

## STATUS REVIEW & RECOVERY OUTLINE for GRASSLAND RAPTORS

**NORTHERN HARRIER** – *Circus cyaneus*

**SHORT-EARED OWL** – *Asio flammeus*

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*Reviewed by the Illinois Endangered Species Protection Board at its 137<sup>th</sup> meeting held February 22, 2008, but there is no record in the minutes of that meeting that action was taken for approval. In the interest of housekeeping, Board Director, Anne Mankowski, proposed review of changes made to replace reference to the ESTAC reviewing the status of the species with reference to the Board reviewing the status of the species and recommended approval by the Board at its 145<sup>th</sup> meeting to be held February 19, 2010.*

Approved by the Illinois Endangered Species Protection Board, at its 145<sup>th</sup> meeting, February 19, 2010.

### **Current Status**

The Northern Harrier and Short-eared Owl are both listed as **ENDANGERED** in Illinois. The Illinois Department of Natural Resources' Natural Heritage database includes probable or confirmed nesting records of Northern Harriers from 6 locations in 6 counties (and evidence of possible nesting from two additional sites in 2 counties) from 1997-2006. For the same period, the database contains confirmed nesting records for Short-eared Owls from only 2 locations in 2 counties (Figure 1). These two species are ecologically similar, both nesting and roosting on the ground in grasslands and marshes, both consuming mid-sized prey (most commonly microtine rodents), and both often occurring in close proximity to one another. Agonistic interactions, such as kleptoparasitism, are common between the two birds (MacWhirter and Bildstein 1996, Wiggins et al. 2006).

Short-eared Owls are an erratic nesting species within Illinois. After 1973, no nesting attempts were known until nesting was documented in five counties in 1990. Nesting Short-eared Owls have been found in about half of the years since 1990 (Herkert & Nyboer). Northern

Harriers appear to nest more regularly in Illinois. Southern Illinois is at the southern limits of the breeding range of these grassland raptors (MacWhirter and Bildstein 1996, Wiggins et al. 2006). Northern Harriers and, particularly, Short-eared Owls are inconspicuous while nesting, with evidence of breeding becoming somewhat easier to obtain if nests survive to fledging, as young birds become mobile and more visible. Though both species are very rare as nesting birds in Illinois, more breeding attempts certainly are not discovered, not documented, or not reported.

During migration and winter, grassland raptors are much more common in Illinois. Both species form communal roosts in grassland areas than can number 20 or more individuals (Walk 1998). Though roosting areas are highly localized and data are sparse, grasslands in southern Illinois and southwestern Indiana appear to be of continental importance for wintering Short-eared Owls (Figure 2; National Audubon Society 2005).

Both grassland raptors are Birds of Conservation Concern in USFWS Region 3 (U.S. Fish & Wildlife Service 2002), and Partners in Flight considers the Short-eared owl as a WatchList Species of Continental Importance (Rich et al 2004).

### **Historical Status**

Northern Harriers are presumed to have nested in prairies and marshes throughout the state (Ridgway 1889), but there is little indication of its abundance. Less is known about the Short-eared Owl's historic status in Illinois, though Cory (1909) thought it nested in Cook County and Ford (1956) remarked on sporadic nesting in Illinois. Nesting Short-eared Owls were probably largely confined to the northern half of the state (Herkert and Nyboer).

### **Proposed Status Review Criteria for the Grassland Raptors**

The proposed status review criteria represent measures of distribution and abundance to prompt the Endangered Species Protection Board to review the status of the species and consider a change in status. Status review criteria do not prompt an 'automatic' change in status, and the Endangered Species Protection Board may review the status or status review criteria of the species at any time.

Evaluate Change in Status to Threatened - Within past 5 years, there are records of *probable* or *confirmed* nesting in the Natural Heritage database from 10 or more Illinois counties, and the average annual population is 25 or more *probable* or *confirmed* nesting pairs.

Evaluate Change in Status to Not Listed as Threatened or Endangered - Within past 5 years, there are records of *probable* or *confirmed* nesting in the Natural Heritage database from 10 or more Illinois counties, AND the average annual population is 50 or more *probable* or *confirmed* nesting pairs.

