

## SPECIES PROFILE

# Piping Plover

*Charadrius melodus*

**Federal Listing:** Threatened

**State Listing:** Endangered

**Global Rank:** G<sub>3</sub>

**State Rank:** S<sub>1</sub>

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### ELEMENT 1: DISTRIBUTION AND HABITAT

#### 1.1 Habitat Description

“Piping plovers nest above the high tide line on coastal beaches, sandflats at the ends of sandspits and barrier islands, gently sloping foredunes, blowout areas behind primary dunes, sparsely vegetated dunes, and washover areas cut into or between dunes. Feeding areas include intertidal portions of ocean beaches, washover areas, mudflats, sandflats, wrack lines, and shorelines of coastal ponds, lagoons, or salt marshes” (United States Fish and Wildlife Service (USFWS) 1996).

#### 1.2 Justification

Before the Migratory Bird Treaty Act of 1918, unregulated hunting caused the decline of the Atlantic coast piping plover population (USFWS 1996). Since the 1940s, the piping plover population has steadily declined due to increased development along the Atlantic coast. This development boom has increased habitat loss and degradation, human disturbance, and predation, all of which have contributed to species decline. These factors have affected the piping plover along the entire Atlantic coast, from Nova Scotia to North Carolina (USFWS 1985, Haig 1992). Though the piping plover was absent for several years along the New Hampshire coast, it was discovered nesting again in 1996.

The Atlantic coast piping plover population is the

aggregate of many small groups with many breeding sites, with each site having fewer than 10 breeding pairs (A. Hecht, USFWS, personal communication). Therefore, even protecting breeding locations with only a few pairs is crucial to maintaining the integrity of the overall population.

#### 1.3 Protection and Regulatory Status

- Federal Endangered Species Act (ESA) of 1973
- Federal Migratory Bird Treaty Act of 1918
- New Hampshire RSA 212-A:6 IV(a) Endangered Species Conservation Act

#### 1.4 Population and Habitat Distribution

The Atlantic coast piping plover population breeds from Nova Scotia south to North Carolina. They are monogamous and territorial during the breeding season with pairs staying together to help raise their young.

New Hampshire Fish and Game (NHFG) began a piping plover protection effort in 1997. Since then, piping plovers have consistently nested on the beaches and dunes along the Atlantic coast in the towns of Hampton and Seabrook. One to 2 pairs have consistently nested north of Hampton Harbor Inlet and 1 to 5 pairs have consistently nested south of Hampton Harbor Inlet (NHFG data).

#### 1.5 Town Distribution Map

*Not completed for this species.*

#### 1.6 Habitat Map

*See Dune habitat profile*

## 1.7 Sources of Information

Information on piping plover habitat, population distribution and status was collected from recovery plans, USFWS data, NHFG data, scientific journals and the Coastal Sand Dune Systems map produced for this process.

## 1.8 Extent and Quality of Data

Piping plovers have been intensively managed throughout their breeding range along the East coast since their listing under the Endangered Species Act (ESA) in 1986. In New Hampshire, breeding habitat has been managed and piping plovers have been monitored annually since 1997.

## 1.9 Distribution Research

Continue monitoring efforts during the breeding season and continue to participate in the Atlantic Coast annual census.

### ELEMENT 2: SPECIES/HABITAT CONDITION

#### 2.1 Scale

The Coastal Sand Dunes map produced for this process identified 13 habitat patches along the New Hampshire coast. Two of these patches provide suitable piping plover breeding habitat and span approximately 2 miles of the New Hampshire coast. These areas fall within two towns: Hampton and Seabrook. In Hampton, piping plovers have been observed to nest with varying success at Hampton Beach State Park since the Piping Plover Protection Effort began in 1997. Birds have tried to nest on town land but have been unsuccessful.

In Seabrook, suitable habitat occurs along Seabrook Town Beach where plovers have nested consistently since 1997. Although plovers have historically nested in the Seabrook Harbor, no nesting has been documented since 1997.

