

ENDANGERED SPECIES

Technical Bulletin Reprint

Wildland Management Center
School of Natural Resources
The University of Michigan

Managing Different Populations of a Species: The Case of the Piping Plover

by Stephen Brown

Each species which has been listed as threatened or endangered by the USFWS is limited by unique problems. Many rare species which exist in relatively localized areas face similar problems throughout their range. This means that management programs designed for one location are often appropriate for the whole population.

But the Piping Plover (*Charadrius melodus*) faces very different circumstances. There are four major breeding populations of this small shorebird. Because each population lives in different habitats, there is a wide variety of limiting factors which may be important to understand and control if the species is to recover.

This issue of the Reprint will examine the major problems facing the Piping Plover and the various management efforts which are being made on its behalf. We will also consider the unique problems which limit the recovery of each major breeding population.

In the last several decades, both the range and the population density of the Piping Plover have markedly declined. For example, early accounts of Great Lakes populations suggest that plovers were fairly common, numbering between 500 and 680 pairs. In 1985 there were only 19 pairs in the state of Michigan. While there is much uncertainty as to the historic range and population size of the species, it is clear declines have occurred throughout its present range.

The Piping Plover nests in the central plains provinces in Canada, the northern plains states in the U.S., the Great Lakes basin, and along the Atlantic coast from the north shore of the Gulf of St. Lawrence south to

Virginia. The Canadian population and the Great Lakes population have officially been designated as endangered, and the Piping Plover is considered threatened everywhere else that it is found. Wintering grounds range from South Carolina to Florida, and westward along the Gulf of Mexico. The Canadian population is estimated at approximately 1500 pairs, while the total population in the U.S. is about 2000. The largest breeding populations exist in North Dakota and Saskatchewan. Since these populations are the largest, we will consider them first.

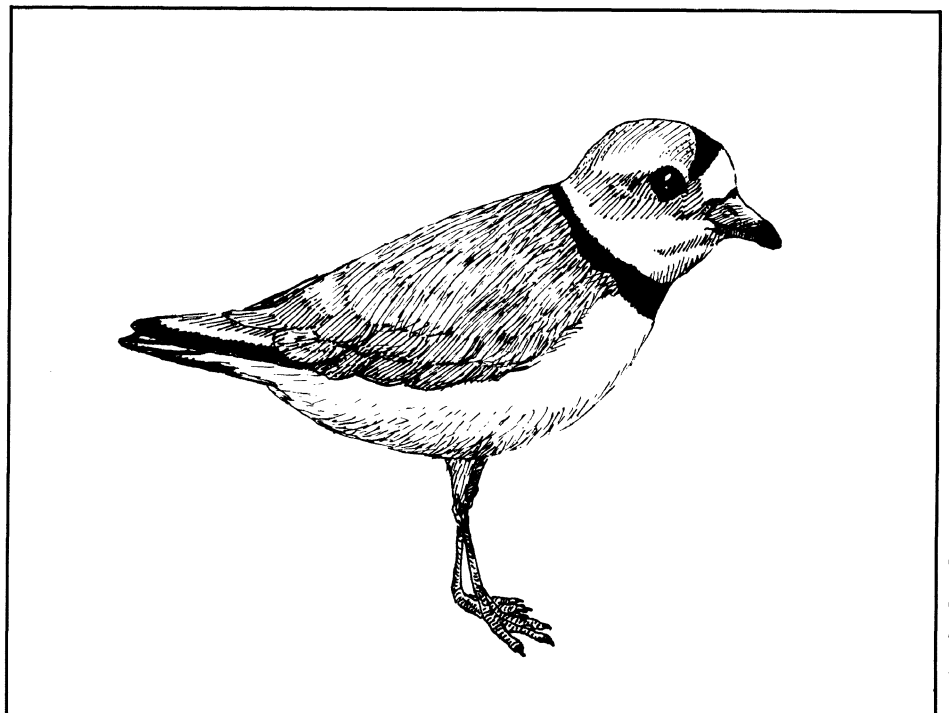
Central Plains Provinces

Susan Haig, working at the University of North Dakota, has probably studied the Piping Plover throughout

a greater portion of its range more than any other individual. She is a member of Piping Plover Recovery Teams in both the U.S. and Canada. Together with the Delta Waterfowl and Wetlands Research Station, she has begun the enormous task of compiling records of individual sightings and studies of plovers from throughout the country. In her report to the Committee on the Status of Endangered Wildlife in Canada, Haig indicates several major problems faced by Piping Plovers.

One of the most vulnerable life history stages of any species is during reproduction. Piping Plovers nest on open beach areas, and so are extremely sensitive to fluctuations in water levels. Where unvegetated

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Drawing by Sue Brown

The endangered Piping Plover: only 19 pairs remain in the State of Michigan.

Piping Plover continued

beach suitable for nesting is limited, plovers are forced to nest close to the water's edge, and their nests are often destroyed by storms. Haig also reports that plovers in the plains provinces of Canada are subjected to destruction by predators and threatened by proposed water development projects. One factor in the plover's favor throughout this region, however, is that human disturbance of nesting sites is much less of a problem than in more heavily populated areas.

