring. Geographic openings would be dictated by the location of turtle nests and at the discretion of the NPS.

Monitoring

- Daily sea turtle patrols begin on May 1, unless leatherback nests have been reported within the state, in which case CAHA will follow the direction of NCWRC. Patrol will continue until September 15, or two weeks after the last sea turtle nest or crawl is found, whichever is later.
- Conduct daily morning surveys by ATV/UTVs and possibly ORVs for crawls and nests on all beaches before onset of heavy public ORV use. Daily surveys for nests end September 15, or two weeks after the last sea turtle nest or crawl was found, whichever is later. Periodic monitoring (e.g., every two to three days) for unknown nesting and emerging hatchlings will continue, especially in areas of high visitation from that date until November 15.
- Monitoring will also occur for post-hatchling washbacks during periods when there are large quantities of seaweed washed ashore or following severe storm events. Nest observations stop when all nests have hatched or excavation indicates that the nest was not viable.
- At approximately 50-55 days into incubation, NPS will expand the closure around a nest to the surf line, establish the filter fencing, and monitor the nest daily for signs of hatchling emergence.
- More intensive night monitoring focused on the appropriate turtle will occur from 1 May until 21 May (nesting) and again from 15 September until 15 November (hatching).

Management

- In general, NPS will follow the guidance found in the NCWRC Handbook for Sea Turtle Volunteers.
- November 16 - April 30: Designated ORV routes and areas open to ORV use 24 hours a day subject to bird and sea beach amaranth closures.
- May 1 - May 21: Designated ORV routes and areas open to ORV use 24 hours a day with the following additional restrictions:
 - All ORVs must be permitted for night driving (either a special use permit or part of the overall general beach use permit/pass).
 - Permits will be accompanied by education about sea turtles, their protection, the rules of night driving, and a phone number to report any specific turtle behavior (nesting, false crawls, etc.).
 - Campfires, use of vehicle headlights (other than as below), auxiliary lights, vehicle battery powered spotlights, or lanterns that cast light in a 360 degree direction are prohibited, except as needed in a true emergency situation, from ½ hour after sunset until 7 AM or sunrise, whichever comes first. Intermittent use of lighting (5 minutes or less) is limited to handheld flashlights, headlamps or other battery powered lighting devices that cast a one-directional beam of light.

- Headlights may only be used when in transit and will be turned off when the vehicle is parked.
- No flash or fixed light photography is allowed.
- Drivers and pedestrian should not approach turtles or turtle nests closer than 75 feet.
- Flashlights, headlamps, and other low light sources may be used on an intermittent basis.
- NPS will conduct night monitoring, with at least one monitor per ranger district, to identify, record, and monitor nesting females and record false crawls. Each section of beach needs to be monitored about every 45 minutes to ensure detection of nests and false crawls. Should the Park be unable to sufficiently staff night monitoring, they may choose to close some areas of beach to night driving, prioritizing for keeping open areas of important night recreational activity. *QUESTION: Which areas might be prioritize?*
- NPS will begin turtle patrols at first light and conduct first patrols each day along key sections of beach that are currently open to ORV use, to the extent practical. Areas within existing resource closures will generally be surveyed last, to the extent practical.
- Nest closures and buffers will be established as described in the CAHA ORV Resource Protection Tables, dated 11/15/08 (see page 9 of Table).
- Pedestrian access to the ocean beaches after dark is allowed at any location(s) adjacent to the villages or established parking, subject to site specific resource closures as needed for bird breeding activity or sea turtle nests.
- May 21 – September 15, General: All potential sea turtle nesting habitat (ocean intertidal zone, ocean backshore, and dunes) will be closed to non-essential ORV use from ½ hour after sunset until 7:00 a.m. (which may be adjusted for future years, pending an annual review of turtle patrol operations) (*or, 6:00 AM at spits and points and 8:00 elsewhere, depending on ability or turtle patrol*) or (*7:00 AM unless turtle patrol is able to clear spits and points earlier*). NPS will begin turtle patrols at first light and conduct first patrols each day along key sections of beach that are currently open to ORV use, to the extent practical. Areas within existing resource closures will generally be surveyed last, to the extent practical. The intent is to complete a very high percentage of monitoring prior to the time noted above.
- Nest closures and buffers will be established as described in the CAHA ORV Resource Protection Tables, dated 11/15/08 (see page 9 of Table).
- Pedestrian access to the ocean beaches after dark is allowed at any location(s) adjacent to the villages or established parking, subject to site specific resource closures as needed for bird breeding activity or sea turtle nests.
- From 22 May – 15 September, Specific: Limited ORV Access for Appropriate Night Recreation During Turtle Nesting Season (i.e., park and stay). The following areas are designated as open to limited ORV access for appropriate and stationary night recreation from May 22 to September 15, subject to site specific resource closures as needed for bird breeding activity or sea turtle nests; and subject to the terms and conditions of a permit (see next section) and to the overnight vehicle limit indicated in (parentheses):
 - Bodie Island Spit limit – XX (if not otherwise closed)
 - Cape Point: Vehicle limit – XX (Access via eastern corridor, if not otherwise closed.)