*Probable* and *confirmed* nesting are defined by Breeding Bird Atlas convention, according to the following forms of evidence:

*Probable Nesting*

- Multiple displaying or territorial birds of a species detected at a site one day. This code is the lowest level of evidence that a species is probably nesting at a site. Five displaying individuals is an appropriate level of abundance for a listed species. Most species can be upgraded to the next criteria with a later visit.
- Displaying/territorial male present at same location on at least two occasions 7 or more days apart. This behavior presumes a permanent territory.
- Pair observed in suitable nesting habitat during the breeding season. This evidence makes it fairly certain that a mated pair of birds has been observed.
- Permanent territory presumed through defense of breeding territory by fighting or chasing individuals of same species. Because territoriality involves the defense of a fixed area, it is useful to map locations of individuals to determine if they are defending the same general area when surveying the block a week or more later.
- Courtship behavior or copulation between a male and female. Courtship behavior includes transfer of food between a pair of birds.
- A bird is observed visiting the same likely nest site repeatedly, but provides insufficient behavior for upgrading to *Confirmed*.
- Agitated behavior or anxiety calls from adults usually indicate a nest site or young in the vicinity. This does not include agitation induced by predators, or using taped calls.

### Confirmed Nesting

- Physiological evidence of breeding based on bird in the hand. This evidence is used primarily by bird banders and includes such evidences as a highly vascularized swollen incubation (brood) patch or an egg in the oviduct.
- Bird seen carrying nesting material such as sticks, grass, etc.
- Nest building seen at the actual nest site.
- Distraction displays, defense of unknown nest or young, or injury feigning. Northern Harriers may dive at observers near the nest site. When an adult performs a distraction display, it puts its own life in danger, distinguishing this evidence from agitated behavior.
- Used nest or eggshells found. Unless carefully identified, use this only for unmistakable eggshells and nests. If identification is unsure, do not consider it.
- Occupied nest indicated by adult entering or leaving nest site in circumstances indicating an occupied nest, where the contents of the nest and incubating or brooding adult cannot be seen. *To minimize the risk of abandonment or predation, intentionally visiting the nest of a Northern Harrier or Short-eared Owl should be avoided until at least after the next criteria is met (indicating incubation is complete), or after activity near a suspected nest has ceased, suggesting a nest failure.*
- Adult bird carrying food for young or feeding recently fledged young. Use this evidence with caution. Some adults carry food a long distance or may be engaged in courtship feeding. Look for repeated carrying of food in the same direction, or to the same location.
- Recently fledged young or downy young. This includes dependent young only. Be cautious that juveniles may range widely soon after fledging. One of the better features to look for is the length of the tail feathers. If shorter than the adults, the young probably originated locally.
- Nest with eggs or eggshells on ground. Nest and eggs must be accurately identified. Be careful not to disturb the vicinity of the nest.
- Nest with young seen or heard. Take care not to cause premature flushing of nestlings from nest.

## **Reasons for Decline**

Destruction of grassland and marsh habitat is the primary reason for the status of both grassland raptors as Endangered in Illinois. Northern Harriers and Short-eared Owls appear to be area sensitive in Illinois, with the majority of nest records from grasslands larger than 250 acres (Herkert and Nyboer, Herkert et al. 1999, Walk and Warner 1999). Populations of Northern Harriers and Short-eared Owls vary significantly in response to abundance of small mammals, the birds' most typical prey. Mowing or haying during the nesting season destroys nests, and nests are vulnerable to abundant mammalian nest predators, such as raccoon, opossums, and skunks. Encroaching and nearby woody vegetation diminishes habitat quality, by limiting the open space innately attractive to both species, and by harboring predators. Great Horned Owls and Red-tailed Hawks are known to prey on adult Short-eared Owls. Though both grassland raptor species readily utilize grasslands of various compositions, from native prairies to plantings of introduced cool-season grasses, structure is important. Northern Harriers select tall, dense vegetation for nesting and winter roosting; Short-eared Owls select cover with somewhat lower height and density for nesting and winter roosting (Herkert et al. 1999, Walk 1998).