Northern Plains States

This population is the southern extension of the Central Plains population, and the two are distinct only insofar as the habitats in which they nest differ. One researcher working in this region is Eleanor Prindiville of the University of Missouri. She reports that the population she studies in North

Dakota numbers about 140 to 200 adults. She has identified several problems which her population has in common with most others, particularly high losses of eggs to predators. But in addition, she suggests that this population may be limited by available nesting habitat. She found that when a drought lowered the water levels near breeding sites, causing the beach area to expand substantially, the percentage of adults which did not breed declined. This suggests that in years when water levels are high, some plovers are unable to breed because appropriate habitat is limited.

Several of Prindiville's co-workers at the University of Missouri are responding to this problem by testing the effects of artificial increases in available habitat. They will experiment with adding gravel and inhibiting the growth of vegetation on possible nesting sites to increase the attractiveness of the habitat to Piping Plovers. But despite the problems in this region, this large population, which is still able to breed successfully, is perhaps the most stable of the sub-populations of the Piping Plover.

Unlike the large populations in Canada and North Dakota, Piping Plovers in much of the midwest nest in very small groups. One small population in Iowa is being studied by Barb Wilson, and it provides a good example of the diversity of habitats which Piping Plovers use for nesting. These birds make their home during the breeding season on large flat areas created by the dumping of fly ash from coal-fired power plants. Because the material is highly alkaline, vegetation cannot become established and the problem of progressive encroachment of plants onto good habitat does not occur. The main problem facing this population is that the habitat itself is shortlived. Fly ash ponds are eventually dredged when the storage capacity for ash is exhausted and the plant needs to create more room for dumping. Wilson says it is unlikely that the plovers will be able to maintain their precarious position during this process, even though the manager of the plant is willing to cooperate when possible. But at least for the time being, this small population of Piping Plovers has reasonably good reproductive success.

Great Lakes Basin

The population of plovers in the Great Lakes region has undergone a drastic decline, as noted above. But because there is very little information about the early years when the birds in this area were breeding more successfully, it is difficult to pinpoint the problems which are the most critical. Ed Pike, the Chairman of the Recovery Team in the Great Lakes Region, has been working with the Michigan population for many years. He is currently heading the effort to create a management program for the Piping Plover in Michigan. However, there are many threats which face this sub-population.

In recent years the Great Lakes water levels have been at a record high. This has exacerbated the problem of limited habitat for nesting because higher water levels mean higher waves during storms and a smaller portion of beach where nests can survive. In addition, the presence of humans may attract artificially high numbers of predators, increasing the number of nests destroyed. Human presence can also affect the birds directly. In contrast to the more isolated areas in North Dakota and Canada, the shoreline of Michigan is popular for recreation. Tom Allan of Lake Superior State College is studying the effects of disturbances caused by people walking near nests. Studies in Nova Scotia have indicated that productivity is higher on undisturbed beaches. The increase in use of Michigan shoreline will probably pose an increasing threat to the Piping Plover.

Atlantic Coast

Recreational use is probably the most widespread problem for the sub-population on the Atlantic coast. Human use of beaches for recreation is extremely high, and more direct methods of protecting Piping Plover nests from people and from off-road vehicles are often necessary. The proceedings of the Piping Plover and Least Tern Management Workshop for Northeastern States, which was held in 1984, describe many such protection efforts. One example of these efforts involved erecting fencing of various types around the nesting areas

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A forum for information
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Publication of the *Reprint*
is made possible by gifts from

American Natural Resources Co.
Detroit, Michigan

Chevron U.S.A., Inc.
San Francisco, California

Chicago Zoological Society
Chicago, Illinois

National Wildlife Federation
Washington, D.C.

Annual Subscriptions for the *Endangered Species Technical Bulletin Reprint* are \$12.00. (Canada: \$17 US) Send check or money order (made payable to: The University of Michigan) to:

Endangered Species Technical Bulletin
School of Natural Resources
The University of Michigan
Ann Arbor, MI 48109-1115

Piping Plover continued

in order to reduce accidental damage to nests from people walking on the beach. These have proven quite effective where large numbers of people are likely to walk near nests, but there has been some concern that the fences actually attract curious onlookers whose presence may disturb the incubating adult birds.

One potential problem on the east coast is that many different groups are attempting to manage and protect small populations of plovers all along the coast. Each group has unique goals, resources, and opinions about the best methods to preserve breeding populations of plovers. This poses an unusual challenge in endangered species management. There is an increased need for sharing information and techniques among the agencies and organizations in order to provide a consistent, effective management program for the species as a whole.

For example, one of the problems which all four regions we have discussed share, at least to some degree, is human disturbance. But in many cases, the areas where plovers nest are prime recreational sites. This creates conflict among the many people and organizations responsible for managing the area. Cooperation regarding these conflicting priorities will be essential in planning for the recovery of the species.