Sand dunes likely comprised a much greater amount of the immediate coast before the increased development of recent decades. The remaining 10 habitat patches identified by the Coastal Sand Dunes mapping process are primarily state owned areas (i.e. State Parks). These areas provide potential locations

for dune habitat restoration.

#### 2.2 Relative Health of Populations

Piping plovers that breed along the New Hampshire coast are part of the greater Atlantic Coast population. The Atlantic Coast population will be considered recovered when 2,000 breeding pairs are maintained for 5 years and are distributed throughout 4 recovery units, as delineated by the USFWS Piping Plover Atlantic Coast Population Revised Recovery Plan (1996). As of 2003, the Atlantic coast population was 324 pairs short of that goal (USFWS 2004a).

New Hampshire falls within the New England recovery unit that must achieve and maintain 625 breeding pairs to meet the recovery goal (USFWS 1996). This goal was attained in 1998 when 627 breeding pairs were recorded. Each year since, the goal has been met or exceeded, except for 1999 and 2000 when the total count dropped by 3 and 4 pairs respectively (see table 1) (USFWS 2004a). Preliminary estimates for 2004 indicate 659 pairs for the New England recovery unit (USFWS 2004b).

According to population monitoring by S.M. Melvin and J.P. Gibbs (1994), a minimum of 1.24 chicks fledged per pair is necessary to maintain a stationary population. However, the USFWS Piping Plover Atlantic Coast Population Revised Recovery Plan states that a higher productivity rate of 1.50 chicks fledged per pair is necessary to prevent extinction and maintain a population of 2000 breeding pairs (USFWS 1996).

Since 1997, when the Piping Plover Protection Effort began in New Hampshire, between 5 and 7 pairs have nested annually along the coast and have fledged a total of 72 chicks. Productivity for piping plovers in New Hampshire has varied between 0.1 and 2.7 chicks fledged per pair each year with the average productivity totaling 1.5 between 1997 and 2004.

#### 2.3 Population Management Status

Piping plovers are monitored each year throughout the breeding season. Nest sites are located and protected from trampling and predation with fenced enclosures. Chicks are monitored daily from hatching to fledging, and recreational activities are managed in breeding areas to prevent disturbance. Beach management activities such as beach raking and boardwalk

maintenance are coordinated with local, town, state and federal officials.

## 2.4 Relative Quality of Habitat Patches

Thirteen habitat patches are identified in the Coastal Sand Dunes map produced for this process. Of these, 3 are known to provide suitable habitat and to be occupied by breeding piping plovers. The remaining 10 habitat patches either provide potential habitat or feeding areas or are potential dune habitat restoration locations.

## 2.5 Habitat Patch Protection Status

Three of the habitat patches identified in the Coastal Sand Dunes map created for this process are known piping plover breeding areas and are protected under Federal and State Threatened and Endangered Species Laws (see element 1.3 above). The remaining 10 habitat patches identified are state owned lands, primarily State Parks, and are open to the public for recreational uses. Coastal sand dune systems are protected under the Federal Coastal Zone Management Act (1972) and NH RSA 482-A pertaining to Fill and Dredge in Wetlands. Refer to the Dune habitat profile for more information.

## 2.6 Habitat Management Status

In areas where piping plovers are known to occur, habitat management protects nesting areas during the breeding season. Management activities include fencing suitable habitat areas during the breeding season, restricting motorized vehicle use and coordinating beach management activities, such as beach raking and boardwalk maintenance. Habitat management is conducted by NHFG according to USFWS Atlantic Coast Piping Plover Population Revised Recovery Plan guidelines and in cooperation with town officials.

Coastal sand dune systems are managed by local towns and New Hampshire State Parks, and are managed primarily for recreation. For more information on coastal sanddune system habitat management, refer to the Dune habitat profile.

## 2.7 Sources of Information

Information on habitat protection and management was obtained from NHFG piping plover monitoring data and annual reports, personal communication, and the Dune habitat maps created for this process.