## **Recovery Actions**

*Action 1: Restore and Maintain Large, Open Grassland/Wetland Areas* – Grassland habitat suitable for Northern Harrier and Short-eared Owls can be established within 1-3 years in appropriate landscapes (Kershner 2001). Grasslands larger than 250 acres, and areas with a concentration of more than 30% grassland/marsh cover, are the most likely to be occupied by nesting grassland raptors. The effective size of grassland/marsh areas can be increased by removing fragmenting features (e.g., hedge rows) and maintaining shrubs (versus mature trees) along small riparian corridors. Incentives and agriculture conservation programs that target restoration and maintenance of large grasslands in focus areas are approaches likely to yield significant benefits to the statewide populations of both species.

*Action 2: Enhance the Composition of Large, Open Grassland/Marsh Areas* – Invasive species (e.g., tall fescue, goldenrod, reed canary grass) and management practices that create monocultures and uniform structure throughout a grassland/marsh patch reduce habitat quality for Northern Harriers, Short-eared Owls, and most other species. Grasslands with floral diversity, managed to provide a variety of structures and successional stages, are more likely to attract nesting Northern Harriers, Short-eared Owls, and other wildlife, and to support larger and more reliable populations of microtine rodents and other prey.

*Action 3: Identify and Monitor Sites with Possible Nesting Grassland Raptors to Document Confirmed Nesting* – Because grassland raptors are rare in Illinois, occur at low densities, and have secretive nesting behaviors in relatively remote areas, confirming the presence of nesting birds can be difficult. The Short-eared Owl's crepuscular and nocturnal habits make locating their nesting areas even more challenging. Areas with a history of nesting grassland raptors, locations where grassland raptors have been reported in appropriate habitat during the nesting season, and sites with good habitat (large patch size, appropriate structure) should be prioritized for more intensive monitoring.

The incidental reports of grassland raptors by recreational birdwatchers, readily gleaned from the listserv "IBET" (Illinois Birders Exchange Thoughts, [www.ilbirds.yahoo.com](http://www.ilbirds.yahoo.com)) and the seasonal "Field Notes" of *The Meadowlark* (a quarterly journal of the Illinois Ornithological Society), are useful for identifying locations with possible nesting of grassland raptors. Similarly, citizen-scientists can be enlisted to carry out additional monitoring at these selected sites, visiting areas repeatedly during the nesting season to obtain additional evidence.

### **Recovery Timing and Estimated Costs**

*Action 1: Restore and Maintain Large, Open Grassland/Marsh Areas* – Costs to restore and maintain large, open grassland areas will vary tremendously, depending upon location and starting conditions. The option with the greatest initial costs would be acquisition of property (average cost of \$4,000/acre) and establishing grassland where none currently occurred (cost of roughly \$100/acre). This approach to establishing a 250-acre grassland would be about

\$1,025,000, and require 2-5 years. At other locations, such as on conservation areas, suitable nesting areas could be restored and maintained through the modification, redirection, or continuation of ongoing management, at little or no additional cost.

*Action 2: Enhance the Composition of Large, Open Grassland/Wetland Areas* - Costs to enhance the composition of large, open grassland areas will vary tremendously, depending upon starting conditions. At one extreme, where undesirable plants are dominant and remnant plants and less-mobile animals are not significant concerns, existing vegetation could be destroyed and more desirable vegetation established, at a cost typically less than \$150/acre, and requiring 2-5 years. At other locations, such as on conservation areas, grassland and wetland composition can be enhanced and maintained through the modification, redirection, or continuation of ongoing management practices, at little or no additional cost.

*Action 3: Identify and Monitor Sites with Possible Nesting Grassland Raptors to Document Confirmed Nesting* – Identification of possible grassland raptor nesting areas, coordination of a citizen-scientist monitoring effort, and compilation of results would entail minor administrative costs, less than 10 person-days/year. Possible grassland raptor nesting areas without volunteer coverage could be satisfactorily monitored with a minimum of 3 visits (half-day visits, or 1.5 person days), plus travel. Monitoring efforts should be on-going, with sites with recent confirmed grassland raptor nesting surveyed annually, and sites with possible grassland raptor nesting surveyed on a 2- or 3-year cycle.

