



STATUS: ENDANGERED

Endangered in Iowa

Northern Harrier

Circus cyaneus

Introduction

Because it is listed as Endangered in Iowa, field data that show confirmed or probable breeding of Northern Harriers in a particular habitat – for at least 2 of the previous 6 years – will qualify that habitat to become one of Iowa’s Important Bird Areas (IBAs).

The Northern Harrier (formerly known as Marsh Hawk) is a slender, medium-sized, and low-flying bird of prey (raptor) of upland grasslands and low-lying marshes. It is easily recognized at close range by its white rump and owl-like facial disk. At a distance this hawk can be identified by its habit of hunting for prey back and forth over low vegetation from only 10 to 30 feet in the air. Unlike most raptors, the sexes differ in coloration. The smaller adult males are slate gray, while the females and immature birds are brown.

In Iowa, the Northern Harrier was once a common summer resident that nested most frequently in the northern part of the state. But by the early 1970’s the harrier was considered uncommon in our state, and by the mid-1980’s was considered to be one of our state’s rarest nesting birds. Although 2 million acres of grassland were added to Iowa’s landscape from 1985 to 1990 by the Conservation Reserve Program (CRP), there has been only a very slow increase in harrier numbers.

Like harriers from other parts of the world, the Northern Harrier nests on the ground, usually in tall, dense clumps of vegetation, either alone or in loose colonies. Most males have one mate, but some males may pair with up to five females in a season. Only the females incubate eggs and brood offspring, and males provide the bulk of food for their mates and nestlings. This species breeds in northern portions of the U.S. and in Canada, and migrates through Iowa to central and southern portions of the U.S. in winter.

Northern Harriers hunt from the air (not a perch), and captures a wide range of prey, mainly small and medium-sized mammals and birds, while coursing low and buoyantly over the



ground. Unlike other hawks, this species relies heavily on its acute hearing to locate and capture prey. Annual breeding numbers and productivity are strongly influenced by the availability of the species' prey in spring, usually voles and other small mammals.

During field work on The Iowa Breeding Bird Atlas project, primarily in the late 1980's, Northern Harriers were reported in 29 counties, mostly in the northern half of the state, and particularly in the Des Moines Lobe region or prairie pothole area. All sightings were in or near public property and at some of the state's largest remaining prairies, grasslands and wetlands.

Habitat Preferences

The Northern Harrier is a bird of open landscapes and wide horizons. It prefers wetlands and marshy meadows; dry upland prairies and grasslands, and old fields; and wet, only lightly grazed pastures.

In both wetland and upland areas, the densest populations are typically associated with the larger tracts of undisturbed habitats that are dominated by low and thick wetland, prairie or grassland vegetation.

During migration, Northern Harriers may be seen hunting over these same types of open habitats. While in migration, juvenile birds may temporarily establish home ranges in habitats where their prey is abundant or more vulnerable. Winter months are spent in open habitats dominated by herbaceous cover and other low growing vegetation. In the winter, individuals frequently roost together on the ground.

Feeding Habits

Northern Harriers have a broad diet, with pronounced seasonal and geographic variations, which are influenced by prey abundance and availability. Harriers feed on deer mice, house mice, shrews, rabbits,

and passerine (or perching) birds such as Northern Cardinal and Song Sparrow. Harrier flight tends to be too slow to overtake adult birds, so it ordinarily drops from the air to pounce on prey on the ground. This species has better directional hearing than other day-time (diurnal) feeding raptors. The owl-like facial disk may direct sound to the ears so that the harrier, flying low over the ground, is better able to locate and capture its prey.

The frequency with which certain habitats are used for feeding appears to be closely related to a combination of prey abundance and vegetative cover. Areas of short vegetation, e.g., heavily grazed pasture and harvested fields; tend to be used only in a limited way, whereas idle and abandoned (often wet) fields with thicker vegetative cover are used most often. Males seem to prefer more open habitats than females, possibly because the female has a smaller home range around the nest site, and females often exclude the smaller males from preferred hunting habitats during winter.

During the breeding season the adults often prey on young and recently fledged birds of several species which they are not capable of capturing as adults. Harriers also take and consume reptiles, amphibians, insects, and occasionally, fresh carrion. Like most raptors, Northern Harriers are opportunistic feeders, and their food depends largely on availability and vulnerability of small prey species.

Breeding Biology

Migrant Northern Harriers begin arriving back in Iowa in late March; and spring migration peaks in mid-April. Nesting is preceded by an aerial courtship display called "sky dancing." During these maneuvers the male does a series of 20 to 70 circular loops, pulling out of the dive about 10 feet from the ground.

Nests are constructed by the female from grass, straw and sticks collected by the male. The nests are normally on the ground in treeless vegetated habitats, and can be in either wetlands or uplands. Many different types of vegetative cover are used for nesting, even within a single area. Most nests are built within patches of dense, often tall, vegetation (e.g, cattails) in undisturbed areas. At most sites, and even many of those in dry-land habitats, nests are located near wetter areas, e.g., near stock ponds or along creeks. Apparently fewer predators frequent such areas. Predation and human disturbance are always a threat to successful nesting.