## 2.8 Extent and Quality of Data

Piping plovers have been intensively managed throughout their breeding range along the East coast since their listing under the Endangered Species Act (ESA) in 1986. In New Hampshire, occupied breeding habitat has been managed, and piping plovers have been monitored annually since 1997.

Information on the location of coastal sand dunes and associated natural plant communities is available from New Hampshire Natural Heritage Inventory (NHNHI). However, there is a lack of information available about the overall health and condition of coastal sand dune systems and piping plover breeding habitat.

## 2.9 Condition Assessment Research

Continue monitoring to determine annual productivity.

## ELEMENT 3: SPECIES AND HABITAT THREAT ASSESSMENT

### 3.1.1 Recreation

#### A) Exposure Pathway

Coastal sand dune systems comprise less than 2 miles of the State's 18.57 miles of shoreline (New Hampshire DES 2004, Coastal Sand Dune Systems habitat map). These limited dune areas not only provide suitable habitat for breeding piping plovers, but they also receive severe pressure from human recreational activities, including sunbathing, swimming, jogging, dog walking, kite flying, volleyball, jet skiing, surfing and fishing. Human presence in coastal sand dunes leads to increased disturbance, increased stress, reduced productivity and direct mortality of breeding piping plovers and their chicks. Human disturbance causes plovers to flush from nests, which results in less incubation time and exposes eggs to extreme temperatures. When this happens, eggs may no lon-

ger be viable, or they may not develop fully, and this can lead to the adults abandoning the nest. Human presence can also cause direct mortality, as when nests or chicks are trampled. Furthermore, human refuse attracts predators, causing increased disturbance, increased stress, reduced productivity and direct mortality of breeding piping plovers.

(B) Evidence:

During summer 2003, Hampton Beach State Park reported 122,890 visitors (J. Lyons, New Hampshire Department of Resource and Economic Development, personal communication). Such intense usage is clearly problematic, since disturbance of piping plovers by humans and their pets is one of the primary reasons for their listing under the Endangered Species Act. Nor are visitor numbers likely to fall. Beach walking is the second most popular recreational activity, and as populations rise, beach usage will increase proportionately (NSRE 1994). Thus, if human recreational activities are not effectively managed in piping plover breeding areas, it is unlikely that piping plovers will successfully breed.

### 3.1.2 Recreation (Off Road Vehicles)

(A) Exposure Pathway

Although only beach cleaning equipment and essential vehicles are allowed on New Hampshire beaches, these vehicles can crush piping plover eggs, chicks and adults. Removal of human-created trash on the beach is desirable to reduce predation threats, but the indiscriminate nature of mechanized beach cleaning adversely affects piping plovers and their habitat. In addition to the danger of direct crushing of piping plover nests and chicks and the prolonged disturbance from the machine's noise, this method of beach cleaning removes the birds' natural wrackline feeding habitat (Eddings and Melvin 1991, Howard et al. 1993).

(B) Evidence:

The USFWS (1996) has identified unrestricted motorized vehicles as a serious threat to piping plovers and their habitats. Piping plover mortality due to motorized vehicles has been well documented throughout its breeding range. In New Hampshire, there is one documented instance and several suspected instances of piping plover mortality due to

motorized vehicles (New Hampshire Fish and Game unpublished data).

Soon after hatching, chicks are very mobile, moving between intertidal zones and dunes and along the length of beaches. This errant nature, combined with the chicks' inability to fly, leaves them particularly vulnerable to injury by motor vehicles. Vehicles also significantly degrade piping plover habitat or disrupt normal behavior patterns. They may harm or harass plovers by crushing wrack into the sand and making it unavailable as cover or a foraging substrate (Hoopes et al. 1992, Goldin 1993), by creating ruts that can trap or impede movements of chicks (USFWS 1996).

