

0022470

From: [Mike Murray](#)
To: pete_benjamin@fws.gov
Cc: david_rabon@fws.gov; [Sandra Hamilton](#); [Thayer Broili](#); sandy_macpherson@fws.gov; [Britta Muiznieks](#); [Michelle Baker](#)
Subject: Fw: TURTLES
Date: 01/14/2009 04:41 PM
Attachments: [2009 CHNSRA Turtle Program TABLE one.doc](#)
[2009 CHNSRA Turtle Program TABLE two.doc](#)

Pete,

See below. Would appreciate hearing your thoughts on what is being proposed.

Mike Murray
Superintendent
Cape Hatteras NS/ Wright Brothers NMem/ Ft. Raleigh NHS
(w) 252-473-2111, ext. 148
(c) 252-216-5520
fax 252-473-2595

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----- Forwarded by Mike Murray/CAHA/NPS on 01/14/2009 04:38 PM -----

Cyndy Holda/CAHA/NPS
To: Mike Murray/CAHA/NPS@NPS
cc
01/14/2009 07:59 AM Subject: Fw: TURTLES

FYI

Cyndy M. Holda

----- Forwarded by Cyndy Holda/CAHA/NPS on 01/14/2009 07:58 AM -----

"bobdavis"
<davisrb@embarqmail.com>
To: "cyndy holda" <cyndy_holda@nps.gov>, "Pat Field" <pfield@cbuilding.org>
cc
01/13/2009 11:00 PM Subject: Fw: TURTLES

----- Original Message -----

From: [bobdavis](#)

0022471

To: [Barbara Ackley](#) ; [bobdavis](#)
Cc: [libby zentmeyer](#)
Sent: Tuesday, January 13, 2009 9:53 PM
Subject: TURTLES

----- Original Message -----

Cape Hatteras Anglers Club
P. O. Box 145
47231 Light Plant Road
Buxton NC 27920
Fax and telephone: 252-995-7968
e-mail: anglers@embarqmail.com
website: www.capehatterasanglersclub.org

January 14, 2009

Mike Murray, Superintendent
Cape Hatteras National Seashore
1401 National Park Drive
Manteo NC 27954

Reference: [Turtle Recovery Program](#)

Dear Mike,

Attached is a copy of a comprehensive turtle recovery program for CHNSRA. You

will note several digressions from the USF&WS Recovery Plan. These were required by differences in the resources between Florida and CHNSRA. Many of the procedures recommended in the Draft Recovery Plan were developed by USF&WS= experience in Florida. This is appropriate because 90% of loggerhead nesting in the United States occurs on 200 miles of Florida. Some of these procedures are questionable when applied to CHNSRA given the historical data from our beaches. Some differences can be summarized:

COMPARISON	FLORIDA	CHNSRA
Nest Density Nests/mile/year	High 640 - 1130	Low 1 - 2
Vehicular Traffic	High	Low
Ghost Crabs	Low	High
Female Hatchlings % Female	High 90%	Low 30% - 40%
Missed Nests	High 5% - 10%	Low 1% - 2%
Beach Nourishment	High	Low
Beach Cleaning	High	None

The attached Turtle Program has a good chance to save the resource. The other choice for NPS is to play safe and rigidly follow the USF&WS procedures. The resource will continue to fail, but no blame could be placed upon NPS just as there was no blame cast upon the researcher that chased and killed the Amoy chick. The recovery will be lengthy since we have destroyed major portions of this resource for the past 10 years and 30 more years will transpire before any increase in female hatchlings will return to nest on our beaches even if changes are made now.

To balance the presentation by Sandra MacPherson, I would again request that NPS provide briefings from USF&WS= Back Bay Refuge, Pea Island Refuge, and NPS Padre Island N.S.

Thank you,

Lawrence M Hardham
President
P. O. Box 1268
Buxton NC 27920
Telephone: 252-995-7945

Robert B. Davis
Board Member
P. O. Box 1224
Buxton NC 27920
Telephone: 252-995-4781

LMH/RBD/eaz

Attachments: CHNSRA Turtle Program
Table 1
Table 2
Pea Island National Wildlife Refuge

CHNSRA TURTLE PROGRAM

BACKGROUND:

The objective of the Turtle Recovery Plan is to increase the number of nesting females in CHNSRA. Much of the mechanism found in the Recovery Plans is laudable. (1991 and current draft) These Plans should not be accepted as a One Size Fits All policy, but recognition must be made as to local field situations.

