

Detecting Northern Saw-Whet Owls (*Aegolius acadicus*)

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ABSTRACT

Six signs of the presence of the Northern Saw-whet Owl (*Aegolius acadicus*) are discussed and the typical habitat of this elusive owl species is reviewed. Different methods of detecting Saw-whet Owls are explained, with a discussion of the advantages, disadvantages, and limitations of each method.

INTRODUCTION

The Northern Saw-whet Owl is a diminutive species of forest owl that generally eludes detection by standard techniques of birdwatching. Since this species is strictly nocturnal, roosts in dense cover, and is loathe to flush from its day perch, few records of this species are obtained without searches specifically targeting this species. Unfortunately, this paucity of records perpetuates the Saw-whet's reputation for being both rare and mysterious, when in fact there is little basis to support or refute these beliefs.

My husband Scott Swengel and I have been studying the Northern Saw-whet Owl and, to a lesser degree, the Eastern Screech-Owl (*Otus asio*) in four study areas in Sauk County, Wisconsin since January, 1986. The haphazard and infrequent documentation of Saw-whet Owls in Sauk County in no way prepared us for the numerous records we have obtained through our research. Thus, I believe that with greater awareness of the habitat and behavior of the Saw-whet Owl and with efforts designed specifically to detect this species, it is possible for birdwatchers to document the presence or absence of Saw-whet Owls more thoroughly and thereby considerably increase our understanding of the Saw-whet's population size, ecology, and movements.

SIX WARNING SIGNALS OF THE SAW-WHET OWL

The Saw-whet Owl may be very elusive, but it cannot completely erase the evidence of its presence. There are six warning signals which may alert the observer that this species is in the area. They are:

1. repetitious too-too-too call;
2. mobbing by chickadees;
3. streams of whitewash in a tree;
4. small, dense pellets;
5. back half of a dead mouse;
6. mound of junco feathers.

First, the Saw-whet Owl calls in the evening and nighttime hours of late winter and spring. It repeats a single, short, high-pitched note, sometimes for a very long time. This is diagnostic of the species. No other eastern bird is likely to call at this time or sound similar. In fact, we have found only one confounding species -- in small numbers, the Spring Peeper (*Hyla crucifer*), a frog, may sound similar. In the West, the observer must listen more carefully. The Northern Pygmy-Owl (*Glaucidium gnoma*) has a very similar call, but the note may be lower in pitch and the frequency is slower.

Sometimes chickadees and their associates, such as nuthatches, find the owl first. Should they encounter a Saw-whet Owl as they circulate on their feeding rounds, these small birds may harass the hapless owl by loudly swarming around it for some time. In our experience, the Black-capped Chickadee (*Parus atricapillus*) calls with a monotonic insistent "dee-dee-dee-dee-dee" and the Red-breasted Nuthatch (*Sitta canadensis*) with a loud nasal "annnn-annnn-annnn-annnn-annnn". The Saw-whet Owl generally rides out this storm motionless. If possible, investigate

all such obvious instances of commotion; an owl, probably a Saw-whet, may be at the center of it.

A third signal is the presence of vertical streams of fecal whitewash in and below a tree. Although this alone is not conclusive evidence of a Saw-whet Owl, this species is a likely culprit if the following characteristics are present. The wash should be all white, with a thick and pasty appearance. Although it may scatter some in its descent, the wash should indicate a plumb line from the point of origin, the roost. Be sure to look carefully for the owl, since it may be very well concealed even with wash pointing right up at it. Finally, the wash should occur in suitable habitat, which is discussed later. Confusing look-alikes include white fungi and pine sap, as well as whitewash from other birds.

Another sign often present near a roost is the pellet. Hawks and owls both produce these masses of regurgitated bones, fur, and other indigestibles of their food. Pellets of the Saw-whet Owl are dense and small; a sample of the ones we collected has averaged 3.05 cm (1.8 - 5.1 cm, N=344 unbroken pellets) x 1.54 cm (0.9 - 2.0 cm, N=386). The fur covering is compacted like felt. Its contents have a set of diagnostic characteristics as well. The skull of the prey item, if present, is arranged lengthwise in the pellet and determines the width of the pellet. Sometimes the lower jaws are still aligned correctly to the skull. Also, the skull is invariably crushed in the back to some degree, and Saw-whet pellets generally have a high density of bones within them. Typical prey items are, of course, small -- generally *Peromyscus* mice, *Microtus* voles, and *Blarina* shrews in our area -- and rarely is a whole set of bones for that prey item present because Saw-whet Owls generally eat their prey in two meals. This signal combined with appropriate fecal whitewash is very good evidence of a Saw-whet Owl.