### 3.1.3 Predation and Herbivory (Subsidized or Introduced Predators)

(A) Exposure Pathway:

Piping plovers face a variety of predators, both natural and domesticated. Known predators of piping plovers, their eggs, and chicks along the New Hampshire coast include fox, striped skunk, crows, ravens, gulls, common grackles, and domestic and feral dogs and cats. Domestic dogs in particular pose significant threats to breeding plovers in New Hampshire. Although dogs are prohibited on Town beaches and State Park beaches between Memorial Day and Labor Day, a lack of enforcement allows dogs to be walked daily. Additionally, many property owners along Seabrook Town Beach are summer residents who bring their cats and leave them outside for the summer to roam freely. Some property owners in both Seabrook and Hampton even provide feeding stations for feral cats, thus increasing the risk of predation in piping plover breeding areas. Meanwhile, other birds such as the herring, great black backed and ring billed gulls encroach on piping plover territory and may cause them to abandon their nests (USFWS 1996).

(B) Evidence

Predation is a major and well-documented threat to piping plover reproductive success along the Atlantic coast (Burger 1987, MacIvor 1990, Patterson et al. 1991, Cross 1991, Elias-Gerken 1994). Likewise, evidence is plentiful that human activity has caused predation pressures to increase (USFWS 1996).

In New Hampshire, gulls, cats, and dogs are the most commonly observed predators, with feral cats

and domestic dogs posing the most significant threats to piping plover productivity and survival. Cats have been documented in piping plover breeding areas at both Hampton and Seabrook, and cats are the suspected cause of the death of several chicks and at least 1 adult. Dogs have been observed running freely through areas restricted for piping plovers, defecating and flushing piping plovers along the beaches. (NHFG, unpublished data). Similarly, large flocks of gulls have been observed feeding in piping plover breeding habitat, thus preventing plovers and their chicks from foraging.

### 3.1.4 Development

#### (A) Exposure Pathway

See Dune habitat profile, Element 3 section 3.1.2 Development (Habitat Loss and Conversion)

#### (B) Evidence

See Dune habitat profile, Element 3 section 3.1.2 Development (Habitat Loss and Conversion)

### 3.2 Sources of Information

Information on piping plover threats was taken from the USFWS Atlantic Coast Piping Plover Population Revised Recovery Plan, NHFG data, scientific journal articles, and personal communications and observations.

### 3.3 Extent and Quality of Data

Threats to breeding piping plovers along the Atlantic Coast have been cited as reasons for the species listing under the Endangered Species Act and have been well documented throughout their breeding range.

### 3.4 Threat Assessment Research

Potential threat assessment research would accomplish the following:

- Evaluate different management practices to determine the most effective human use management strategies in piping plover breeding areas
- Investigate different predator control methods and implement a predator control management protocol

- Identify and obtain funding to support a part time animal control officer to patrol beaches and enforce animal control laws and possibly carry out predator control management protocol
- Work with town officials to determine necessary actions and begin enforcing town regulations regarding use of unofficial pathways over dunes/ town property during piping plover breeding season

## ELEMENT 4: CONSERVATION ACTIONS

### 4.1.1 Improve enforcement of existing laws and regulations, Regulation and Policy

#### (A) Human disturbance

#### (B) Justification

- Enforcement of existing laws will reduce human disturbance to breeding piping plovers by reducing the number of dogs in the breeding areas and reducing human foot-traffic on unofficial paths over the dunes.
- Reducing human disturbance to breeding piping plovers will reduce the amount of time incubating birds are disrupted from the nests, reduce the occurrences of nest abandonment, reduce the risk of eggs/chicks being trod on by humans and their pets and thus foster increased productivity.
- Improving enforcement of existing laws and regulations should be focused on the breeding areas.
- Improving enforcement of existing laws and regulations should be maintained year round for consistency. Enforcement should increase during the breeding season, which corresponds with peak human recreational activities.