- Hatteras Inlet Vehicle limit – XX (Access via Spur Road, if not otherwise closed.)
- Ocracoke South Point limit – XX (Access via designated corridor, if not otherwise closed.)
- The above areas only will be accessible by ORV only during daylight hours, subject to resource closures for bird breeding activity or turtle nests, and subject to terms and conditions of a special use permit, which include the following:
 - Such vehicles must have a special use permit that is in addition to any standard beach access permit or pass.
 - Appropriate recreation would include fishing, stargazing, or other relatively stationary activities.
 - Permitted vehicles must arrive at the site no later than ½ hour after sunset and remain parked within the designated area with headlights off until 7:00 a.m. the next morning.
 - In order for permittees to leave the beach during the night, there must be an actual emergency, which entails a call to Dare County central dispatch (473-3444) or 911. Dispatch information will be listed on the nightly permit.
 - Parking areas at the respective night access sites will be designated by NPS law enforcement staff and marked with signage (e.g., carsonite or barricades) that will be maintained by the LE staff. Permittees must park their vehicles only in the designated area.
 - Pets are prohibited
 - Campfires, use of vehicle headlights, vehicle battery powered spotlights, or lanterns that cast light in a 360 degree direction are prohibited, except as needed in a true emergency situation. Intermittent use of lighting is limited to handheld flashlights, headlamps or other battery powered lighting devices that cast a one-directional beam of light.
 - Special use permits will be issued one night at a time and must be obtained in person at a designated NPS permit issuing station (locations TBD).
 - Each vehicle must have a functional portable toilet.
 - NPS may impose a limit on the number of nights in a row an individual may obtain a night fishing permit, if it appears that there is routinely more demand for permits than the vehicle limit allows.
 - NPS retains the right to not issue night parking permits when weather forecasts dangerous conditions.
- If a permittee or individual accompanying a permittee violates the terms and conditions of the permit, including any of the above provisions, the violator is subject to a citation and the person's privilege to obtain a night-access permit will be revoked for the remainder of the season. If there are three (3) or more documented violations of these requirements at a particular site within a 30-day period, all night access to that site will be suspended for a 30 day period. If night access is suspended at a location due to repeated violations, NPS will evaluate apparent causes of non-compliance (is it training? signing? something else?) and take proactive steps to address manageable causes prior to reopening. If, in the judgment of NPS, causes of non-compliance cannot be effectively managed, NPS will not reopen an area to night access until all turtle nests in the area have hatched.

- September 16 – November 15: Based on the location(s) of remaining unhatched sea turtle nests, NPS will designate routes/areas that are reopen to night driving (i.e., night driving will be reopened on routes/areas that do not have unhatched turtle nests). NPS will publish the list of routes/areas open to night driving in the weekly beach access report and will update the list weekly until all turtle nests have hatched.
 - All ORVs must be permitted for night driving (either a special use permit or part of the overall general beach use permit/pass).
 - Permits will be accompanied by education about sea turtles, their protection, the rules of night driving, and a number to report any specific turtle behavior (nesting, false crawls, etc.).
 - Campfires, use of vehicle headlights (other than as below), auxiliary lights, vehicle battery powered spotlights, or lanterns that cast light in a 360 degree direction are prohibited, except as needed in a true emergency situation, from ½ hour after sunset until sunrise. Intermittent use of lighting (less than 5 minutes) is limited to handheld flashlights, headlamps or other battery powered lighting devices that cast a one-directional beam of light.
 - Headlights may only be used when in transit and will be turned off when the vehicle is parked.
 - No flash or fixed light photography is allowed.
 - Drivers and pedestrian should not approach turtles or turtle nests closer than 75 feet.
 - Flashlights, headlamps, and other low light sources may be used on an intermittent basis.
- As of September 16 if unhatched sea turtle nests remain that block night access to Bodie Island Spit, Cape Point, Hatteras Spit or South Point Ocracoke, NPS may continue to utilize the ORV limited night access special use permit for night procedures described above to allow night access to those locations until all such turtle nests have hatched.
- NPS will conduct night nest monitoring/watch during expected hatching to ensure the safety of hatchlings in any areas open to ORV use with turtle nests present.
- Resources Management staff will examine all sea turtle nests after hatching to determine productivity rates. Excavate nests in the evening a minimum of 72 hours after hatching event. In cases where hatching events or dates were unknown, unearth nest cavities 80–90 days after the lay date, or later if eggs are still viable. Any live hatchlings found during excavations will be released at dusk or after dark on the same day as excavation. Provided no other unhatched nests remain in the area, areas will reopen to nighttime driving in accordance with what is published in the weekly beach access report.
- The Superintendent retains the authority under 36 CFR § 1.5 (a) to close all or a portion of a park area to all public use or to a specific use or activity, as needed to protect park resources.

