

## A LARGE NORTHERN HARRIER ROOST AT FORT SILL, OKLAHOMA

BY

KEVIN M. MCCURDY, SAMUEL J. ORR AND TONI M. HODGKINS

While road-trapping raptors on the East Range of the Fort Sill Military Reservation in Comanche County, Oklahoma, near dusk on 19 January 1985, Samuel J. Orr discovered a large Northern Harrier (*Circus cyaneus*) roost. As he watched, a Red-tailed Hawk (*Buteo jamaicensis*) flew southward from a tall cottonwood tree and began a long, low glide into a protected natural grassland covering 800 ha and known as the Tall Grass Prairie Preserve (TGPP; Fig. 1). Before the end of this flight, the hawk had flushed more than 30 Northern Harriers from the grass.

Thomas J. Wilmers, a former Fort Sill wildlife biologist, was notified about the harrier roost and tried to count the harriers a few days later. Not long thereafter, Orr and biologist Allan R. Pfister joined Wilmers in a count attempt, but both the uneven terrain and the large area of the roost confounded their efforts.

Wilmers and Pfister, together with Gene G. Stout, former head of the Natural Resources Division at Fort Sill, subsequently organized the first official harrier count on the TGPP. It involved Natural Resources Division personnel and 10 to 17 volunteers who encircled the roost and counted birds that left at daybreak. This circle encompassed 640 ha, though the actual roost covered only about 200 ha. Counts have been made at least once each winter from 1985 through 1995 except for the winter of 1990-91, because of the Persian Gulf War (Table 1).

By 0700, observers were positioned at 10 to 16 stations approximately one-quarter mile apart along firebreaks around the roost. Official sunrise occurred around 0730, at which time the count began as the first harriers arose from the grass and

## THE TALLGRASS PRAIRIE PRESERVE



Fig. 1. Photo of TGPP from the west taken by Jack D. Tyler on 26 December 1995. The harrier roost was in area near center of photo.

began to circle, gradually drifting away from the roost in all directions. Each person counted to his right (counterclockwise) as he faced the roost, and was equipped with a radio to communicate with the count coordinator and the person to either side, so that birds were not counted twice. The harriers were not tallied until they passed between the counter and the person to his right. Each harrier was designated as either outgoing (birds leaving the roost) or incoming (birds entering the roost). The few harriers that reentered the roost were subtracted from totals at the end of the count. Gray adult males were tabulated in one column, "brown birds" (adult females and immatures) in another, and "unknown birds" in a third.

After the number of harriers leaving the roost had abated (usually around 0830), a helicopter was called in to flush remaining birds by criss-crossing the roost at low altitude. Helicopter support was not available after 1992 and on a few earlier counts, two helicopters participated. The helicopter(s) flew transects from east to west, starting on the north side and working southward until the entire area had been covered. This "forced flush" sometimes augmented harrier numbers considerably. For instance, more than 100 previously uncounted hawks were added at one station during the 1987 count. Normally, most harriers left the roost on their own. However, on 6 February 1988--an extremely cold morning--at least 75 birds returned to the roost after the helicopter had left the area. Because they had passed no observer, these birds were not counted. Any harriers still in the air at the close of the survey were counted. Totals for all harrier counts were conservative.

During this time there were at least six other harrier roosts on Fort Sill, with estimated populations of 7 to 50 birds. Three of these also harbored Short-eared Owls (*Asio flammeus*). However, the TGPP roost contained by far the largest number of harriers. There were also several additional harrier roosts, some with Short-eared Owls, near Lawton and in outlying areas.

Harrier populations in the TGPP roost have fluctuated markedly since 1985 (Table 1). In 1987, the largest concentration of harriers (1,053) was tallied. The smallest counts (49) were in 1994 and 1995. The low count in 1994 may be partially attributed to foggy weather.