Unlike many endangered species which have contiguous geographical ranges, the Piping Plover nests in many different kinds of habitats, and each location has unique limiting factors. In addition, there appear to be serious problems on the Gulf Coast wintering grounds used by the plovers, such as beach development. Still, there are positive signs that interest in the Piping Plover is increasing, and that greater support is becoming available for management of the species. For example, the Michigan Department of Natural Resources' Living Resource Program has designated the Piping Plover as its 1985-6 symbol, and has made significant funding available for management and research efforts.

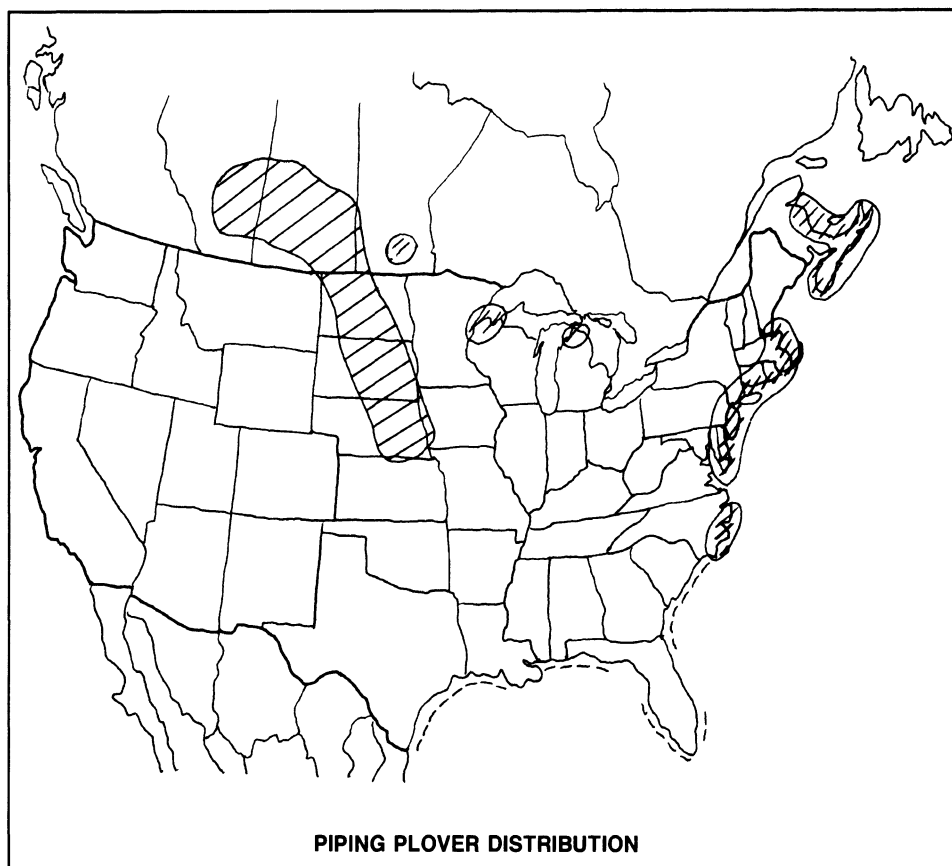
The challenge facing those who would protect the species is to coordinate the sharing of information so that management efforts can be guided by previous successes and failures,

and so that research efforts address priority problems. The clearinghouse program at the Delta Waterfowl and Wetlands Research Station is a model of this kind of cooperation. Only through unusual efforts such as this can the unusual challenge of preserving the Piping Plover be met.

(Editor's Note: Anyone interested in more information about the Piping Plover, the information presented here, or the people described in this article, should contact the author through the *Endangered Species Technical Bulletin* Reprint office.)

Stephen Brown is currently a Master's of Science student in the Resource Ecology Program at the University of Michigan School of Natural Resources. He is conducting research on a small population of Piping Plovers in northern Michigan.

Diane Debinski, a Master's student studying endangered species policy, contributed to this article.



Resources . . .

Species, the IUCN Species Survival Commission's newsletter, is now available by subscription. All members of the SSC and Specialist Groups will continue to receive a free copy of each issue. For a subscription, send name and address, together with a check/band draft/international money order US\$15.00 for one year (2 issues); payable to the Chairman's Account: SSC Executive Office, IUCN, 1196 Gland, Switzerland.

To Our Readers . . .

Thank you for your astounding response to the survey that was sent out in late February. Sixty-two percent of you have returned completed surveys; and many of the surveys have excellent comments and suggestions that will really help the staff in making the *Reprint* a publication that better meets your needs.

One of the more consistent criticisms which is surfacing in the survey results is the excessive time delay in getting the *Reprint* into your hands. Part of the delay is simply the time it takes for the US Fish and Wildlife Service to get their flats back from the printer and mail them to Michigan; part of the delay, however, is in getting the copy for the *Reprint* portion of the *Bulletin* together. Getting people to write articles and send in announcements and other information can be like pulling teeth at times. We need materials from you, the largely non-governmental endangered species community, to make our production of the *Reprint* a more timely and useful activity. Please don't hesitate to contact me if you have story ideas or information which you feel people involved with endangered species should know. Thank you for your interest and support of this publication.

Paul Larmer
Reprint Editor

April 1986

Vol. 3, No. 6

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