#### (C) Conservation Performance Objective

Improve enforcement of existing laws and regulations to increase annual productivity among breeding piping plovers by reducing disturbance from humans and their pets. Successful reduction of human disturbance will be indicated by a reduction of the number of people walking dogs on the beaches, a reduction of the number of unofficial paths leading from private residences over the dunes and into breeding areas and a reduction in the frequency of use of fireworks on the

beaches at night.

(D) Performance Monitoring

Daily monitoring of piping plovers during the breeding season will continue, and will include information about the number, location, and activities of the birds as well as documentation of human disturbance and its effect on breeding piping plovers.

(E) Ecological Response Objective

The desired ecological response to improved enforcement of existing laws and regulations is to maintain productivity at 1.50 or more chicks fledged per pair each year. This level of productivity will sustain a population of 625 breeding pairs in the New England region and will contribute to the desired 2000 breeding pairs in the Atlantic Coast piping plover population, as outlined in the Atlantic Coast Piping Plover Revised Recovery Plan of 1997, by the USFWS.

(F) Response Monitoring

See section D above.

(G) Implementation

The New Hampshire Fish and Game, together with the USFWS and local officials at the town level should find funding for additional personnel to enforce existing town regulations and state and federal endangered species laws. Enforcement should be carried out year-round with an increase in enforcement during the summer months to correspond with piping plover breeding and the peak of recreational beach use.

(H) Feasibility

The expertise to improve enforcement of existing laws and regulations exists at the town, state and federal levels. However, lack of personnel and funding to support additional personnel has prevented adequate enforcement of town laws and state and federal endangered species laws.

#### 4.1.2 Education and Outreach to residents, day visitors, community and town officials, Education and Outreach

(A) Human disturbance and Predation

(B) Justification

- Education and outreach to residents, day visitors, community and town officials will help to reduce human disturbance of breeding piping plovers by raising awareness. It will also reduce predation by reducing the number of feral cats, domestic cats and dogs and the number of people who feed gulls on the beach.
- Reducing human disturbance will increase productivity and survivorship among piping plovers by reducing the amount of time incubating birds are disrupted from the nests and reducing the occurrence of nest abandonment.
- Reducing the number of predators on beaches will reduce the risk of eggs and chicks being stepped on by humans and their pets and reduce the number of chicks that are lost to predation.
- Education and outreach should be targeted to town officials, members of the local communities, and day visitors to beaches to raise awareness, understanding, and support.
- Education and outreach should be conducted year round. Education programs with the local schools and meetings with town officials should be conducted in the off-season to raise awareness and support among the community. Outreach to residents who live directly along the beaches should be conducted just before the start of each breeding season to raise awareness. Education and outreach to day visitors should be conducted during the summer months when plovers are breeding and most people visit beaches.
- Education and outreach efforts will consist of direct contact and involvement with members of the local communities and those who use New Hampshire beaches for recreation. Public attitudes towards piping plovers will be learned, and this information will be used to guide management activities. Furthermore, education and outreach efforts should lead to greater community involvement in the management of piping plovers and their breeding areas.

(C) Conservation Performance Objective

To support breeding piping plovers by increasing community awareness of, and involvement in, the protection and management of this endangered species that occurs in their back yard.

(D) Performance Monitoring

Observe use of beaches for a decrease in human and animal activity during breeding plover breeding season. Increase the number of people from local areas volunteering to monitor plovers.

(E) Ecological Response Objective

The desired ecological response is greater productivity for each breeding season.

(F) Response Monitoring

- Observe and record the number of volunteers from the local communities for an increase in involvement.
- Observe use of beaches and plover breeding areas for a decrease in the number of domestic pets observed.
- Monitor breeding piping plovers and recording productivity for increases in productivity.

(G) Implementation

- Continue posting signs along areas closed for piping plover breeding areas.
- Create and install educational displays at all main beach entrances.
- Give an informative presentation to town officials, local conservation commissions, community groups involved in beach management, local police departments, state parks personnel and feral cat feeding program coordinators.
- Create mini-presentations for day visitors at beaches, including a guided walk to observe piping plovers.
- Create and distribute an informational packet mailing to all residents who live along piping plover breeding areas.
- Create an educational program to be used in local schools and organize student involvement in monitoring and management on the beaches.
- Recruit, train, and maintain piping plover volunteer monitors.