Research in other parts of the country has indicated that declines in harrier populations may be related to reduction in numbers of rodent prey species such as cotton rats (*Sigmodon hispidus*) and/or to mild weather (Weller, W.W., I.C. Adams Jr., and B.J. Rose, 1955, Winter roosts of Marsh Hawks and Short-eared Owls in central Missouri, *Wilson Bull.* 67:189-193). Red-tailed Hawk and Great Horned Owl (*Bubo virginianus*) nesting on Fort Sill also reflect this trend (Orr, unpubl. data).

### DESCRIPTION OF STUDY AREA

Fort Sill's East Range covers approximately 10,400 ha, and is used for artillery and small arms training. Within the East Range are 1640 ha comprising buffer zones around two impact areas. One of these zones embraces the TGPP. Terrain on the East Range consists of gently sloping grasslands with small intervening drainages. Elevation ranges from 305 to 390 m (Fig.1.)

The plant community on the TGPP is dominated by tall grasses, with big bluestem (*Andropogon gerardi*), switch grass (*Panicum virgatum*), and Indian grass (*Sorghastum nutans*) being the principal species (Choate, L.L., 1989, Natural history of a relictual population of the prairie vole (*Microtus ochrogaster*) in southwestern Oklahoma, *Occas. Pap. The Mus., Texas Tech Univ., Lubbock*, 129:1-20). The

TGPP is part of Fort Sill's prescribed burn wildlife management program and is burned approximately every three years.

The authors wish to thank Gene G. Stout for his invaluable aid in helping to initiate and promote the harrier count. Appreciation is also expressed to the many volunteers who have helped with the surveys and to the Army Aviation Branch and pilots who facilitated the count. Special thanks go to Thomas J. Wilmers and Allan R. Pfister who conceived the count, and to Jay K. Banta, another former biologist, for maintaining it.

**Table 1.** Census results from the Tallgrass Prairie Preserve Northern Harrier roost, Fort Sill, Oklahoma, 1985-1995.

DATE	NO. OF STATIONS	GRAY BIRDS	BROWN BIRDS	UNK BIRDS	TOTAL	HELICOPTER FLUSH
2/09/85	16	125	93	85	303	YES
2/15/86	14	64	77	36	177	YES
2/29/86	12	24	48	27	99	NO
1/03/87	11	118	282	569	969	NO
2/07/87	12	127	547	379	1053	YES
1/02/88	12	98	322	370	790	NO
2/06/88	12	83	368	369	820	YES
1/07/89	13	55	61	52	168	YES
1/13/90	11	10	30	53	93	YES
1991	NO COUNT BECAUSE OF PERSIAN GULF WAR					
1/11/92	12	71	146	127	344	YES
1/23/93	12	45	106	83	234	NO
1/22/94	12	21	18	10	49	NO
2/12/94	10	11	46	8	65	NO
1/21/95	12	14	28	7	49	NO

FORT SILL NATURAL RESOURCES DIVISION, DIRECTORATE OF ENVIRONMENTAL QUALITY, FORT SILL, OKLAHOMA 73503-5100, 15 JULY 1995.

## OCURRENCE OF SNOWY OWLS AT SOONER LAKE, OKLAHOMA, WITH NOTES ON THEIR ECOLOGY AND BEHAVIOR

BY

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The Snowy Owl (*Nyctea scandiaca*) is predominantly a resident of northern tundra and boreal forests and has a Holarctic distribution (Johnsgard, 1988; Parmalee, 1992). Although it summers in these regions, it tends to move southward from the more northerly parts of its range during winter. It is considered to be a regular winter visitor to the northern Great Plains, but movements into the southern states are rare, resulting from periodic and irregular irruptions that are thought to be related to the variable abundance of its main prey, lemmings (Kerlinger and Lein, 1988b; Kerlinger et al., 1985; Parmalee, 1992). Records of Snowy Owls in Oklahoma are scarce (approximately 46 in more than 100 years), the most recent having been in January 1981 (Baumgartner and Baumgartner, 1992). An invasion during the winter of 1974-75 brought at least 20 individual owls to Oklahoma (Shackford, 1975). This paper documents the occurrence of four Snowy Owls near Sooner Lake in northwestern Pawnee County, Oklahoma, during the winters of 1992-93 and 1993-94, including notes on their ecology and behavior.

