

**STATUS: ENDANGERED**

Endangered in the U.S. (Upper Midwest Population) and in Iowa

Piping Plover

Charadrius melodus

Introduction

In terms of its ranking on national lists of endangered species of birds in the United States, the Piping Plover has become the most endangered bird species within Iowa. In the spring of 2006 the Piping Plover was also identified by National Audubon as being the sixth most seriously endangered species nesting within the entire Continental United States. This species is currently a rare and intermittent breeder at a small number of specific locations along the Missouri River, and a rare migrant at other locations within our state.

BirdLife International currently estimates the total population of Piping Plovers left in the world at 6,100. The decline to this low level is thought to be entirely due to human interference with this bird's breeding and winter habitats, and habitats used as stop-over sites during migration.

Field observation data that document confirmed or probable breeding of Piping Plovers at a specific habitat for at least 2 of the previous 6 years (the years being considered roll forward annually) are needed for Iowa's IBA Technical Committee to recognize that site as one of Iowa's Important Bird Areas (IBAs). To date, two small, privately owned areas in Iowa that are each known to support breeding Piping Plovers, have been identified as IBAs. Each of these is extremely critical to the continued existence of this species within our state. It is hoped that populations will rebound, and additional nesting sites will be located and given the protection they deserve.



The Piping Plover is the smallest of Iowa's plovers, and originally nested on sand or gravel beaches and sandbars along the Missouri River. But populations have declined severely as these habitats have disappeared or have been severely altered. Various forms of development, recreational activities or manipulated water level fluctuations along shorelines are the primary causes of these declines.

Numerous studies have been conducted and conservation efforts have been organized at breeding areas across this species range in North America. Recent conservation efforts have also focused on the wintering areas used by this species. In general, the Piping Plover's coexistence with humans is increasingly dependent on management actions such as fencing-off nests, warning signs, restricting off-road vehicle access, and predator control.

Habitat Preferences

Piping Plover have specialized habitat needs. They favor sparsely vegetated, wide open, sand or gravel areas or beaches and sandbars. This species always nests near water, and feeds at the shoreline, or near nests.

When located and observed in recent years, Iowa's Piping Plovers were using large fly-ash deposits near ponds at power plants. They often nest near or within Least Tern nesting colonies.

During migration this plover may use the shorelines of reservoirs and natural lakes, rivers and wetlands. Piping Plovers spend the winter along the Gulf Coast on tidal flats and beaches.

Feeding Habitats

Piping Plovers normally feed along a shoreline at or very near the waterline, or near nest sites and other open sandy upland areas where they glean small invertebrates from vegetation and rocks.

Major diet items include a variety of small insects, worms, crustaceans and other invertebrates. Their endangered status prohibits collecting; and sensitivity to human disturbance makes sampling food on territories difficult and unwise if birds are present.

Food is captured through a series of short rapid runs interspersed with rapid pecks. Pecks and runs occur successively and so quickly that birds appear to be probing randomly rather than directing pecks at specific food items. Piping Plovers have been observed leaving nests to peck at insects in the sand or chase spiders and grasshoppers. Feeding is alone or in small groups (but not cooperatively) during all hours of the day, and throughout the annual life cycle.

Breeding adults alternate between 30 and 120-minute periods of feeding and incubation throughout the 24 hour day. Both adults and chicks spend more time foraging in habitats that have few people than in areas that are more populated by humans.

Breeding Biology

Piping Plovers normally arrive in Iowa in mid-April. Pairs at sites with fewer birds take several days or weeks to become established. Males then perform display flights over breeding territories with slow wing beats and piping call notes.

Prior to mating the male walks around the territory moving pebbles and small debris, stopping periodically, and squatting on the ground to form a shallow scrape with his breast. In cold, late springs, nest building and mating may be delayed for significant periods of time. Nests are placed on open ground some distance from water, and usually do not have direct shelter or shade. Piping Plovers may nest very close to, or within, breeding colonies of Least Terns.

Egg laying begins in early May and the usual number of eggs is 4, sometimes 2-3,

and rarely 5. Incubation averages 26-28 days, and is done by both parents. Hatching starts in late May and extends into mid-June. The downy young may leave the nest a few hours after hatching.