(H) Feasibility

NHFG has been constrained by limited funds for plover monitoring and management and the creation of education and outreach programs. To date, funding has been used to hire one temporary seasonal

piping plover monitor. This position involves carrying out the logistics of monitoring plovers, managing breeding areas, coordinating volunteer efforts and coordinating beach management activities between local, town, state and federal groups.

**4.1.3 Institute temporary closures of piping plover breeding areas, Restoration and Management, Habitat Protection, Regulation and Policy.**

(A) Human disturbance, Motorized vehicles and Predation

(B) Justification

- Closing piping plover breeding areas will eliminate all forms of human disturbance and predation by domestic dogs and will eliminate all use of motorized vehicles in the breeding areas, thus fostering a more productive breeding environment.
- Eliminating human disturbance and motorized vehicles and reducing the number of predators present in the breeding areas will have a direct positive impact on the survivorship and productivity of breeding piping plovers.
- Areas targeted for closure during the breeding season should include the NHFG property on the south side of the Seabrook-Hampton Bridge on Seabrook Harbor and the southernmost dune at the south end of Hampton Beach State Park near the jetty. Areas of Seabrook Town Beach should be considered as well.
- Closures of piping plover breeding areas should be in place between 15 March and 31 August. Areas may be reopened sooner than 31 August, as determined by observations of fledging by the piping plover monitor.
- Areas designated for closure during the breeding season will be monitored. If no birds use 1 or more of the designated areas, then those areas may be opened.

(C) Conservation Performance Objective

Eliminate disturbance by humans, their pets and motorized vehicles to allow this federally endangered and state threatened species space to perform courtship, nest and raise its young through complete closures of designated piping plover breeding areas on an annual basis

(D) Performance Monitoring

Monitoring will continue as outlined in the USFWS guidelines in both areas designated as closed for plover breeding and areas left open to human uses where piping plovers breed.

(E) Ecological Response Objective

The desired ecological response to closure of piping plover breeding areas is the maintenance of between 1.24 and 1.50 chicks fledged per pair each year. When this is achieved, New Hampshire will be contributing to the population of 2,000 breeding pairs along the Atlantic Coast, as outlined in the USFWS revised recovery plan.

(F) Response Monitoring

Areas closed for piping plover breeding will be monitored, as will areas left open to human use. Productivity will be compared between the two areas and calculated for the entire New Hampshire coast to determine whether productivity goals are being met and maintained.

(G) Implementation

NHFG, together with the USFWS, New Hampshire Audubon and other conservation organizations should decide on a plan of action for habitat restoration at the New Hampshire Fish and Game owned land on Seabrook Harbor. This coalition should begin to identify steps and strategies to work with other state agencies (i.e. Division of Resource and Economic Development – State Parks Department) and town officials to determine what actions need to be taken to institute temporary closures of piping plover breeding areas on State and Town owned lands.

(H) Feasibility

NHFG-owned land on Seabrook Harbor is the most feasible area for closure. However, this area requires habitat restoration work to make it suitable breeding habitat and therefore would not be the most appropriate for immediate consideration. Closure of the southernmost section of Hampton Beach State Park is the most appropriate area for immediate consideration because it is state-owned land that has supported breeding piping plovers consistently since 1997. This area also would be appropriate because of its minimum impact on human recreational uses. Closure of the breeding areas at Seabrook beach may

be appropriate because these areas have supported breeding piping plovers since 1997. However, these areas will be more difficult to close because of their proximity to towns and the potential negative repercussions from disgruntled beach-goers.