During early March 1993, the first of the owls was brought to my attention. It was an adult male that, according to a local resident, had been present since late December 1992. It stayed in grazed prairie grassland in close proximity to two farm ponds on the south side of Sooner Lake (Fig. 2). This owl usually roosted on

the ground, although it occasionally did so on wooden fenceposts and once atop a fallen log. Analysis of several pellets recovered near these roosts revealed a diet rich in ducks and crayfish (Steve Metz, pers. comm.). Bird enthusiasts from all over the state came to see the owl, and several observed it on 13 March 1993, the last day it was seen. This was two days later than the latest departure date known for Oklahoma (Grzybowski et al., 1992).

In the winter of 1993-94, three more Snowy Owls were discovered at Sooner Lake. During the annual Christmas Bird Count there, 28 participants searched the entire count circle with Snowy Owls in mind, but found none. On 6 January 1994, a call from John Dole informed me that there was an immature Snowy Owl at Sooner Lake in the exact location as the owl of the previous year. This was the individual I observed most often (Fig. 3). It was an immature female with much dark barring in its plumage (see Josephson, 1980). The crown was dark, almost like a black cap, and only the face was pure white. Although I spent considerable effort searching, I did not locate this owl until 5 February 1994. I saw her on about 10 different occasions throughout the month of February; Sue and Carly Sheffield, Brian and Paulette Faulkner, and Carl and Rosemary Wisk also saw her. She was most readily found perched on one of her fencepost roosts just before dusk (1700-1800 h). She appeared to have established a territory in pastures surrounding the ponds and including adjacent areas of the lake, and seemed indifferent to the close presence of humans. She was seen flying from a perch only once, when a truck drove to within one or two meters of her. Around her many roosts I recovered about a dozen pellets as well as the remains of some larger prey. Prey species included eastern cottontail (*Sylvilagus floridanus*), fulvous harvest mouse (*Reithrodontomys fulvescens*), hispid cotton rat (*Sigmodon hispidus*), bobwhite quail (*Colinus virginianus*), and white bass (*Morone chrysops*). On one visit, I observed her on a log protruding above Sooner Lake, possibly searching for aquatic prey. She was never actually seen in the act of hunting, even though I watched her into the night (as late as 1900) on several occasions. Wintering birds tend to show peaks of activity at dawn and at dusk, spending up to 98% of daylight hours perched (Boxall and Lein, 1989). Other raptors in the area included Short-eared Owls (*Asio flammeus*), Red-tailed Hawks (*Buteo jamaicensis*), Rough-legged Hawks (*Buteo lagopus*), Northern Harriers (*Circus cyaneus*) and Bald Eagles (*Haliaeetus leucocephalus*), but no interaction between any of these species and Snowy Owls was ever observed. This Snowy Owl was last seen on 1 March 1994.

A second immature Snowy Owl with different markings at Sooner Lake was



Fig. 2. Prairie around Sooner Lake where Snowy Owls remained during winters of 1992-93 and 1993-94.



Fig. 3. Female Snowy Owl seen from 6 January to 1 March 1994 at Sooner Lake. Photo by James W. Arterburn.

reported to me by Dole on 3 February 1994. It had evidently been in the area for about a week. A few people noticed it in early February in a grazed pasture approximately 2.4 km east of where the aforementioned owl had been seen. On 13 February 1994, yet another Snowy Owl, this an all-white adult, was seen by Dole and Florence Wass at Sooner Lake as it stood next to the lakeshore in the same general area where the other two owls were staying. To my knowledge, this individual was never seen again. On 5 March 1994, no Snowy Owl could be found around Sooner Lake, despite an intensive search. The weather had become quite warm and sunny during this week with temperatures ranging above 26°C (80°F), and I suspect that the Snowy Owls left Sooner Lake to return north.