Clutches range from four to nine eggs, but generally contain five eggs. Incubation is by the female only, and lasts from 30 to 32 days. Male harriers continue to supply food while the female incubates eggs and tends to the young. When prey animals are abundant, males may supply more than one female with food. If females are well fed, they may lay more eggs and raise more young.

Nestlings are able to walk at about 2 weeks of age, at which time they begin moving along small paths through surrounding vegetation to nearby resting and feeding sites. Juveniles make brief flights near the nest at four to five weeks of age. The young become independent and fly away from the nest site at about seven or eight weeks of age. Parents roost away from the nest area and interact with offspring only to deliver food. Fledglings roost close to, but not with, siblings; and follow parents on hunting flights. Parents can discriminate their own offspring from foreign fledglings, as parents chase and strike intruding fledglings but not their own.

Once all siblings are capable of flying, virtually all food items are exchanged by an aerial pass, and prey usually is relinquished to the first fledgling that reaches the parent. Fledglings practice capturing prey by

pouncing on apparently inanimate objects, but spend little, if any, time hunting, and rarely capture live prey prior to independence.

Concerns and Limiting Factors

The Northern Harrier was once a characteristic species of Iowa prairies but it has disappeared from many former nesting areas. Some surveys suggest that it is still declining in various parts of North America. This species is one of the least tolerant of habitat fragmentation. The often unnoticed, but continuous, carving up of prairie and wetland habitats into smaller and smaller parcels is a major concern, and a definite limiting factor.

Management practices, such as mowing and burning, especially if poorly timed, will eliminate nesting success. Harrier nests are also preyed upon by raccoons, skunks, snakes, and other animals. Half of the documented nests during a 10-year period leading up to publication of the Iowa Breeding Bird Atlas, were unsuccessful.

In the twentieth century, when raptors were characterized as either "objectionable" or "beneficial" depending on their diet, Northern Harriers (because they feed largely on mice) were generally considered beneficial, and as such were rarely singled out as targets of predator control. Nevertheless, shooting pressure has been and remains a threat to harrier populations in certain regions, especially for birds wintering at communal roosts in southern portions of the U.S.

Eggshell thickness and mass were significantly lower between 1947 and 1969 than before World War II and the advent and widespread use of commercial poisons. Reproductive failure and population declines were linked to the use of several pesticides in mid-twentieth century; and populations recovered somewhat following the regulation of DDT in early 1970s.

Conversion of native prairie, grassland and wetland habitats to monoculture, row-crop farming has led directly to population declines, and poses a threat to both breeding and wintering populations. These continuous losses are an obvious major limiting factor. Early mowing and haying activities near nests, and in some cases, trampling by livestock, have increased the threat of nest destruction. Overgrazing of pastures, and the advent of larger crop fields and fewer fencerows, together with the widespread use of insecticides and rodenticides, have reduced prey availability and thus the amount of appropriate habitat for this species.

Nevertheless, Northern Harriers are food and habitat generalists, and the relative stability of the species in the second half of the twentieth century suggests that recovery is possible where appropriate habitat is maintained and then managed with diligence.

Habitat Management Recommendations

The Northern Harrier is listed as Endangered in Iowa, primarily due to its dependence on declining wetland and undisturbed grassland habitats. This species is protected under Migratory Bird Treaty Act of 1972. Previously, the preponderance of reports about this species came from public lands, indicating the value of these lands to the continued viability of this species in our state.

It should also be recognized that all forms of wetland preservation for waterfowl and habitat management for upland game birds are beneficial to harriers, and should be encouraged and supported. USDA programs such as the Conservation Reserve Program (CRP) and the Wetland Reserve Program (WRP) have provided habitats on privately owned lands for prey populations and nesting sites. Greater use

of programs like these is needed to restore Iowa's wetland and prairie landscapes.

The size of a particular habitat is important, and the larger that habitat is, the better it will be for harriers, and for other species with similar ecological requirements. Protection and restoration of native wetland and prairie complexes and grasslands of 300 acres or more in size are very important to this species. We highly recommend partnerships between local, state and federal agencies; private conservation organizations; businesses; and private landowners to accomplish such large and important conservation initiatives. The Iowa IBA Program will strive to assist develop, facilitate and fund such partnerships at sites that have received IBA recognition.

On-site management recommendations include protection of undisturbed habitat in which annual vegetation and successional plants can grow and dead vegetation is not removed. Several researchers advocate reducing or eliminating winter livestock-grazing from wetland and grassland ecosystems to improve winter habitat. In areas where succession will lead to thick shrubby growth and eventual reforestation, active maintenance of old fields through prescribed burning and grazing (after young harriers have left the nest area) is recommended.

Please refer to the grassland management section in Part 2 of this document for additional habitat management recommendations.