



**United States  
Department of  
Agriculture**

**Wildlife  
Services**

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July 7, 2003

Marcia Lyons  
National Park Service  
P.O. Box 190  
Buxton, NC 27920

Dear Marcia:

The predator management work was completed on June 2 -14, 2003 on Hatteras and Bodie Islands. A total of 9 red fox, 2 opossums, and 2 raccoons were removed. The 4 red fox removed from Hatteras Island included 1 adult male, 2 adult females, and 1 juvenile female. The 5 red fox removed from Bodie Island included 1 adult male, 1 adult female, 2 juvenile males, and 1 juvenile female. The two opossums and 2 raccoons were removed from Hatteras Island.

Given the sizes of Hatteras and Bodie Islands, the fact that Bodie Island likely has a well established fox population, and depending on the number of fox dens on the Pea Island National Wildlife Refuge on Hatteras Island, continued population management will be necessary. Additional removal efforts are recommended. This residual population will rapidly increase without continued predator management. We will plan to return in August if funds are available to complete the second removal effort during the peak nesting period to help protect new born chicks and turtles.

We enjoyed working with you and your staff and look forward to assisting you in the future. We hope our efforts met your expectations. If you need further information, please don't hesitate to contact me, toll free at 1-866-487-3297 Ext 224.

Todd Menke  
Supervisory Wildlife Biologist





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September 24, 2003

Marcia Lyons  
National Park Service  
P.O. Box 190  
Buxton, NC 27920

Dear Marcia:

A total of 6 red fox, 4 opossums, 2 raccoons, and one free ranging domestic cat were removed during the predator management work on Hatteras and Bodie Islands from August 20 -29, 2003. All 6 red fox were removed from Bodie Island which included 4 juvenile males and 2 juvenile females (see Table 1). The carcass of a red fox was also found on Bodie Island near the Oregon Inlet. The four opossums, two raccoons, and the free ranging domestic cat were removed from Hatteras Island near Cape Point and Hatteras Inlet.

Table 1: Locations Where Red Fox Were Taken On Bodie Island

	GPS Coordinate	Age/Sex	General Location
1.	N 35.77898 W 075.53748	Juvenile Male	Oregon Inlet
2.	N 35.77917 W 075.53735	Juvenile Male	Oregon Inlet
3.	N 35.81069 W 075.54813	Juvenile Female	Oregon Inlet
4.	N 35.82093 W 075.55222	Juvenile Male	Coquina Beach
5.	N 35.82367 W 075.55443	Juvenile Female	Coquina Beach
6.	N 35.82389 W 075.55421	Juvenile Male	Coquina Beach

Given the sizes of Hatteras and Bodie Islands, the fact that Bodie Island likely has a well established fox population, and depending on the number of fox dens on the Pea Island National Wildlife Refuge on Hatteras Island, continued population management will be necessary. Additional removal efforts are recommended. This residual population will rapidly increase without continued predator management. The weather was more of a factor this year compared to last year. Shifting sand due to high winds and the heavy rains did slow our progress some. The fox were not as active during those days either.

Recommendations for next year would again include two removal efforts. The earlier the better for the initial visit to help reduce some of the dispersal activities to keep our efforts localized and not so spread out due to such a large area to cover. Due to the amount of human and domestic dog activity during the summer we recommend additional removal efforts occur during the winter or early spring when fox will be more active and be more attracted to lures and baits. At this time, the human activity would be considerably lower and some fox calling/shooting activity could be incorporated in addition to trapping efforts. The second visit could then be scheduled during the peak nesting period (if needed) to help

protect new born chicks and turtles. To increase the chances of catching those wandering fox both trips should be at least 10 days each. We recommend obligating funds early to avoid any delays with additional predator management. Unfortunately there were no funds remaining this year. We actually were over spent this year due to the long hours worked. Again we estimate that each 10 day visit for 2 technicians will require approximately \$4,500. Initiating an interagency agreement for \$9,000 would help insure keeping the fox population at an acceptable level to reduce predation on the T&E species.

Locating den sites in the spring and mapping fox sign/activity would again be very helpful for us (see Tables 2 below). Maintaining a tolerable population level on Bodie Island will help reduce the chances of new fox getting onto Hatteras Island.

Table 2: Red Fox Den Sites Found On Bodie Island

	GPS Coordinate	Active/Inactive	General Location
1.	N 35.77903 W 075.53773	Active	Oregon Inlet
2.	N 35.77917 W 075.53747	Active	Oregon Inlet
3.	N 35.82444 W 075.55432	Active	Coquina Beach

We enjoyed working with you and your staff and look forward to assisting you in the future. We hope our efforts met your expectations. If you need further information, please don't hesitate to contact me, toll free at 1-866-487-3297 Ext 224.