One of the most interesting aspects of these observations is the fact that various Snowy Owls during different years chose the same location to spend the winter. Prime winter habitat in the northern Great Plains closely parallels traditional tundra habitat and prey species (Kerlinger et al., 1985). On the wintering grounds, Snowy Owls select habitats where prey is most available (Boxall and Lein, 1982a) and defend territories (Boxall and Lein, 1982b). The fact that one of the Oklahoma birds was preying on crayfish and another on large fish demonstrates their propensity to take aquatic prey when available. The large fish (white bass) were carried to a fencepost and consumed there. In 1840, J.J. Audubon also observed Snowy Owls catching fish (Bent 1938).

In addition to the Snowy Owls mentioned above, another sighting is worth mentioning. On 26 November 1993, an all-white adult bird was observed along Highway 44 near Foss in Washita County by John Dole (pers. comm.).

During those years when northern prey populations crash, Snowy Owls have been known to wander as far south as the Gulf Coast states, Oklahoma, and California (Johnsgard, 1988; Parmalee, 1992). These individuals are generally immature, with males tending to winter farther south than females (Kerlinger and Lein, 1986). Because the owls described herein moved so far south of their range, there is a better than average chance that they did not successfully return to their breeding grounds. Inexperienced immature birds probably have a more difficult time making the long journey than adults, and such factors as disease (e.g., aspergillosis) and anthropogenic hazards (e.g., power lines, airplanes, radio towers and guns) associated with a much longer flight greatly reduce their chances (Kerlinger and Lein, 1988a; Parmalee, 1992).

I thank John Dole, Florence Wass, Carl and Rosemary Wisk, Brian and Paulette Faulkner, and Sue and Carly Sheffield for sharing their observations of Snowy Owls at Sooner Lake and Jim Arterburn for the use of his excellent photograph.

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#### GENERAL NOTE

**Common Poorwills during fall in Tulsa, Oklahoma.**—During the fall of 1993, 1994 and 1995, I monitored, several times daily, bird life in the Williams Center Green, a small .52 ha park-like area in downtown Tulsa, Tulsa County, Oklahoma. This green area is bordered by Second Street and the Bank of Oklahoma Tower on the north and Third Street to the south, by the 15-story Adam's Mark Hotel westward, and the three-story Tulsa Performing Arts Center building to the east. The green is made up of open grassy areas, paved walkways, plentiful trees, shrubs and flowers and a small man-made stream and pond.

At about 0950 on 26 October 1993, I came upon a Common Poorwill (*Phalaenoptilus nuttallii*) sitting in the open underneath a Crepe Myrtle (*Lagerstroemia indica*) on the east side of the green near a brick wall. Photographs of this bird are on file with the Tulsa Audubon Society and the Oklahoma Bird Records Committee. The poorwill was observed later that day by James B. Thayer, James C. Hoffman, M. Jo Loyd and Patricia L. Seibert, but was not seen thereafter.

Almost exactly a year later, on 24 October 1994, I located a Common Poorwill at approximately 1000 under a 1.3 m-high hedge about 1.5 m from a main walkway on the green bordered by Second Street, the hotel, and other downtown buildings. As I approached to within .7 m, this bird began to rock from side to side. When I came within .3 m, it opened its mouth, hissed, and spread its wings and tail, revealing the rufous primaries and white outer rectrices. Loyd and Seibert saw this bird at about 1200 that same day, but I could not relocate it at 1730. Both organizations mentioned above also have pictures of this poorwill.