Matthew Godfrey of NCWRC and Sandra MacPherson of USF&WS are advocates for Natural Nesting with the least manipulation by humans. Following this advice over the past 10 years, CHNSRA has experienced the loss of nearly half the turtle nests. Continuation of this policy into the new Recovery Plan will not provide sea turtle recovery in CHNSRA. Without change the downward travel will not stop.

Natural processes are difficult to fulfill on these islands with synthetic dunes. Those dunes were built in the 1930=s to protect the roads that would allow the Recreational Area to be developed. They will continue to serve that function.

Turtle management in North Carolina is dictated by the NCWRC Turtle Handbook. This allows for some latitude in interpretation. At the urging of Matthew Godfrey NCWRC, Hatteras adopted a conservative interpretation of least manipulative management with natural hatching. This reduced nest relocation from 67% (pre-2000) to 28% (2000 B 2008). When relocated a nest was generally moved closer to the dune on the same beach regardless of topography. Previously (1997 B 1999) nests were relocated to several safer locations of the islands. Our neighbors at Pea Island and Cape Lookout have chosen a more liberal interpretation of the Handbook. They both survey their

beaches each season and designate safer zones for relocation. In 2005 Matthew Godfrey convinced Jeff Cordes of Cape Lookout to follow the CHNSRA conservative interpretation. The results were disastrous and Jeff Cordes returned to their previous policies. In his 2006 turtle report he cites that tidal flooding continues to be the principle threat to nesting success at CALO. Nest relocation is the primary management tool used to enhance hatching success in the Park. The best management decisions can only be made by evaluating local conditions and their potential effect on nesting success.

The best science for CHNSRA is the data that comes off the beaches at Cape Hatteras.

Pea Island has taken further steps to reduce turtle losses. They have developed a volunteer organization of nest sitters who are activated when nests reach their hatch window. Each night they smooth the sand and deploy a shield of garden edging in a tight keyhole configuration leading down to the surf line. The edging provides a shield against extraneous light and some protection against ghost crabs. The volunteers may use a white bucket as a target at the water line for hatchlings to follow. In addition, aggressive ghost crabs that intrude into the hatch lane are removed by the volunteers. A count is made of hatchlings that emerge and successfully enter the water. Volunteers are requested to stay on duty until midnight. Unfortunately there are inadequate personnel to cover the rest of the night so each nest is covered with a wire cage for additional protection and hatchlings picked up at first light.

Back Bay Wildlife Refuge in Virginia takes further efforts. All nests are relocated in a centralized corral behind the primary dune for maximum protection from their dynamic beaches. Each nest is transferred to a special individual cage to prevent predation. They also work with a volunteer group of nest sitters. Cape Romain has a somewhat similar policy, but provides less protection against predation.

The ultimate in nest protection is found at Padre Island N.S. All nests are relocated to a hatching building which provides temperature (sex ratio) control and absolute protection from predators. A brief comparison of these various programs is shown in Table 1.

The success of turtle recovery in CHNSRA will be directly related to the degree of human effort applied to the program. Our man-made dunes have altered the natural habitat and man is obligated to mitigate their damage.

CHNSRA should take the best ideas from our neighbors and apply those which offer the most effective opportunities for successful turtle recovery.

We have two major factors that cause loss of the turtle resource. Both can be compensated.

1. Weather: Wind and waves associated with storm events along our dynamic beaches.
2. Predation: Mammalian, Avian and ghost crabs.

Proper control over these two variables will lead to turtle recovery. Peripheral variables such as man-made lighting and disturbance are of less value and need careful consideration before wasting precious human resources on the problem.

There are a number of deficiencies in the current CHNSRA program that should be addressed:

1. Failure to observe Section 1132 of 1991 Recovery Plan. For 17 years CHNSRA has not identified those beaches with 40% or more nest loss due to erosion and inundation.
2. Relocation of nests only closer to the dune even on low beaches instead of moving completely away to a safer location.
3. Enlargement of enclosure and installation of silt fencing in a wide AU@ shape which provides no effective light shielding, but

affords greater protection for the ghost crab population.

