

0025457

**From:** [Thayer Broili](#)  
**To:** [Tyler Bogardus](#); [Britta Muiznieks](#)  
**Cc:** [Mike Murray](#); [Darrell Echols](#)  
**Subject:** Fw: Experimental Fence Research/Demonstration for CWB Protection at Bodie Island Spit  
**Date:** 02/24/2010 10:24 AM  
**Attachments:** [Colonial Waterbird Fence Project Description.docx](#)

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Not too encouraging, but maybe we can improve upon their efforts. Tyler, give Jeff and Jerald a call to pick their brains on this. I will forward anything I get from them via e-mail.

Thayer Broili  
Chief of Resource Management  
Cape Hatteras National Seashore  
Phone 252-473-2111 ext.137  
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----- Forwarded by Thayer Broili/CAHA/NPS on 02/24/2010 10:05 AM -----

**Michael  
Rikard/CALO/NPS**

02/24/2010 09:57 AM

To Thayer Broili/CAHA/NPS@NPS  
cc Jon Altman/CALO/NPS@NPS, Jerald  
Weaver/SAJH/NPS@NPS, jcordes@fs.fed.us  
Subject Re: Fw: Experimental Fence Research/Demonstration  
for CWB Protection at Bodie Island Spit 

Thayer

We tried this many years ago with not much luck. Some of the problems were that the electric fence had to be very low to ground to stop raccoons and the fencing would often sag and touch the ground. Also you do not get a good electrical ground in sand so the animals are not shocked when they touch the fencing. You may ask Jeff Cordes and Jerald Weaver their experience with this as they were the ones trying to make it work. I have copied them on this email.

Michael Rikard

▼ [Thayer Broili/CAHA/NPS](#)

**Thayer  
Broili/CAHA/NPS**

02/24/2010 09:02 AM

To Michael Rikard/CALO/NPS@NPS  
cc Jon Altman/CALO/NPS@NPS  
Subject Fw: Experimental Fence Research/Demonstration for  
CWB Protection at Bodie Island Spit

Thought you might want to look at this. If you or Jon have any ideas/comments, I'd welcome them.

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----- Forwarded by Thayer Broili/CAHA/NPS on 02/24/2010 09:01 AM -----

**Thayer  
Broili/CAHA/NPS**

02/23/2010 03:35 PM

To pete\_benjamin@fws.gov, David.h.allen@ncwildlife.org  
cc Mike Murray/CAHA/NPS@NPS, Britta Muiznieks/CAHA/NPS@NPS, Darrell Echols/CAHA/NPS@NPS, Tyler Bogardus/CAHA/NPS@NPS, Margaret Carfioli/CAHA/NPS@NPS  
Subject Experimental Fence Research/Demonstration for CWB Protection at Bodie Island Spit

As we've discussed in the past, there appears to be merit in field evaluating the use of low voltage electric fencing for the protection of shorebirds at CAHA. We want to conduct an experiment this summer at Bodie Island Spit to this end. Attached is a project action summary for your review and comment. Should you concur with this project, we want to implement it by as early as mid-April before any CWB colonies set up.

The attached summary is part of our project documentation. Our NEPA guidelines give us a couple of categories that allow us to categorically exclude this project and we will complete this documentation after we receive your feedback. We are unsure whether this warrants any formal Section 7 correspondence so we are not providing any at this time, but will wait for feedback from Pete.

Because the timeframe for implementing this proposal is short, we request your feedback ASAP so we can implement the proposal by the target date if there is agreement that it's viable. Obviously, we welcome your direct participation if you're interested. Please give me or Tyler Bogardus, the project manager, a call if you have questions. Tyler has been our predator control guy for the past several years, is now our lead bio tech for the Bodie Island District, and did the equipment research, etc., for the proposal. He will be the individual that will provide day-to-day management of the project should it be implemented. His phone # is 252-216-6872.



Colonial Waterbird Fence Project Description.docx

Thanks for your advice and help as always,

Thayer Broili  
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Cape Hatteras National Seashore  
Phone 252-473-2111 ext.137  
Fax 252-473-2595

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*Proposed Action Summary*

**Install a Temporary Electric Fence at Bodie Island Spit  
to Protect Colonial Waterbird Nesting**

**Cape Hatteras National Seashore,  
Dare County, NC**

**February 23, 2010**

The National Park Service (NPS) proposes to install a temporary electric fence at Bodie Island Spit, Cape Hatteras National Seashore, to protect nesting colonial waterbirds from mammalian predators. The purpose of the proposed action is to determine if an electric fence reduces nocturnal (7:00pm - 6:00am) predation by mammals on colonial waterbirds. The proposed fence would be on-site for 4-5 months during the 2010 nesting season for colonial waterbirds.

