

**STATUS: ENDANGERED**

Endangered in Iowa

**Barn Owl***Tyto alba***Introduction**

The Barn Owl is one of the most widespread of all owls, and is among the most widely distributed of all land birds on Earth. Versatility in the use of nest sites and in selection of prey, strong powers of flight, and an ability to use human-modified habitats undoubtedly are significant factors in its large geographic range. Despite being common in some areas and often nesting close to human habitations, the secretive, nocturnal activity of Barn Owls renders them inconspicuous to most people. However, declining populations in several areas have raised public awareness of the species. The Barn Owl is one of the most intensively studied owls, especially in Europe and North America, but most of the 28 subspecies remain poorly known.

Barn Owls occupy a broad range of open habitats, urban to rural. Its northern range limit is determined by climate, specifically the severity of winter conditions, and they reach their northern limits in the northern tier of states. Iowa Barn Owls nest in a wide variety of natural cavities, and also a wide variety of cavities in human-made structures.

Its breeding numbers seem limited by the availability of nest cavities in proximity to adequate densities of small mammals (especially voles [*Microtus* spp.]), its primary prey. Its reproductive pattern is highly flexible, especially compared to other owls. Generally monogamous, Barn Owls are sometimes polygamous and can raise two or more broods per year. It can breed year round where climate conditions permit. Normally a strictly nocturnal species, the Barn Owl has evolved excellent low-light vision and remarkable hearing; indeed, its ability to locate prey by sound is the most accurate of any animal that has been tested.

Changing agricultural practices threaten some populations, but nest boxes have helped boost numbers in other areas. Barn Owls may not migrate, or if so, perhaps only for minimal distances. This species has been documented in Iowa in every month of the year, and it appears likely that some Barn Owls remain in Iowa year-round. There are no accurate data on the how many Barn Owls reside in Iowa, or how much movement they undergo.

Habitat Preferences

The Barn Owl seems best suited to oak savanna communities, but it also uses a variety of other open habitats such as grasslands, marshes, and agricultural fields; and it can be found in and around cities. In general, a broad array of habitats are utilized, and populations are probably limited most by availability of appropriate nesting and roosting sites near available prey, and by severity of winters.

The habitat preferences of Iowa Barn Owls lead them to nest in a wide variety of natural cavities including: trees, cliffs, caves, and riverbanks; and also in a wide variety of man-created cavities including nest boxes, and those in corncribs, grain storage bins, barn lofts, haystacks, attics of abandoned houses and church steeples.

Barn Owls respond favorably to nest box placement in abandoned and otherwise remote buildings that they frequent. Records show that in the mid-1990's seven of twelve nests known to exist in Iowa were in nest boxes. Fortunately, this owl is not very territorial, and during this same period three active nests (2 in nest boxes) were located within a 60-yard radius at the same farmstead in Taylor County.

Feeding Habits

Barn Owls utilize grasslands, marshes and open fields for foraging, and they hunt mostly at night, beginning about one hour after sunset and ending about one hour

before sunrise, but also occasionally hunt by day. The preferred method of hunting seems to be flights about 4 feet to 14 feet above ground level, but hunting is sometimes done from perches. When feeding young, Barn Owls return to areas of recent successful prey captures until they are unsuccessful. Flight is silent to human ears as well as at ultrasonic levels. Prey is detected by excellent low-light vision and by extremely acute hearing. Ability to locate prey by sound is the most accurate of any animal that has been tested, allowing capture of prey hidden by vegetation or snow, or in total darkness.

Small mammals make up a majority of the diet, and were 74-100% of prey in 52 food-habits studies. Voles (*Microtus*) are the dominant prey in much of n. North America. Other small mammals are taken more or less as available, including shrews, moles, deer mice, house mice, pocket mice and flying squirrels. Juveniles of larger species are also taken including: wood rats, pocket gophers, Norway and black rats, muskrats, and rabbits. Rarely taken are strictly diurnal species such as ground squirrels and chipmunks. Birds are usually only a small percentage of the diet, and those that are eaten are mostly small species that roost in the open such as European Starling, Red-winged Blackbird, and meadowlarks. Amphibians, reptiles, fish, insects, scorpions, and crayfish are rarely taken. Extensive food habits data are derived mainly from pellet analysis. Prey remains in Barn Owl pellets are highly reliable indicators of diet.

Prey is captured with the feet and usually nipped through the back of the skull with the beak for the kill. Long legs facilitate penetration into long vegetation and snow to catch prey. Most prey is swallowed whole; those too large to swallow are eaten piecemeal. Rain tends to decrease the hunting performance of Barn Owls.