**4.1.4 Institute predator control protocol, Regulation and Policy**

(A) Predation

(B) Justification

- Instituting a predator management protocol will enable action to be taken during the breeding season to control predators in piping plover breeding areas.
- Controlling predators in piping plover breeding areas will help to reduce the number of eggs, chicks and adults lost to predation and will increase productivity.
- Predator control should be instituted in piping plover breeding areas.
- Predator control should be conducted year round. Removal of predators from the breeding areas prior to and throughout the breeding season are crucial to plover nesting success.
- Predator control will only be carried out if evidence of predators is observed in the breeding areas and control will be targeted to the areas where predators are present.

(C) Conservation Performance Objective

The objective of instituting predator control protocol is to increase productivity among breeding piping plovers.

(D) Performance Monitoring

Monitoring of breeding piping plovers and management of breeding areas will continue as outlined in the USFWS Atlantic Coast Piping Plover Population Revised Recovery Plan.

(E) Ecological Response Objective

Reduce the number of eggs, chicks and adults lost to predation and observe an increase in New Hampshire's piping plover productivity each breeding season.

(F) Response Monitoring

Piping plovers and their breeding areas will con-

tinue to be monitored. The number and frequency of predators and the number of eggs, chicks, and adults lost to predation will continue to be observed and recorded. Piping plover productivity will continue to be determined each breeding season.

#### (G) Implementation

NHFGt must take action immediately to implement the most appropriate predator control in piping plover breeding areas. Options to consider include acquiring funding to provide for animal control in piping plover breeding areas, acquiring funding to hire a Departmental part time animal control person, contracting with a private wildlife control operator, or entering into an agreement with the U.S. Department of Agriculture, Wildlife Services.

#### (H) Feasibility

On town-owned lands, predator management has been the responsibility of local police departments' animal control officers and has been conducted as requested by the piping plover monitor. However, due to lack of funding, equipment, personnel, and animal control requests, local police departments do not effectively control predators in piping plover breeding areas. On state-owned lands where piping plovers nest, no predator control has taken place.

Despite these shortcomings, NHFG has the authority and the connections with USDA Wildlife Services to enter into agreements for instituting predator control in piping plover breeding areas. Although Wildlife Services has the personnel, the equipment, and the expertise to carry out effective predator control in piping plover breeding areas, controversy among local community members has kept New Hampshire Fish and Game from entering into any agreement with Wildlife Services.

### 4.1.5 Manage motorized vehicle use, Habitat Protection, Regulation and Policy.

#### (A) Motorized vehicles

#### (B) Justification

- Managing motorized vehicle use in piping plover breeding areas will reduce mortality of eggs, chicks and adults during the breeding season and will help to protect piping plover breeding habitat year

round.

- Successful management of motorized vehicle use will be evident in the survivorship and productivity of breeding piping plovers and in the overall health of the coastal sand dune habitat.
- Management of motorized vehicles should be targeted at coastal sand dune systems, including known and potential piping plover breeding areas.
- Motorized vehicles should continue to be managed as outlined in the USFWS Atlantic Coast Piping Plover Population Revised Recovery Plan.
- Daily monitoring of breeding piping plovers and management of breeding areas, combined with partnerships between town, state and federal officials in beach management will allow for adjustments to be made to vehicle use on beaches as necessary.

#### (C) Conservation Performance Objective

The objective of managing motorized vehicles is to increase productivity of breeding piping plovers along the New Hampshire coast.

#### (D) Performance Monitoring

Observation of motorized vehicles use will continue as part of the daily monitoring of breeding piping plovers and the management of breeding areas. NHFG will continue to work with town, state and federal officials involved in beach management activities to coordinate motorized vehicle use on beaches and in piping plover breeding areas.

#### (E) Ecological Response Objective

Increase piping plover productivity and protect breeding habitat areas.

#### (F) Response Monitoring

Daily observation and monitoring of breeding piping plovers and their habitat will result in documented occurrences of motorized vehicle use in breeding areas. NHFG will continue to coordinate beach management activities in piping plover breeding areas between town, state, and federal officials.