**Background**

Cape Hatteras National Seashore (CAHA) is home to many species of beach-nesting wildlife (sea-turtles, colonial waterbirds, and shorebirds), several of which are Federally- or state-listed as threatened, endangered, or species of special concern. Predation by mammalian carnivores has been considered a significant factor in the decline of nesting waterbirds and shorebirds along the Atlantic coast and at CAHA.

Over the past two decades breeding populations of Federally threatened piping plover (*Charadrius melodus*) and several species of special concern (including common terns [*Sternus hirundo*], least terns [*Sternus antillarum*], gull-billed terns [*Sterna nilotica*], black skimmers [*Rynchops niger*], and American oystercatchers [*Haematopus palliatus*]) have shown consistent declines at CAHA. Factors affecting their nesting success include predation, disturbance related to recreation and off-road vehicles, and habitat loss, all of which are responsible for significant losses. In recent years CAHA has implemented a variety of management practices aimed at improving the reproductive success of these beach-nesting birds.

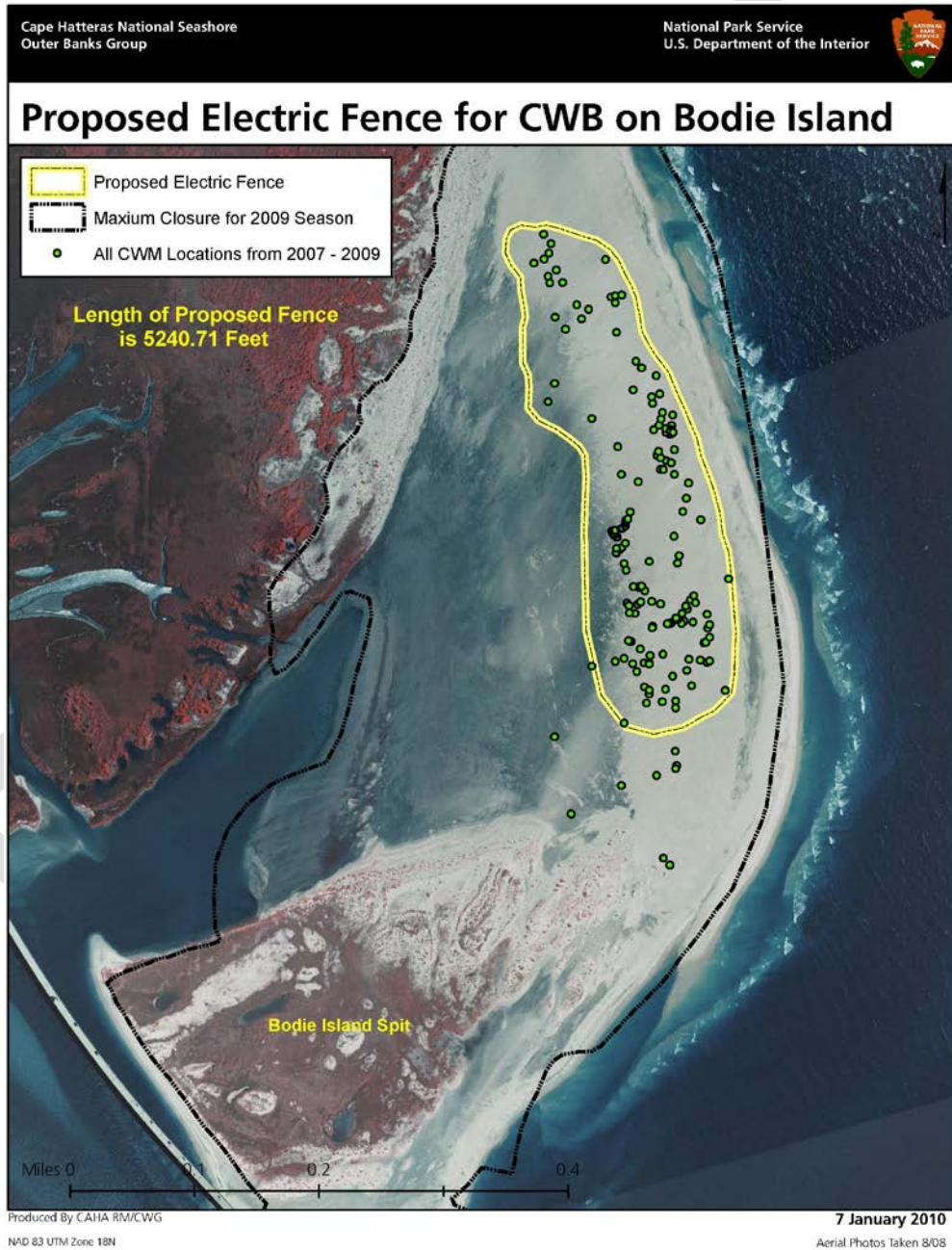
In recent years CAHA has embarked on an ambitious mammalian predator control program, but productivity of colonial waterbirds and shorebirds remains low, with predation continuing to be one of the leading causes of egg and chick mortality. Mammalian predators have negatively impacted the hatching success of colonial waterbirds at Bodie Island. Current predator management activities include removal of mammalian predators near nesting sites, but colonial waterbirds fledgling success has been minimal. Although no piping plover eggs were lost due to predation during the 2009 season at CAHA, 56-94 percent of egg losses for terns, skimmers, and oystercatchers were attributed to predation by mammals. At CAHA, the overall productivity trend is that fewer than 0.1 colonial waterbird chicks per nesting attempt make it to fledging.