Less than three weeks later, on 11 November 1994, I flushed a Common Poorwill at about 1130 from within 4.4 m of the spot where I had found the species on 24 October. As it flew up, it reminded me of a big moth, and the rusty primaries and white tips of the outer three rectrices were noticeable. It lit on a manhole cover beneath a stand of Yaupon Holly (*Ilex vomitoria*) about 15 m away. This time, I drew to within 3 m and could discern that this individual was darker than the one I had seen on 24 October. I could not find it when I returned at 1500.

At 0750 on 8 September 1995 I found a Common Poorwill sitting under a crab apple tree (*Malus* sp.) in a 19 by 22 m elevated landscaped area on the east side of the bank tower. As I neared the bird, it took off and flew directly into the windows of the bank tower. The poorwill fluttered to the ground, but as I approached, it arose again, flew across Second Street, and landed on the patio railing of a fifth-floor room of the Adam's Mark Hotel. After about five minutes, the bird flew down to the south end of the Williams Center Green and I could not find it again.

Thayer and I discovered this or another Common Poorwill under a Magnolia Tree (*Magnolia grandiflora*) at 0920 on 1 October 1995. At 1430 the bird was still in the same place. John S. Tomer and I relocated it at 1730 about 22 m directly south of its original location, but we could not approach it very closely. Color slides of this bird have been deposited with both the Oklahoma Bird Records Committee and the Tulsa Audubon Society.

As I was walking around the raised landscape area on the west side of the bank tower at 0710 on 3 October 1995, a Common Poorwill suddenly took wing from the concrete. Its slow, erratic flight took it directly over me and toward the windows of the lighted bank tower before it veered off to the south and the Williams Center Green. As it flew, I could discern the rounded wings and short, round, grayish tail with buff in its outer corners. I found it again at 1105 under a stand of yaupon holly on the east side of the Williams Center Green, but it flew as I walked up, and I could not subsequently relocate it. This may have been the same individual seen two days before.

At 0740 on 18 October 1995, as I was descending the north-south sidewalk through the center of the green, a landscape maintenance man flushed a Common Poorwill from under a stand of yaupon holly. The bird flew east to west, passing about 10 m in front of me, and landed under a hedge 20 m away. Seibert, Loyd and I searched in vain for it that evening.

In Oklahoma, the Common Poorwill is an uncommon to rare summer resident in western regions, an irregular visitant throughout much of the state (Baumgartner and Baumgartner, 1992, Oklahoma bird life, Univ. Oklahoma Press, Norman, p. 202), and has also nested in northeastern Oklahoma (Glass, et al., 1994, *Bull. Oklahoma Ornithol. Soc.* 27: 12-13.) It may breed more commonly in the Flint Hills of east-central Kansas than in western sections of that state (Thompson, M.C., and C. Ely, 1989, *Birds in Kansas*, Vol. 1, Univ. Kansas Mus. Nat. Hist., Lawrence, p. 349). The only other Tulsa County record was a recently-killed bird found in a southeast Tulsa residential area by Dr. Paul Buck of the University of Tulsa Faculty of Natural Sciences on 21 March 1974 (Lindsay, H.L., 1985, *Bull. Oklahoma Ornithol. Soc.* 18:6-7).

The latest sighting for the species in Oklahoma heretofore was of a freshly killed specimen found near the western edge of Lawton in Comanche County on 9 November 1993 by Michael D. Brown (Brown, M.D., 1994, *Bull. Oklahoma Ornithol.*

Soc. 27:13-14). According to files of the Oklahoma Bird Records Committee (J.A. Grzybowski, pers. comm.), there have been no previous fall occurrences of the Common Poorwill in northeastern Oklahoma. The above six (or seven) sightings are not only the second through seventh for northeastern Oklahoma, but that of 11 November 1994 postdates the latest record for the state by two days.

One wonders just how common the silent Common Poorwill is in Tulsa County during fall migration. The Williams Center Green, with its obvious attraction to migrating birds and the ease with which one can observe them, deserves further study.--James W. Arterburn, 5806 East 78th Place, Tulsa, Oklahoma 74136, 6 August 1995.

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