4. Failure to control village lighting which pollutes the dark sky and disorients hatchlings (Section 2142 and 2144).

5. Failure to monitor the number of hatchlings that enter the water.

6. Failure to prevent predation by ghost crabs.

7. Ignoring Section 218 for 15 years. Studies of sand temperatures have just started and need to be enlarged as a valuable management tool.

There is no way we can generate turtles to nest at CHNSRA. Once the nests are laid, they become our total resource pool. All we can do is to cut the losses. A relative ranking of causes for turtle loss is in Table 2.

PROPOSAL:

The turtle program is not an exact science. We are dealing with a natural biological process subject to wide variations. Some nests are laid in areas which have the potential for high success; others are not. Within a nest some eggs do not hatch, but most produce turtles of vigor and vitality and there are individuals that range between these two extremes. Similar variations occur between nests laid by different females on the same beach.

There will be losses regardless of environmental lawyers screaming about Atake@. We can exercise diligence and try our best to minimize those losses within the confines of funding and personnel.

A. TURTLE PATROL:

This is composed of two separate groups in order to better detect Amised nests@ and earliest protection of each nest.

1. FINDERS: Their principal purpose is to quickly survey and identify nests on their section of the beach.

a. Check operation and fuel level of ATV.

b. Communication check-in with cell phone or radio as

equipped.

- c. Check supplies on ATV.
- d. Call in for special instructions and any information from night beach users.
- e. Start patrol on beach not later than twilight. Sufficient visibility is required for safe operation and detection of turtle activity.
- f. When suspect nest is found, identify by erecting a small enclosure using 4 foot pieces of 1/2 inch PVC pipe. Four of these pipes around the edges of nest disturbance with string and tape should be adequate. Pipes can be driven quickly into sand with a rubber mallet and are safer to carry on an ATV than 8' wooden stakes.
- g. Call in location then immediately resume patrol.
- h. At completion of patrol call in for additional instructions then return.

2. PROTECTORS: This group will determine if location is a nest or dig and protect in place with wooden post, signs and string or upon direction will dig and transport eggs to Relocation Hatch Field. Handling shall be by NCWRC Handbook procedures except that eggs will be transported in Styrofoam coolers and shock absorber cradles similar to those used at Padre Island N.S. which affords best protection for beach travel and egg handlers shall use rubber gloves.

Enclosure should be a 10 meter square for those nests not relocated. Bury transponder ball and temperature recorder at nest as required for sex ratio survey.

The 10 meter size enclosure should be retained into the hatch window to allow nearby ORV driving to deter ghost crab density.

B. RELOCATION HATCH FIELD

1. QUANTITY: There should be three sites of Relocation Hatch Fields:

- 1) Ocracoke Island
- 2) South Beach Hatteras Island
- 3) North Beach Hatteras Island

These three sites were chosen to reduce transport time of the relocated eggs and to reduce effects of major hurricanes impacting our coast.

2. SITE SELECTION

Hatch Fields should be placed behind the primary dune for maximum protection against normal storms. At the very least, a high beach location should be used. Vegetation should be removed mechanically and root growth may be retarded by suitable herbicides.

Nest placement at the Hatch Field should be laid in a 2 meter grid. This process represents a combination of Cape Romain and Back Bay procedures and should be modified by CHNSRA personnel as required.

It is anticipated that NPS would coordinate with USF&WS and NCWRC for advice and testing of sand at the Hatch Field to ensure that conditions provide an appropriate incubation environment. Test parameters might include:

1. Sand Albedo
2. Grain size of sand
3. Sand, water content and Salinity
4. Proper gas exchange of O_2 and CO_2
5. Temperature range (NOTE: warmer temperatures favor females and produce hatchlings with greater body mass, greater activity levels, and faster growth rates)

3. PROCEDURE

Beach eggs would be transferred to cages and buried in the sand for natural incubation. Suitable cages would be of the design successfully used at USF&WS Back Bay Refuge. Adequate temperature recorders should be buried in the grid to provide data for sex ratio estimation. Shade could be provided if more males are desired. However, more females are required if nesting is to increase at CHNSRA in the future.