Park management is continually assessing on-going predator removal programs and this pilot research effort is to evaluate alternative approaches for improving the productivity of beach

nesting birds. The proposed electric fence serves as the first experimental attempt to improve colonial waterbird productivity using a physical barrier to limit mammalian access to nests.

### Site Description

A site survey has been conducted, and preferred location for the fence has been identified (Figure 1). The electric fence is proposed to be installed within the piping plover pre-nesting closure area on Bodie Island Spit. This location will likely be located entirely within the closure area for actively nesting colonial waterbirds during the summer of 2010.



**Figure 1.** Proposed location for electric fence at Bodie Island Spit.

**Timing**

The target start date for the installation of the electric fence is mid-April to mid-May and removal in August or September of the same year; the fence would be on-site for 4-5 months. Installation would be completed prior to the colonial waterbirds nesting to minimize disturbance to the birds.

**Monitoring and Maintenance**

Daily fence maintenance will be performed by the NPS to check for correct voltage readings, shorts in fence, removal of debris, and monitoring for predator sign and bird interactions. To obtain accurate voltage readings a digital voltage meter will be used. All observations of predator activity in the area or near or within the electric fence will be recorded. Monitoring the colony will be done daily from a point outside of the electric fence. Monitors will observe for numbers of adults and chicks, and look for behavioral displays resulting from the presence of the electric fence. Any colonial waterbirds nesting outside of the electric fence will also be observed from a distance daily. A complete nest count will be performed by a walk through survey during the survey window of June 5th-20<sup>th</sup>, 2010. The fence will be removed after all chicks have fledged from the colony so as not to disturb any nesting or fledging attempts (August-September). The fence will be deconstructed, and evaluation of the materials will be conducted prior to storage.

**Fence Design Specifics**

The electric fence proposed is readily available for purchase and is being proposed for use consistent with its design. The electric fencing equipment would be purchased from Max-Flex fencing in Lindsie, WV.

The electric fence would be installed using a pole-pounder to drive the poles approximately 18" into the sand, with poles will be placed every 30 feet. All wires will be attached to poles with wire fencing clips. A marine deep cycle 12-volt battery will be the power source for a Maxim<sup>TM</sup> M 2-20 electric fence energizer. The battery will be charged with a 10-watt solar panel kit mounted on a 4" x 4" post. The marine battery, DC programmable timer and energizer will be installed on the same 4" x 4" post and a cover will be placed over the battery, timer and energizer to protect from the elements.

The electric fence will be comprised of six alternating hot/cold Hot Strand<sup>TM</sup> wires. The wire spacing will be from the bottom up 6", 6", 8", 10", 10", and 10" making the total fence height 50" (Figure 2). The bottom wire of the electric fence will be placed at 6" instead of the suggested 4" shown in the diagram to allow adequate room for the nesting shorebirds to walk under the fence.