Education and Outreach

The NPS will develop an appropriate and effective turtle education and outreach program to help inform all beach users, regardless of the means they use to access the beach, regarding turtle species, their behavior, and all appropriate human behavior to ensure the success of nesting and hatching of turtles on Cape Hatteras National Seashore.

Research and Knowledge Base

The NPS will commit sufficient resources to the monitoring, science and adaptive management approach to build a detailed, thorough knowledge of turtle management on Cape Hatteras National Seashore and to share that knowledge with others within the state, other Parks, and up and down the Atlantic Seashore.

Volunteer Program

The NPS will develop an appropriate and effective volunteer program to increase its access to resources, to inform and educate interested members of the public, and to help advance the recovery of turtle species. To the greatest extent possible, the NPS will also partner with such state agencies as the North Carolina Wildlife Resources Commission (NCWRC) to maximize resources and abilities to achieve the goals noted above.

Stationary Lighting within the Control of the NPS

The NPS will work with FWS, the NCWRC, and appropriate others to develop turtle-friendly lighting at all NPS facilities that might affect lighting on or near the beach, as well as require all concessionaires with potential impact to utilize the same lighting through their special use permits.

Village Lighting

In addition, the NPS will work with Dare and Hyde Counties, and the villages, with technical assistance from the FWS and the NCWRC, to develop a lighting ordinance to promote and encourage the installation of turtle-friendly lighting. The ordinance might include requirements for new construction, timelines for retrofits or renovations, grants, technical assistance, and other means to achieve the end goal.

Adaptive Management

***Caveat:* This section needs to be reviewed by someone with expertise in adaptive management methodology in order to confirm or improve the technical sufficiency of the following proposal. The information that is collected by the Resources Management staff is anecdotal in nature. It can reasonably be used to inform management decisions or to support the need for additional formal research studies. The anecdotal information alone should not be used as the sole basis for making significant changes in management practices. Any significant changes in management should include consultation with recognized experts in the field.**

Objective: To determine the effect of management on nesting rate, hatching success, sea-finding by hatchlings (prevalence of misorientation/disorientation and trapping by obstacles), and proportion of false crawls.

Proposal: Identify the “management category” of each ocean beach segment as one of the following:

1. ORV areas (ORV/pedestrian segments, open to ORV use during daylight hours)
2. Non-ORV areas (pedestrian only segments)
3. Resource Areas that are closed from (date) to (date) to all ORV and pedestrian use (control segments)
4. Other resource closures (i.e., a category # 1 or # 2 segment that is closed during the season for resource protection and then it become a category # 3 segment at that time)

Monitor and Document the following information:

1. Turtle species
2. Nest vs. false crawl
3. Dates and times of activities (nest, false crawls, hatching)
4. Location (physical description and GPS location)
5. Management category (ORV, Non-ORV, Resource Area, other Resource Closures, or Experimental) of the nest site at the time it was laid
6. If nest needs to be relocated and, if so, why and where (new physical description and GPS location), number of eggs relocated, and time of day
7. Necessary protective measures for nest and hatchlings
8. Information regarding any resource closure violations, predation, hatchling misorientation, trapping by obstacles, or possible “take” incidents
-Information regarding any post hatching nest excavation and analysis
9. Visitor use in terms of number of visitors using the beach from May 1 to November 15, kinds of use, night use, kinds of night activities, and other appropriate socio-economic data.
10. Examine all nests after hatching to determine productivity rates. Excavate nests in the evening a minimum of 72 hours after hatching event. In cases where hatching events or dates were unknown, unearth nest cavities 80–90 days after the lay date, or later if the eggs are still viable (i.e., late season nests). Any live hatchlings found during excavations will be released after dark on the same day as excavation.

Evaluate:

1. Compare the number and proportion of nests, false crawls, hatchling misorientation/disorientation incidents, predation incidents, and hatchling emergence rate that occur in the respective management categories. Document in annual sea turtle report.
2. Evaluate data over multiple years to help determine management actions chosen in terms of dates, times, and restrictions, to the extent possible, against such criteria as nests, false crawls, and others noted above, generally related to risk management, overall impact, etc.
3. Conduct periodic review and evaluate trends every 5 years and include a summary of that analysis in the annual sea turtle report for the respective year. Review results with USFWS and NCWRC. (Note: Loggerhead and green turtles typically nest every 2-3 years, so this would allow for a minimum of two nesting cycles to be considered.)

Adapt

1. If a significant effect of recreation at a particular site is found, recreational restrictions can be varied systematically to distinguish the effects of type and level of activity. This might include changing dates, times, and locations. On the other hand, if no effect is detected, then the next round of experiments could entail allowing similar night access to other selected sites. Any change in management would require consultation with USFWS and NCWRC, prior to implementation.

Further Studies to Consider:

1. Design a systematic research study to monitor and determine the effects of night access on sea turtle nesting