Short-eared Owl winter roosting strategies

Thomas Bosakowski

Photo/J.P. Myers/VIcEO.

HE SHORT-EARED OWL (ASIO FLAM- 
meus) is classically described as a 
ground-roosting and ground-nest-
ing species (Urner 1925, Bent 1938, 
Chislett 1941, Weller et al. 1955, Craig-
head and Craighead 1956). Conse-
quently, a recent observation of several 
Short-eared Owls roosting in conifers in 
the manner of their close relative, the 
Long-eared Owl (Asio otus), prompted 
an investigation. A thorough exami-
nation of the literature confirmed that 
this behavior was uncommon and had 
been noted by only a few investigators 
(Bent 1938, Banfield 1947, Hoyt 1962, 
Clark 1975, Ponshair 1976, Hanisek 
1978, Kemp 1982). During three win-
ters, systematic searches of conifer 
roosts were conducted to determine the 
frequency, duration and stimulus for 
this alternative roosting strategy.

STUDY AREA AND METHODS

The owl roosts under study were lo-
cated in the Hackensack Meadowlands 
in northeastern New Jersey, where ex-
tensive tracts of estuarine marsh border 
the lower Hackensack River. Common 
Reed (Phragmites communis) is the 
dominant plant cover, tidal ditches and 
creeks are numerous, and sparse decid-
uous tree cover is found only in drier 
upland edges which are heavily urban-
ized. In many areas, highways, railroads, 
industrial parks, and active and inactive 
 sanitary landfills have encroached into 
the marsh. Virtually all conifers present 
had been ornamentally planted at some 
of the industrial parks.

Conifer roosts of Short-eared Owls 
were studied at one industrial park that 
directly adjoined the marshes. Owl 
roosting was limited to only one 22-
hectare block as determined through 
intensive searches for owls and/or pel-
lets, whitewash, feathers, and prey re-
mains, within a one-kilometer radius. 
Systematic searches of all conifers in the 
22-hectare block were made each winter 
from 1981 to 1983. On most searches, 
flush counts (Craighead and Craighead 
1956) were necessary as the owls were
usually hidden in the dense conifers. To help determine the length of time of roost site use, pellets were collected during flush counts in 1982 and 1983 when there was no snow cover. Most authorities agree that approximately one pellet/day/owl is ejected at the roost site (Chitty 1938, Craighead and Craighead 1956, Clark 1975), thus providing a measure of roost-site use in owl-days (Graber 1962).

During the second and third winters observations of the adjoining _Phragmites_ marsh were made at dusk to observe Short-eared Owls emerging from ground-roosting sites. Although the conifer roosts were not consistently used, owls remained in the immediate vicinity throughout the winter. Observations began at least 0.5 hours before sunset. From a 3-meter dirt mound, the number, location, activity, flight direction, and time of Short-eared Owl emergence for initial evening flight, were recorded. Average snow depth was obtained from the National Weather Service at Newark International Airport, located only 13 kilometers south of the study area. The reading closest to sunrise was used as this would most closely match the conditions when the owls selected their daytime roosts.

**RESULTS**

Conifer roost characteristics—In 1981, 1–2 Short-eared Owls roosted 2 meters above the ground in 4-meter Austrian Pines (_Pinus nigra_), that were planted on a 0.5 meter mound, bordered with small boulders. Two 1-meter ornamental yews (_Taxus spp._), a 2-meter hemlock (_Tsuga canadensis_), a 1-meter ornamental juniper (_Juniperus communis_), and a 3-meter white birch (_Betula pendula_), were also present on the mound, but were assumed not used, owing to a lack of aforementioned owl indicators. During the following two winters, another roost-site mound was chosen containing three 2-meter Austrian Pines, two 1-meter junipers, and a 1-meter yew. In 1982, only junipers were used and owls roosted in the upper one-half of the shrubs, evidenced by patterns of whitewash found on low branches. In 1983, one juniper and two Austrian Pines were used. Owls and whitewash patterns were observed above ground at about 0.5 meters and 2 meters, respectively. The two roost areas were notably in areas with virtually no human traffic with the nearest driveway about 15 meters from both sites. In contrast, three other conifer groups were present, but were presumably not selected owing to their close proximity (2–3 meters) to regularly used parking lots.

Effect of snow cover on roost-site use—Figure 1 presents the results of systematic searches for conifer-roosting owls during the day and compares them to amount of snow cover. When average snow depth was at least 5 centimeters, six of seven observation days showed Short-eared Owls roosting in conifers, with an overall total of 26 pellets deposited. In contrast, there was a statistically smaller proportion of conifer-roosting during snow-free conditions (2 of 19 observation days). Only one of five significant snowfalls (>5 centimeters) did not produce an observation of conifer-roosting, although this snowfall melted within two days (March 16, 1982). It should also be emphasized that the only conifer-roosting observed without snow cover was that of a roost initiated February 12, 1983, the day after a record snowfall (45.7 centimeters). The habitual use of this roost continued well after the deep snow had melted and one or two owls deposited a total of 22 pellets during the following snow-free period. In all other cases, conifer roosts were abandoned immediately following snow melt.

Evening emergence from ground roosts—Further substantiation that owls abandoned conifers and not the entire area after snowmelt is presented in Figure 1. Significant numbers of owls were present throughout the winters of 1982 and 1983. Furthermore, these owls were observed as they emerged from ground-roosts among the tall 2–3 meter _Phragmites_ cover. Since this marsh is less than 200 meters from both conifer roosts, it appears fairly safe to assume that the individuals roosting in conifers were among those seen roosting in the marsh during snow-free periods.

