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To: Larry_Hardham
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Subject: Re: Turtle Questions
Date: 07/22/2009 11:56 AM
Attachments: [Questions for Sandy MacPherson - Responses.doc](#)

Dear Larry:

Thank you for your email. Answers to the first four questions about sea turtles that you posed in your December 23, 2008 email to Mike Murray (Cape Hatteras National Seashore) and Patrick Field (Consensus Building Institute) have been addressed by Sandy MacPherson (National Sea Turtle Coordinator, U.S. Fish and Wildlife Service) in the attached document, and I believe were previously provided to the Negotiated Rulemaking Advisory Committee via Consensus Building Institute. Answers to some of the remaining questions are available in the newly released 2008 recovery plan (<http://www.fws.gov/northflorida/>) or other readily available sources, such as published peer-reviewed articles that were provided during the Negotiated Rulemaking process, or were provided by Sandy MacPherson in her presentation to the Negotiated Rulemaking Advisory Committee. Much of the information that you requested specific to sea turtle nesting activities at Cape Hatteras National Seashore would have to be provided by the National Park Service, or possibly the North Carolina Wildlife Resources, should they retain any of that information. Additional general information on sea turtles can be found on the Fish and Wildlife Service's websites at:

<http://www.fws.gov/northflorida/SeaTurtles/seaturtle-info.htm>

or

<http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?sPCODE=C00U>

At this time, I am not aware of any additional information to provide in response to your questions. Thank you for your interest in protecting federal endangered and threatened species.

Sincerely,

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"Larry Hardham" <hardhead@embarqmail.com>

To "David Rabon" <david_rabon@fws.gov>

0023732

07/13/2009 12:09 PM

cc
Subject Turtle Questions

David

Am I ever going to get answers to my questions from Reg. Neg.?

Larry

Remaining questions for Sandy MacPherson after Nov. Reg. Neg. meeting**Recovery Plan**

- 1. That old (1991) Recovery Plan requests of all Federal and State agencies in the Southeast to do “temperature transects on representative beaches throughout the Southeast”. How many transects have been done and where? If none have been done why not?**

In the case of recovery action 218 in the former recovery plan from 1991, numerous studies have been conducted on sand temperatures on nesting beaches throughout the Southeast including ones conducted at the following locations:

- 1) Kill Devil Hills, NC
- 2) Nags Head, NC
- 3) Bodie Island, NC
- 4) Hatteras Island, NC
- 5) Ocracoke Island, NC
- 6) North Core Banks, NC
- 7) South Core Banks, NC
- 8) Shackleford Banks, NC
- 9) Bogue Banks, NC
- 10) Bear Island, NC
- 11) Onslow Beach, NC
- 12) Masonboro Island, NC
- 13) Bald Head Island, NC
- 14) Holden Beach, NC
- 15) Cape Romain, SC
- 16) Wassaw NWR, GA
- 17) New Smyrna Beach, FL
- 18) Melbourne Beach, FL
- 19) St. Lucie Nuclear Power Plant, FL
- 20) Hutchinson Island (South), FL
- 21) Hobe Sound, FL
- 22) Juno Beach, FL
- 23) Boca Raton, FL
- 24) Keewaydin Island, FL
- 25) Sanibel Island, FL
- 26) Venice Beach (South), FL
- 27) Venice Beach (Central), FL
- 28) Nokomis Beach Park, Casey Key, FL
- 29) Casey Key (Central), FL
- 30) Casey Key (North), FL
- 31) Turtle Beach, Siesta Key, FL
- 32) Siesta Key (Central), FL
- 33) Lido Key, FL

- 34) Longboat Key (South), FL
- 35) Longboat Key (Central), FL
- 36) Longboat Key (North), FL
- 37) St. George Island, FL
- 38) Cape San Blas, FL
- 39) Panama City, FL
- 40) Bon Secour National Wildlife Refuge, AL
- 41) Dauphin Island, AL

2. There is no request for transects in the new draft plan why not?

The Recovery Team believes it is important to assess available data to develop scientifically based protocols for nest management. Therefore, the current 2008 Recovery Plan for the Northwest Atlantic Population of the Loggerhead Sea Turtle includes the following recovery action:

6111. Evaluate the effects of nest management activities on nest productivity, hatchling fitness, and sex ratios and develop scientifically based standardized protocols for nest management.