Todd Menke  
Supervisory Wildlife Biologist



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July 18, 2003

Marcia Lyons  
National Park Service  
P.O. Box 190  
Buxton, NC 27920

Dear Marcia:

A total of 15 red fox, 3 opossums, and 1 raccoon were taken during the predator management work on Hatteras and Bodie Islands from June 2 -14, 2003. Of those, 14 red fox were removed from Bodie Island which included 3 adult males, 2 adult females, 4 juvenile males, and 5 juvenile females (see Table 1). Another adult male was removed from Hatteras Island near the point (see Table 2). The three opossums and one raccoon were taken near Hatteras Inlet close to the bird cage. Twelve fox were removed using foothold softcatch traps and three were removed by shooting using a rifle.

Table 1: Locations Where Red Fox Were Taken On Bodie Island

	GPS Coordinate	Age/Sex	General Location
1.	N 35.79137 W 075.53736	Juvenile Male	Oregon Inlet
2.	N 35.79137 W 075.53736	Adult Female	Oregon Inlet
3.	N 35.79163 W 075.53751	Adult Male	Oregon Inlet
4.	N 35.79680 W 075.53941	Adult Male	Oregon Inlet
5.	N 35.81395 W 075.55009	Juvenile Female	North Ramp 4
6.	N 35.81395 W 075.55009	Juvenile Female	North Ramp 4
7.	N 35.81395 W 075.55009	Juvenile Female	North Ramp 4
8.	N 35.81395 W 075.55009	Juvenile Male	North Ramp 4
9.	N 35.83896 W 075.56100	Juvenile Male	Ranger Station
10.	N 35.83896 W 075.56100	Juvenile Male	Ranger Station
11.	N 35.83896 W 075.56100	Juvenile Female	Ranger Station
12.	N 35.83896 W 075.56100	Adult Male	Ranger Station
13.	N 35.83896 W 075.56100	Adult Female	Ranger Station
14.	N 35.83896 W 075.56100	Juvenile Female	Ranger Station

Table 2: Location Where Red Fox Was Taken On Hatteras Island

	GPS Coordinate	Age/Sex	General Location
1.	N 35.23145 W 075.54406	Adult Male	Cape Hatteras Point



The adult male removed from Hatteras Island was likely the fox that was left from last year. We saw little to no activity on Hatteras Island and were excited to finally remove the one we were after. However, during the last few days, new activity was noted near Hatteras Inlet. Most of this activity appeared to be young fox. There must be a new den in this area. Red fox do have a large home range. Red fox typically will mate from mid-January to early February. Estrus in the vixen lasts 1 to 6 days, followed by a 51-53 day gestation period. Fox pups can be born from March to May. Red fox generally produce 4 to 9 pups and disperse from denning areas during the fall months to establish new breeding areas in vacant territories. Red fox typically weigh about 7 to 15 pounds.

Given the sizes of Hatteras and Bodie Islands, the fact that Bodie Island likely has a well established fox population, and depending on the number of fox dens on the Pea Island National Wildlife Refuge on Hatteras Island, continued population management will be necessary. Additional removal efforts are recommended. This residual population will rapidly increase without continued predator management. The weather was more of a factor this year compared to last year. Shifting sand due to high winds and the heavy rains did slow our progress some. The fox were not as active during those days either.

Recommendations for next year would again include two removal efforts. The earlier the better for the initial visit to help reduce some of the dispersal activities to keep our efforts localized and not so spread out due to such a large area to cover. The last week of April would likely be the best week for the initial removal effort. The second visit would be more productive during the peak nesting period to help protect new born chicks and turtles which would be sometime in July or August. To increase the chances of catching those wondering fox both trips should be at least 10 days each. Funding was an issue this year so we recommend obligating any end of the year money that may be available now and appropriate enough funds early to avoid any delays with additional predator management. Each 10 day visit for 2 technicians will require approximately \$4,500. Initiating an interagency agreement for \$9,000 would help insure keeping the fox population at an acceptable level to reduce predation on the T&E species.

Locating den sites in the spring and mapping fox sign/activity would again be very helpful for us (see Tables 3 and 4 below). Maintaining a tolerable population level on Bodie Island will help reduce the chances of new fox getting onto Hatteras Island.

Table 3: Red Fox Den Sites Found On Bodie Island

	GPS Coordinate	Active or Inactive	General Location
1.	N 35.78502 W 075.53852	Inactive	Oregon Inlet
2.	N 35.77994 W 075.53475	Active	Oregon Inlet
3.	N 35.81395 W 075.55009	Active	North Ramp 4
4.	N 35.83480 W 075.55972	Active	Coquina Beach
5.	N 35.83896 W 075.56100	Active	Ranger Station

Table 4: Red Fox Den Sites Found On Hatteras Island

	GPS Coordinate	Active or Inactive	General Location
1.	N 35.19632 W 075.73615	Inactive	Hatteras Inlet

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Todd Menke  
Supervisory Wildlife Biologist