#### (G) Implementation

NHFG should continue to carry out monitoring and management as outlined in the USFWS Atlantic Coast Piping Plover Population Revised Recovery Plan. In addition, NHFG should revise existing

wording on lobster regulations. Currently, licensed lobstermen are allowed to drive on New Hampshire beaches to look for and retrieve lobster traps that wash ashore after storms. This regulation should be reworded to enact a restriction on all vehicle use, including licensed lobstermen, during the piping plover breeding season.

(H) Feasibility:

NHFG has been working since 1997 with all public employees and officials in order to manage motorized vehicle use in piping plover breeding areas. These efforts have been carried out under the USFWS guidelines and should continue. NHFG has the authority, the staff and the expertise to change wording of regulations affecting fish and wildlife management in the state. Action should be taken as soon as possible to make the necessary revision permitting licensed lobstermen to drive on beaches.

#### 4.2 Conservation Action Research

Due to growing human populations and increasing recreation and development pressures, effective management of piping plovers and their breeding areas is vital to their existence. Research should be conducted to consider different approaches for managing piping plover breeding areas.

### ELEMENT 5: REFERENCES

#### 5.1 Literature:

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- USFWS. 2004b. Preliminary 2004 Atlantic Coast Piping Plover Abundance and Productivity Estimates. <<http://www.fws.gov/northeast/pipingplover/status/preliminary.04.pdf>>. Accessed 2005 March 26.

## 5.2 Data Sources:

Table 1. USFWS. Piping Plover Atlantic Coast Population, Annual Status Report 2002-2003 accessed 3.21.05 <http://www.fws.gov/northeast/pipingplover/status/index.html>

## ELEMENT 6: LIST OF FIGURES

Table 1. Summary of Atlantic Coast Piping Plover Population Estimates, 1989 to 2003

STATE/REGION	PAIRS	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Goal
Maine	16	17	18	24	32	35	40	60	47	60	56	50	55	65	61		
New Hampshire									5	5	6	7	7	7	7		
Massachusetts <sup>e</sup>	137	140	160	213	289	352	441	454	483	495	501	496	495	538	511		
Rhode Island	19	28	26	20	31	32	40	50	51	46	39	49	52	58	71		
Connecticut	34	43	36	40	24	30	31	26	26	21	22	22	32	31	37		
NEW ENGLAND	206	228	240	297	376	449	552	590	612	627	624	623	641	699	687	625	
New York <sup>d</sup>	191	197	191	187	193	209	249	256	256	245	243	289	309	369	386		
New Jersey	128	126	126	134	127	124	132	127	115	93	107	112	122	138	144		
NY-NJ REGION	319	323	317	321	320	333	381	383	371	338	350	401	431	507	530	575	
Delaware	3	6	5	2	2	4	5	6	4	6	4	3	6	6	6		
Maryland	20	14	17	24	19	32	44	61	60	56	58	60	60	60	59		
Virginia	121	125	131	97	106	96	118	87	88	95	89	96	119	120	114		
North Carolina	55	55	40	49	53	54	50	35	52	46	31	24	23	23	24		
South Carolina		1	1		1			0					0				
SOUTHERN REGION	199	201	194	172	181	186	217	189	204	203	182	183	208	209	203	400	
U.S. TOTAL	724	752	751	790	877	968	1150	1162	1187	1168	1156	1207	1280	1415	1420	1600	
ATLANTIC CANADA	233	229	234	234	234	181	208	186	197	212	240	231	245	275	256	400	
ATLANTIC COAST	957	981	985	1024	1111	1149	1358	1348	1384	1380	1396	1438	1525	1690	1676	2000	

Table 1. Summary of Atlantic Coast Piping Plover Population Estimates, 1989 to 2003

## Distribution of Piping Plover in New Hampshire

Distribution  
■ Known



0 10 20 40 Miles

Known = confirmed breeding observations as reported in the NH  
Natural Heritage Bureau's Element Occurrence Database