The effects of nest management activities (e.g., nest relocation, nest screening) and natural factors (e.g., nest washovers) on nest productivity, hatchling fitness, and sex ratios should be evaluated. Tidal inundation can diminish hatching success depending on frequency, duration, and developmental stage of embryos. The extent to which eggs can tolerate tidal inundation should be better measured to enable development of guidelines for nest management relative to tidal threats. Similarly, the impacts of nest relocation under varying scenarios should be evaluated to determine whether nest relocation might be an appropriate management tool. Resource agencies should support research to evaluate the impacts of nest management activities and natural factors on nests and hatchlings.

The effects of nest screening and caging on hatchling navigation and homing behavior should be evaluated as well. Irwin *et al.* (2004) found that galvanized wire mesh cages measurably alter the inclination angle and intensity of the magnetic field beneath them, but that the magnitude of field distortions decreased with distance below the cage. One hypothesis is that hatchlings imprint on magnetic features of the natal beach and use them as cues in homing to their natal beaches as adults. If such magnetic imprinting occurs, then the use of wire screens and cages poses a potential risk of disrupting magnetic navigation.

Based on the findings of research, recommendations for nest management should be developed.

3. The number one listed “objective” in the new draft recovery plan for the Loggerhead sea turtle is: **“Ensure the number of nests in each recovery unit is increasing and this increase corresponds to an increase in the number of nesting females.”** How do you do this when the policies used at CHNS have resulted in a loss of 46% (either entirely lost or hatched under 20% of eggs) of nests laid in the seven years between 2000 and 2006.

The purposes of the Endangered Species Act are “to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes of the... [Act].” Recovery is the process by which the decline of an endangered or threatened species is arrested and threats are removed or reduced, ensuring the long-term survival of the species in the wild. At that point the species is recovered and protection of the ESA is no longer necessary.

Therefore, the goal of a recovery plan, like the 2008 recovery plan for the Northwest Atlantic loggerhead sea turtle, is to reduce the threats affecting a species in the wild so that the species might recover and become self-sustaining, and thus not require significant human manipulation, such as nest relocation. The 2008 recovery plan identifies numerous threats affecting the species’ ability to survive in the wild and actions that should be undertaken to reduce or eliminate those threats.

The recovery team has identified two sets of recovery criteria: demographic criteria and listing factor criteria. The demographic criteria identify trends and numbers of nests and nesting females, trends in abundance on foraging grounds, and trends in strandings as targets by which progress toward recovery can be measured. The listing factor criteria identify reduction or elimination of threats to the species as targets by which recovery can be measured. The recovery team does not believe the use of hatching success rate as a target for species recovery is appropriate. As stated by Carthy *et al.* 2003, “Female loggerheads nest at various distances from the water and at various sites along the beach. This behavior results in the exposure of clutches to a variety of incubation environments and helps avoid complete loss of reproductive effort if some of the incubation environments preclude development. By concentrating clutches on one area of beach (e.g., low beach areas because of armoring or development, or high beach areas because of conservation activities), anthropogenic influences often reduce the variety of incubation environments.” They also stated, “Because the characteristics of hatchlings vary with incubation environments, a scattered nesting pattern also increases the variation of hatchling characteristics. This may ensure that at all times at least some hatchlings have characteristics that are appropriate for survival, when the exact characteristics that are best suited for survival vary unpredictably over space and time (Foley 1998). Human-related activities that reduce the variety of incubation environments reduce the variety of

hatchling characteristics produced. If the specific characteristics produced by the limited incubation environments do not enhance survival (compared to other possible characteristics), then the overall survival rate of hatchlings may be less than it would have been had the full spectrum of incubation environments and, consequently, the full spectrum of hatchlings characteristics been maintained.”

Carthy, R.R., A.M. Foley, and Y. Matsuzawa. 2003. Incubation environment of loggerhead turtle nests: effects on hatching success and hatchling characteristics. Pages 144-153 in Bolten, A.B. and B.E. Witherington (editors). *Loggerhead Sea Turtles*. Smithsonian Books, Washington D.C.