Procedures utilized at Back Bay would be used or modified as required by CHNSRA personnel.

Observation and care of hatchlings at hatch time requires the establishment of a strong volunteer organization. The Hatch Field principal provides efficiency in personnel management since one night observer team can monitor the 30 to 40 nests expected for each Hatch Field. In the normal course of events only one or two hatches would occur each night.

The advantage of the Hatch Field Process is that storm losses are minimized and predation is prevented. Only the Padre Island Laboratory Hatchery would produce better success.

Concerns as to vigor or vitality of hatchlings from the Relocation Hatch Field process were best answered by the Cape Romain report published by SCDNRA and USF&WS in 2007:

Concerns regarding nest relocation include moving nests into a warmer, drier environment resulting in an increase in nest incubation temperature and a decrease in incubation duration possibly resulting in a smaller, less robust hatchlings. However, our results suggest that these concerns are not valid for Cape Island.@

C. IN-SITU PROTECTION

Hatching procedures used at USF&WS Pea Island Refuge would be

recommended for those nests allowed to incubate on their initial beach sites. Their procedures provide much better light protection and predator control than used at CHNSRA. However, a strong volunteer program would be needed to ensure success. Since many nests will be in remote locations, night time ORV travel would be necessary for personnel access to the nest site. Without the volunteers there would be no ghost crab protection or data gathered as to how many hatchlings survived to the ocean. Without volunteers to deploy the garden shielding the light protection from silt fencing would be no better than currently provided.

To help comply with the ESA, interdunal roads should be built to bypass beach traffic around those nests laid at the toe of the dune.

D. BEACH EVALUATION FACTORS FOR RELOCATION

Prior to April 15 of each year experienced CHNSRA personnel should review and determine those beaches judged to be unsuccessful for turtle nesting and consult with NCWRC staff. As conditions change on the beaches, further determinations could be made that would influence a decision to relocate a particular nest.

Some parameters that could be considered would be:

1. General topography
2. Overall elevation of beach
3. Nest elevation
4. Cliff formation
5. Swale
6. Gullies
7. Past experience of 40% or greater loss. In the past seven years 33% of our one-mile beach segments failed this test.
8. Ghost crab population
9. Conflict with Federal listed bird closure

10. Major conflict with public access

E. TIME FACTORS FOR RELOCATIONS

CHNSRA data from the past ten years show that nests laid after July 9 have less than a 50% chance to hatch because of summer storm activity. Therefore all nests laid after this date should be relocated.

F. SEASONAL DATES FOR MONITORING

Review of CHNSRA data for the 11-year period (1997-2007) show only one turtle nest was laid as early as mid-April. Sand temperatures were too cold and the nest did not hatch. The first successful nest was on May 1. No nests laid after August 31 ever hatched. Only two nests were laid after that date.

Turtle monitoring by daily patrol should begin May 1 and end August 31.

G. NIGHT ORV DRIVING

Current procedures of nest identification and protection with symbolic fencing have proven appropriate with public ORV driving at night. CHNSRA annual reports back to 1999 show no adult turtles have ever been killed by beach ORV driving. The only resource loss was of four eggs crushed in 2007. With the 9,078 eggs laid that year the loss was 0.044%. From Table 3 of the 2001-2007 summary the loss was only 0.01% over that seven year period. This is negligible compared to the effects of weather and predation by a factor of 1,000 to 1.

Night driving is required to monitor and nest sit on those nests allowed incubating in remote areas. Additional safeguards are proposed for night driving to give extra protection and address the issue of AMissed Nests@.

1. MISSED NESTS: Part of the ORV driving permit would require permittee to have an operable cell phone or radio capable of contacting NPS ATurtle Watch Hotline@ (to be established by NPS) along with one or more ATurtle Flags@ present in the vehicle. Permit holder would be required to report any sighting of turtle activity to the ATurtle Watch Hotline@ and to identify the site with a ATurtle Flag@. These flags could be inexpensive wire and plastic such as commonly used by surveyors and utilities, but with a turtle icon printed on the flag. Training would be part of the educational component to obtain an ORV permit. This process would reduce the incidents of Amisted nests@ and improve the efficiency of the day time turtle patrols. Incentives might be provided by NPS for members of the public who report a valid nest.