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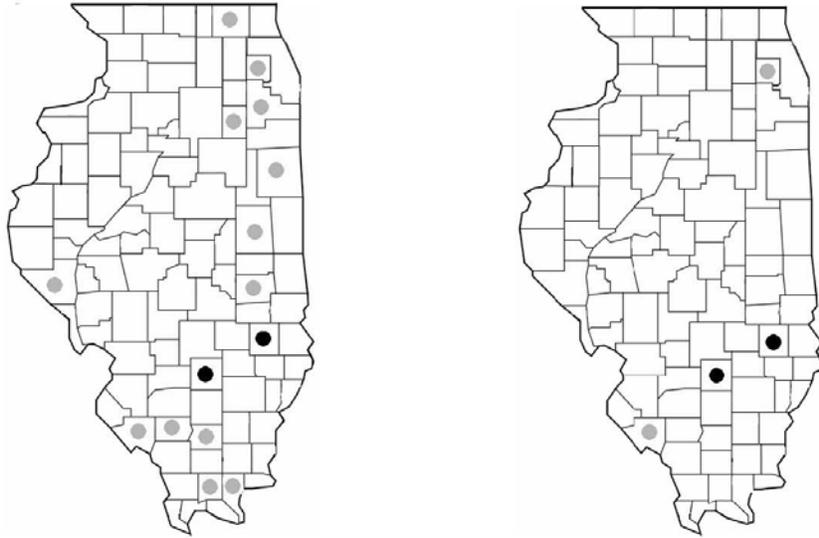
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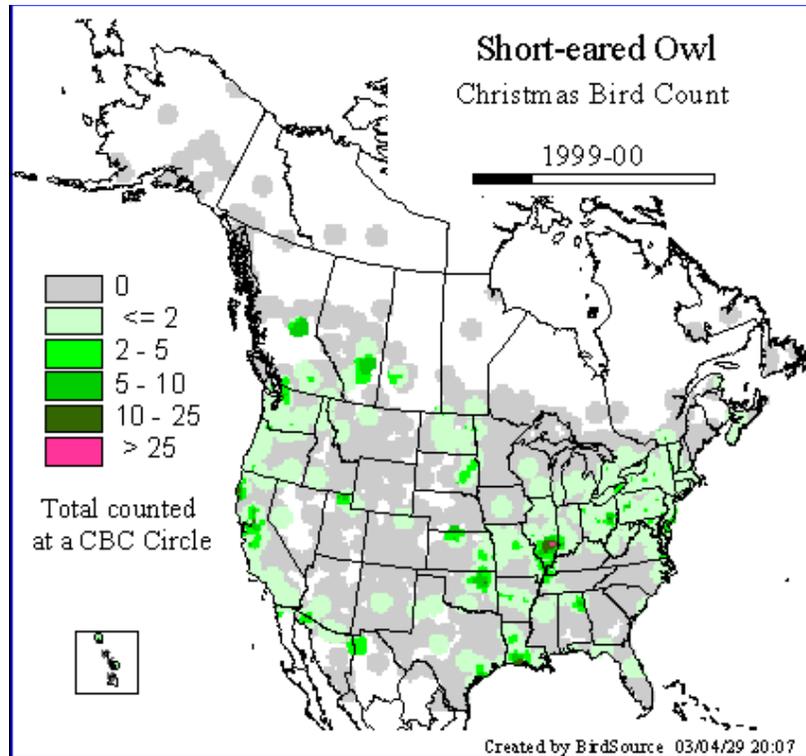
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**Figure 1.** Counties with nesting records of Northern Harriers (left) and Short-eared Owls (right) in the Illinois Department of Natural Resources' Natural Heritage Database (black circles; 1997-2006 data from T. Kienenger, manager) and in Nyboer et al. 2006 (gray circles).



**Figure 2.** Abundance of short-eared owls in North America, as estimated by Christmas Bird Count data for the winter of 1999-2000.