Foley, A.M. 1998. The nesting ecology of the loggerhead turtle (*Caretta caretta*) in the Ten Thousand Islands, Florida. Unpublished Ph.D. dissertation. University of South Florida, Tampa, Florida. 164 pages.

It is important to remember that sea turtles survived a long time without human manipulation of their nests. They have employed a nesting strategy that has allowed them to successfully perpetuate themselves. Sea turtles only became threatened when human activities affected them directly by killing or harming them or indirectly by degrading their habitats. Therefore, we need to address the threats affecting them in the wild so that they might recover and become self-sustaining.

4. What is the time frame for recovery of Loggerhead, Green and Leatherback sea turtles?

See the recovery plans for the recovery criteria for these three species at <http://www.nmfs.noaa.gov/pr/recovery/plans.htm#turtles>.

Basic Questions

- 1. How long do loggerhead sea turtles live?**
- 2. What is the age range that female loggerheads are able to reproduce?**
- 3. What is the age range that male loggerheads are able to mate?**
- 4. What would be an acceptable percentage of lost nests? The 1991 Loggerhead Recovery Plan seems to have put an alert at 40%.**
- 5. What is the “normal” percentage of nests that are “lost” to weather in the state of NC? In the total nesting area?**
- 6. Recent articles indicate a reduction in turtle nesting in North Carolina. Is this because there are not enough males or not enough females?**

7. **How many hatchlings at CHNS actually get into the water at CHNS and is this different from what is considered normal?**
8. **Do you believe that as far as site specific management plans go that one plan fits all or should plans for different areas recognize differences in sites (low wide beaches vs. narrow steep beaches and/or man made dunes)?**
9. **What is the natural sex ratio of adult turtles off the coast of NC and is this ratio the same through out their range?**
10. **What is the natural sex ratio of male and female hatchlings at CHNS?**
11. **If research showed that the male to female hatchling ratio would be changed by less than 10% by moving nests from the high tide line to the base of the dune and possibly significantly reduce the number of lost nests why would you not do so?**
12. **How far away from land do sea turtles surface to look for a “good” nesting site?**
13. **Do vibrations in the sand affect incubation or hatchlings? At what distance can emerging hatchlings hear a passing car? At what distance can emerging hatchlings feel a car passing at 15 mph? And does either of these events alter their activity?**
14. **Is there any peer reviewed science that shows the time that females come ashore to nest? Is it different here at CHNS?**
15. **How many mature Loggerhead sea turtles are there?**
16. **How many of these are male and how many are female?**
17. **How many immature Loggerhead males are at sea?**
18. **How many immature Loggerhead females are at sea?**
19. **How many females does a male mate with in a season?**
20. **What is the greatest land predator of sea turtle eggs and hatchlings? (science to back up answer)**
21. **Should successful management practices used in one area be shared with and used in other areas?**

22. Why not relocate all nests laid after the first week of July since we lose a high rate (over 50%) of these to our storm season.
23. How far does a stationary light source have to be to disorient an adult female?
24. How far does a stationary light source have to be to disorient a hatchling?
25. How many vehicles were on the beaches in the vicinity of false crawls at CHNS in 2008, 2007, 2005 or any year?
26. Why not institute a protocol at CHNS similar to that of Cape Romain and why did you not even mention this program in your presentation?

False Crawls

1. How do you explain 24 false crawls at the hook at Cape Point inside a bird closure (with no ORV or human activity) in 2007?
2. Where can I find peer reviewed research that explains why false crawls are bad and not that turtle just knows what she is doing?
3. What happens when a turtle can not nest at a location? Do they abort or assimilate the eggs?
4. Why do sea turtles make false crawls? List of scientific papers that attempt to explain why turtles make false crawls.
5. What is the significance of false crawls?
6. Do we need to be concerned with the false crawl to nest ratio? List of scientific papers that document the “acceptable” ratio.
7. How do you explain a higher than 1:1 false crawl to nest ratio at sites where there is no ORV use, villages or ocean piers?
8. How do you explain the fact that Cape Lookout historically has experienced a higher false crawl to nest ratio than at CHNS? Cape Lookout does not have seven ocean front villages, three fishing piers or nearly the human activity that we have.
9. What time of night are false crawls made? Is the time of night that false crawls are made at CHNS the same as in say Fla.? Or on beaches where there is no ORV use? (Scientific papers to support answer).