Young Piping Plovers feed themselves. Both parents brood the young during cool weather at first, but the female often deserts the young within a few days, leaving the male to care for their offspring. Generally, the young are able to fly at between 21 and 35 days of age. Females may lay several clutches if their nests are destroyed, but only one brood is raised. There is often intense defense of nesting territory and mate.

Concerns and Limiting Factors

In the mid-1800's Piping Plovers were harvested for food and brought to the verge of extinction. Piping Plovers were protected from hunting by legislation in 1913, but populations have not increased to former levels. Populations continue to decline primarily due to destruction and degradation of summer and winter habitat, shoreline erosion, human disturbance of nesting and feeding birds, and predation.

By the late 1970's more than 99% of the sandbar nesting habitat along the Missouri River that was available in the late 1800s had been lost to channelization and other human activities. A more recent problem has been choosing to increase river flows from upstream reservoirs at irregular intervals in order to maintain certain water levels for a very limited number of barges that use the middle stretches of the Missouri River.

The future of Piping Plovers in Iowa is probably linked to the future of Least Terns, as these species frequently nest together. Adequate nesting habitat continues to be the major factor that limits populations of these two species in Iowa.

Artificially increasing flows in the Missouri River while nesting is underway on sandbars and shorelines has had a very serious negative impact on Piping Plovers and Least Terns – both of which are endangered species in Iowa. If these species lose their nest sites, eggs or broods adjacent to the Missouri River floodplain, and are forced to use breeding sites away from the river that may be marginally suitable, the survival of Piping Plovers in Iowa may well depend on their ability to survive at two small existing habitats that are now IBAs.

Disturbance during nesting is the major limiting factor in many areas, and this is especially true when this species is only known to presently breed at two IBAs within Iowa. Human presence may inhibit courtship, incubation, and brooding. Human disturbance near nesting sites has reduced reproductive success at various locations across the nation, and habitat alteration and destruction is always a concern.

In certain areas of the Midwest, lowering of the overall water table due to irrigation projects and strip mines has been an additional concern. Natural encroachment onto lake shorelines, riverbanks and sandbars by woody vegetation may be responsible for habitat loss. Invasive plant species are also a concern in the limited habitats that are still available for Piping Plovers to utilize.

Habitat Management Recommendations

At the local level, at Iowa's IBAs or at any other sites where Piping Plovers might be found, the key to the continued existence of this endangered species in Iowa lies in providing or sustaining breeding and adjacent feeding habitat, and protecting those areas from any form of disturbance during nesting and brood rearing,

Local conservation efforts should begin with closing off, during spring and early summer,

significant portions of sandy areas or beaches that surround sites that Piping Plovers (and Least Terns) use for nesting and the rearing of young. Recreation vehicles, pets and continuous human disturbance have caused many nest failures within the range of Piping Plovers.

Probably the second most important management recommendation for Iowa is gaining full implementation of wildlife-friendly water level regulation policies and flow regimes within the Missouri River. When flows once again follow natural spring and summer fluctuations, few if any nests will be destroyed by flooding. The river and its floodplain may then return to being conducive to the continued survival of both Piping Plovers and Least Terns.

Other management recommendations include: using fences (sometimes electric) to prevent entrance by humans and mammal predators; using a variety of techniques to control vegetation encroachment at nesting and feeding sites; possible addition of sand and gravel to create artificial nesting sites; and in some cases, nest relocation to prevent flooding or other major threats.

Generally, intensive management at breeding sites is not ideal in that methods are temporary, and the success of some methods is uncertain and controversial. Nonetheless, management techniques are being assessed and refined and in some cases, activities aimed at increasing nest success have been achieved in other parts of the nation.

Continuous annual survey work by volunteer birders as citizen-scientists is needed to watch Piping Plover population fluctuations. Data that are collected should be submitted the Iowa Important Bird Areas (IBA) Program. The Wildlife Diversity Program of the Iowa Department of Natural Resources also plays a vital role in future conservation activities for Piping Plover.