Communal roosting: intraspecific and interspecific—No more than two Short-
eared Owls roosting together in conifers and no more than three Short-eared Owls emerging together from ground-roosts in the marsh were observed. Of note, a Long-eared Owl was observed once roosting on the same branch with a Short-eared Owl about 0.7 meters apart. The Short-eared Owl was completely exposed near the end of the branch. In contrast, only the head of the Long-eared Owl was visible as it dozed alongside the tree trunk. The owls were left undisturbed, but the following day none was visible until my close approach flushed two Short-eared Owls and one Long-eared Owl from the same Austrian pine. This interspecific owl roost lasted for at least two days and probably had been in existence several days before discovery of it. This co-roosting was observed only in one season, although several Long-eared Owls continued to use this roost in subsequent years.

DISCUSSION

These observations strongly suggest that significant snowfall (≥5 centimeters) may be the primary stimulus for Short-eared Owls to seek roosting sites in dense conifer cover, as opposed to their typical ground-roosting sites. Of all the reports describing Short-eared Owl roost sites (Table 1), only Banfield (1947) speculated that the white background of snow provided “poor cover” for the owls. This loss of cryptically colored surroundings may be an important motivation for abandoning ground roosting areas given that Short-eared Owls almost always remain well hidden until flushed. Similarly, the Craigheads (1956) noted that Short-eared Owls almost always select fields with light-colored grasses that closely resembled their plumage. By roosting in dense conifers, relatively dry and protected branches may offer thermal advantage in terms of body heat conservation. Hayes and Gessaman (1980), have shown that in small raptors the maintenance of thermal balance can only be improved by the use of physical shelter or sunbathing. In areas where conifers or evergreens were not available, Short-eared Owls have used a variety of substrates as roosts (Table 1).

In both conifer roosts and on the ground, the establishment of small communal roosts was frequently observed. Although as many as six Short-eared Owls were seen hunting in the same area at dusk, the largest communal roost encountered had three owls. Much larger roosts have been reported, however (Weller et al. 1955, Clark 1975, Bildstein 1979). The unusual observation of two Short-eared Owls roosting with a Long-eared Owl represents only the second published record of an interspecific owl roost (both species using the same tree). Kemp (1982) first reported a communal roost of one Short-eared Owl and three Long-eared Owls in a hawkthorn bush (Crataegus spp.) in England. Apparently, the gregarious nature of wintering Asto owls provides adequate levels of socialization necessary to establish a cooperative interspecific roost. This mutual tolerance suggests that the benefits of communal roosting outweigh the costs of interspecific competition. Newton (1979) suggests that it is more efficient for individuals to clump together when food is unpredictably concentrated at various places and times (e.g., vole plagues), than when food is uniformly distributed. Additionally, communal roosts often serve as “information cen-

### Table 1. Review of Short-eared Owl winter roosting sites

<table>
<thead>
<tr>
<th>Source and Location</th>
<th>Original Description of Roosting Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hendrickson &amp; Swan (1938) Iowa State College</td>
<td>2 acre deciduous thicket, perched on logs, bases of brushpiles in colder weather, never over 8 ft from the ground.</td>
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<tr>
<td>Jenkins (1944) England</td>
<td>perched 20–30 ft in “deciduous” trees.</td>
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<tr>
<td>Banfield (1947) Toronto, Canada</td>
<td>fields, clumps of ornamental conifers (15–20 ft) when snow on ground, used only Douglas fir (Pseudotsuga taxifolia).</td>
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<tr>
<td>Weller et al. (1955) Columbia, Missouri</td>
<td>In a form in a tuft of grass, fields with a dense cover of grass less than 1 ft high (Panicum dichotomiflorum, Aristida spp.).</td>
</tr>
<tr>
<td>Hoyt (1962) central New York</td>
<td>residential “cedar” grove</td>
</tr>
<tr>
<td>Clark (1975) central and western New York</td>
<td>abandoned limestone quarry filled with stumps, auto junkyard, pile of scrap metal, scotch pine grove (Pinus sylvestris, juniper grove (Juniperus communis)—same roost as reported by Hoyt (1962).</td>
</tr>
<tr>
<td>Ponshair (1976) Blendorn Twsp., Michigan</td>
<td>young scotch pine plantation—perched under conifers, only 1 observation of owl in tree.</td>
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<tr>
<td>Kemp (1982) Norfolk, England</td>
<td>raised tussocks, “broken” birches (Betula pendula), and tree stumps in open “boggy area”, hawkthorn bush, roosted under or 1–2 m up in “conifers”.</td>
</tr>
<tr>
<td>This study Lyndhurst, New Jersey</td>
<td>2–3 m Austrian pines or 1 m common shrubs—roosted 1–2 m above ground, or in Phragmites communis marsh (reeds 2–3 m).</td>
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</tbody>
</table>
ters" from which some birds follow others to profitable hunting grounds (Ward and Zahavi 1973). Further study is required to isolate the precise mechanisms of communal roost formation in Asio owls, as well as conifer roosting behaviors in Short-eared Owls.

LITERATURE CITED


Department of Zoology and Physiology, Rutgers University, Newark, NJ 07102
(Present Address: Dept. of Toxicology and Pathology, Roche Research Center, Nutley, NJ 07110)