2. SYMBOLIC FENCING: Wooden posts should have red reflectors or reflective tape on at least two sides readily visible to ORV drivers.

3. ANNUAL REVIEW: NPS would have annual reviews and modify the night driving restrictions whenever:

a. More than one adult turtle is killed by a night ORV.

b. More than 1% of annual total egg/hatchling count is lost due to public night ORV operation.

H. PREDATOR CONTROL

The Back Bay cages have proven effective against predators. The Relocation Hatch Field process would have little problem with predation. However, those nests left on the beach would benefit from predator control.

Ghost crabs predation can be reduced by maintaining small enclosures and encouraging ORV traffic prior to hatch. The attendance

of volunteers at hatch time with the Pea Island procedure can minimize predation of the hatchlings.

Mammalian predator populations can be reduced by trapping methods. There is a constraint on this process: Trapping is allowed on the recreational beaches, but prohibited in the lands behind the dunes. The Enabling Legislation protects the flora and fauna that is not on the beach. The mammals recognized as being present and therefore protected were listed in the Cape Hatteras National Seashore 1938 Prospectus as being: A deer, otter, mink, raccoon, muskrat, foxes, rabbits and squirrel. @

An exception could be to allow trapping around the periphery of the Relocation Hatch Fields.

I. LIGHT MANAGEMENT

NPS should work toward restoration of Dark Skies to their beaches. This would not only benefit the turtle resource, but would be a major improvement in quality of visitor experience. A turtle friendly ordinance should be enacted by state and local governments. At the very least, no lights should be visible from the beach. This would require control or shielding of interior house lighting.

J. VOLUNTEER GROUP

The key to Turtle Recovery at CHNSRA is the strong volunteer organization required for morning ATV patrols and night nest sitting that are part of the Relocation Hatch Field and In-Situ Pea Island procedures.

This may be the most formidable task before the NPS. Some volunteers can be imported from other parts of the country. Each year new people arrive to become part of the permanent community and could serve as volunteers. The people of the villages were once a rich resource of volunteers in the past. Not long ago the lighthouse complex was all volunteers and now it is but a few. Other programs have

suffered from the recent beach closures.

Animosity within the villages will increase unless NPS changes course to restore public access to their popular beaches. Public acceptance and participation will depend on how NPS pursues its policies.

There are a number of methods to improve public motivations. None of these can prevail against continued alienation of the public by NPS actions



2009 CHNSRA Turtle Program TABLE one.doc 2009 CHNSRA Turtle Program TABLE two.doc

TABLE # 1
TURTLE PROGRAM COMPARISON

<u>Site</u>	<u>Relocation Frequency</u>	<u>Hatching</u>	<u>Predator Control</u>	<u>Count # of Hatchlings entering water</u>	<u>Human Manipulation</u>	<u>% Lost Nests</u>
CHNSRA	Low	Natural	No ¹	No	Low	High 46%
Cape Lookout	↓	Natural	No	No	↓	↓
Pea Island	↓	Assisted	Yes	Yes	↓	↓
Cape Romain	↓	Assisted	No	No	↓	↓
Back Bay	↓	Controlled	Yes	Yes	↓	↓
Padre Island	High	Controlled	Yes	Yes	High	Low 0%

¹ General mammalian trapping program, not each nest

TABLE # 2
RELATIVE RANKING TURTLE LOSSES

<u>PROCEDURE</u>	<u>RANKING OF DETRIMENTAL EFFECT</u>	
Natural Process	Highest	50% LOSS
Relocation on same beach	↓	↓
Large enclosures	↓	↓
Wide “U” silt fencing	↓	↓
Village lighting	↓	↓
Keyhole light shields	↓	↓
Volunteer nest sitters	↓	↓
Partial relocation – behind dunes	↓	↓
Back Bay cages	↓	↓
Night ban on ORV driving	Lowest	Less than 0.04% loss