Breeding Biology

In courtship, the male Barn Owl performs flight displays, including loud wing-claps, and the male encourages the female by providing food. Courtship probably begins about one month before eggs are laid, but actual egg laying can take place from early spring to late summer. There is no evidence that day length influences the initiation of courtship and breeding; and it is likely that food availability and climate are important determinants of the breeding season.

When a nesting cavity is selected in a natural site or a man-made structure, small debris including grass and sticks are arranged into a crude depression. No real nest is built. The number of eggs laid is usually 3-8, but as few as 2 and as many as 12, or even more, have been observed. The eggs are whitish, but sometimes become stained in the nest. Incubation is by the female only, and lasts from 29 to 34 days. Males bring food to females during incubation, and females leave the nest during incubation only briefly at long intervals.

Female Barn Owls brood the young when they are small, and the male provides food for both adults. Only the female feeds the young. The female begins sharing the hunting duties again about 2 weeks after brooding begins. The young are roughly 55-65 days old at first flight, and return to roost at the nest or close by for several more weeks. When prey is sufficiently abundant Barn Owls may produce two broods per year, and sometimes three.

Concerns and Limiting Factors

From 1995 through 2005, just 37 Barn Owl nests were confirmed in Iowa (3.7 nests per year). And most of those were in the southern half of the state. Although there is some evidence of a decline in the number of Barn Owls in Iowa and nearby states, this species was never thought to be

common. And Iowa lies at the Northern edge of where this species breeds.

The apparent decline in the Barn Owl population in Iowa is probably the result of a number of factors. The most serious limiting factor appears to be the loss of dense grass habitats where their primary prey is found. Other limiting factors include: loss of nesting and roosting sites, severe winter weather, predation by more abundant Great Horned Owls, collisions with vehicles, and the possible effects of pesticides and other man-made chemicals.

Many of the limiting factors that have had a negative impact on Barn Owls are directly related to land use changes. Today across most of Iowa there is fence row to fence row acres of corn and soybeans where fifty years ago crop rotations included 25% or more of hay or meadow. Barn Owls have found fewer habitats for hunting, nesting and roosting as industrial agriculture expanded and eliminated native vegetation and natural habitats.

Because of the secretive, nocturnal nature of Barn Owls and increasingly enlightened human attitudes toward birds and all wildlife, shooting and trapping are not considered to be major problems. There is some evidence that Barn Owls may have been affected much less by organochlorine pesticides than other raptors during the mid to late 20th Century. Overall, man-made chemicals entering the environment are not thought to be as negative as the loss of hunting, nesting and roosting sites due to the outright elimination of habitat, or the degradation of the habitat that remains.

Studies have shown that collisions with automobiles are a significant, and possibly increasing cause of mortality. Most of this mortality occurs from early autumn to late winter with a peak in autumn consisting mainly of immatures and corresponding to post-fledgling dispersal from nest sites. Electrocution via power lines is considered

to be a minor cause of mortality. Loss of nest sites by demolition or alteration of old buildings has had a negative effect on Barn Owls in Iowa as well as many other parts of North America

Habitat Management Recommendations

The lack of accurate data on population numbers and population trends in most parts of the range of Barn Owls complicates the assessment of conservation needs. Being nocturnal and secretive, the Barn Owl is a difficult species to assess. However, the most serious North American declines in Barn Owl populations seem to have been in the Upper Midwest, including Iowa.

Many believe that the key to increasing numbers of Barn Owls in Iowa are two straight-forward concepts: 1) to provide safe, predator-proof nesting and roosting sites near the habitats that they prefer for hunting; and, 2) to increase and maintain large blocks of dense grasslands that will provide the prey species that sustain Barn Owls.

Nest boxes can be fairly easily and inexpensively placed where they are most likely to be used. Locations for nest boxes include: within or on the outside of barns, silos, corn cribs, grain storage bins or machine sheds. Those with a desire to increase or sustain Barn Owl numbers may obtain nest box designs and installation instructions from the Iowa DNR Wildlife Diversity Program, Wildlife Research Station, Boone, Iowa. After nest boxes are placed it is important to monitor them for results. It is important to avoid disturbing Barn Owl nests during incubation, or until the young are at least two weeks old.

Because most of Iowa's best potential habitat for Barn Owls is in the southern half of the state, restoration efforts in this area are more likely to be successful, especially where savanna habitat still exists.

Restoration of savannas anywhere in the state where it previously existed is likely to benefit a number of wildlife species, including possibly Barn Owls. Prescribed burning and understory thinning are management techniques that eliminate unwanted trees and shrubs, remove ground cover, and create open grassland and prairie habitats for the small mammals that Barn Owls require. To provide optimal benefits to Barn Owls, grasslands should be managed to enhance the dense ground cover that is essential for meadow voles, the primary food of this species, as well as other small mammals.