Below the electric fence, a 12"-wide chicken wire will be laid on the ground and slightly buried. This will allow for a solid ground for mammalian predators to receive the shock. In sandy environments the shock would be greatly reduced or minimal if an animal was not stepping on metal fencing. This chicken wire fencing will also deter mammalian predators from digging under the fence.



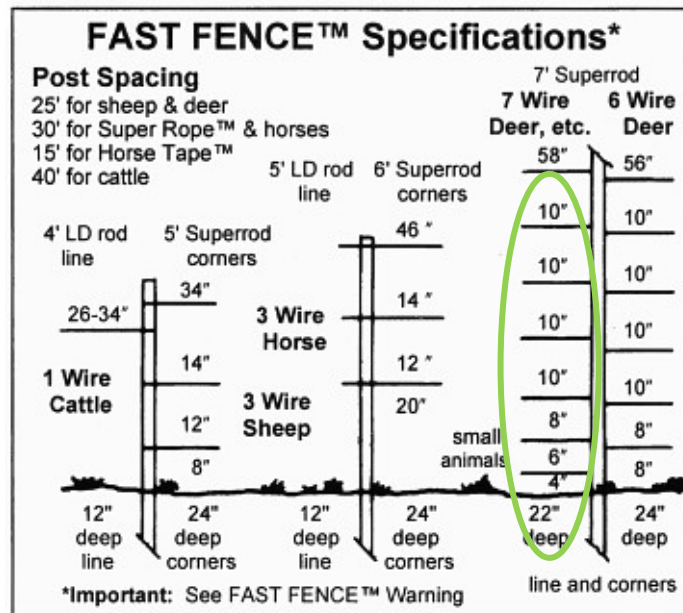


Figure 2. Proposed electric fence wire spacing (circled in green).

### Avoidance, Minimization, and Mitigation of Potential Impacts to Wildlife

Mammalian predators targeted for exclusion include: coyote, red fox, gray fox, raccoon, opossum, and feral cat. Encounter with the proposed fence will administer a low level shock to these animals which is hoped to generate a “flee” response and discourage them from entry into the area. The amount of voltage administered should not result in any substantial health effects to these animals.

The fence’s low amperage, a 12-volt DC programmable timer, the placement of the electric fence away from the piping plover breeding areas, and arrangement of wires of the electric fence will minimize the potential for adverse impacts or injury to the public, field staff, mammalian predator species, nesting colonial waterbirds, nesting piping plover and American oystercatcher, nesting sea turtles, and non-breeding birds such as gulls and crows.

#### Avian Species

The colonial waterbird species nesting at Bodie Island Spit include: least tern, common tern, and black skimmer. American oystercatchers and piping plover may also nest at Bodie Island Spit. A piping plover pre-nesting area is scheduled to be established on Bodie Island Spit by no later than March 15.

Fence design modification: The bottom wire of the proposed fence will be six inches above the ground surface, to minimize the potential for impacts to birds. This spacing would allow piping plovers and other nesting birds to walk safely under the wire. The piping plover nest enclosures use metal fencing that is 2” x 4”, an acceptable height for piping plover to cross under.

Piping plover and other shorebirds should be able to walk under the 6" high wire without receiving a shock for various reasons:

- Birds in general have hollow feathers that protect the individual from receiving a shock.
- With electric fences the amount of shock is directly related to body mass. The more an animal weighs the greater amount of shock received. Subject shorebirds including piping plover weigh from a few ounces to less than a pound.
- With little mass to sink into the sand, shorebirds are not grounded very well and should not receive enough of a shock to cause any adverse health effects.

#### *Sea Turtles*

Potential impacts to nesting sea turtles appear to be low at the proposed site. Of the 835 total nests documented throughout the entire Seashore between 2000 and 2009, only one nest was laid was documented near the proposed site, at the high tide line, during the 2008 nesting season.

Fence siting: The placement of the electric fence will be approximately 30-40 meters from the high tide line to avoid impact to sea turtles attempting to nest and will be inside an already established piping plover pre-nesting area.

#### **Avoidance, Minimization, and Mitigation of Potential Impacts to Humans**

The potential for injury to the public and field staff is expected to be minimal due to the placement of the fence within an established resource closure, the use of a programmable timer, and informational signage. The timer will be set so that the fence will be non-active or cold from 6:00am to 7:00pm. Informational signage will be installed near and on the electric fence.