Pellet finding is also confounded by many look-alikes, such as pine cones, hickory nutshells, other species' pellets, and many unpleasant, unmentionable items. By comparison, Barred Owl (*Strix varia*) pellets are both much longer and wider and, although they hold together well, the fur is much more digested, to the consistency of dust. Barred Owls eat mostly small rodents, like the Saw-whet Owl. Great Horned Owls (*Bubo virginianus*) also produce large masses of pellet material but in much looser form so that it often splatters widely on the ground. Their pellets contain a wide variety of prey items, including such large animals as rabbits (*Sylvilagus floridanus*) and Ruffed Grouse (*Bonasa umbellus*). Eastern Screech-Owl pellets are only a little larger, but are less compact and the skulls are intact. A good knowledge of the other raptors in the vicinity also aids in identifying the origin of a pellet.

Saw-whet Owls prefer to eat the head end of the prey first (Collins 1963), generally including the forelegs. For various reasons, they sometimes do not eat the back half and, if found in appropriate habitat, this is a clue, although not conclusive, that indicates a Saw-whet may be present.

The sixth signal is even less diagnostic -- a large mound of feathers from an obviously defunct Dark-eyed Junco (*Junco hyemalis*) on the forest floor. Saw-whet Owls, with their small stomach capacity, strip off many of the feathers before eating a bird, commonly a junco. Although these last two signs do not prove a Saw-whet Owl is present, they certainly indicate this possibility and warrant further investigation.

HABITAT

In our study area, we have found Saw-whet Owls in a variety of habitats. These forest types include:

1. predominately coniferous forests, which in our area occur on slopes and in gorges;
2. mixed coniferous-deciduous forest;
3. predominately deciduous upland forest;
4. brushy thicket;
5. pine plantations, including stands of young Red Pine (*Pinus resinosa*), old Red Pine, and several species of spruce;
6. pine islands and groves;
7. Jack Pine (*Pinus banksiana*) barrens.

Some of these locations may have contained only wintering or transient Saw-whet Owls, particularly the more southern habitat types. Other studies have found wintering Saw-whet Owls in alder thickets in western Minnesota (McCabe 1973) and in deciduous riparian thickets in Iowa (Scott 1938, Peasley 1944, and Stephens 1944).

Large owls such as Barred and Great Horned Owls appear not to repel Saw-whet Owls strongly despite the fact that larger owls occasionally prey on smaller owls. Through pellet collection, sightings, and vocalizations of the various owls, we have noted a fair amount of overlap in land use between the Saw-whet and larger owls. Since Eastern Screech-Owls prefer southern-type forest edges in our area, they and the Saw-whet Owls are generally segregated from each other because of different habitat choices. We have, however, also noted interspecific call answering to taped calls among all these species, indicating perhaps a degree of competition and antagonism among them. Eastern Screech-Owls and Saw-whet Owls are mutually responsive to each other's taped calls, and Barred and Great Horned Owls have responded to tapes of both Eastern Screech-Owls and Saw-whet Owls. Furthermore, we have noted several instances when Saw-whet Owls have continued to call after a Great Horned Owl vocalized. Similarly we have heard Saw-whets sing after Barred Owls have just called in the vicinity.

Consistent with our experience, Saw-whet Owls have been found in a variety of habitats across the country. Boula (1982) studied them in Oregon in low thickets of sapling Grand Fir (*Abies grandis*) and Western Larch (*Larix occidentalis*) in old-growth Ponderosa Pine (*Pinus ponderosa*) and Grand Fir forests, noting that the Saw-whet Owls preferred old-growth forests with structural diversity to managed stands of uniform-size trees. In Washington State, Grove (1985) studied Saw-whet Owls which preferred Ponderosa Pines for roosting. Like us, he found that the Saw-whet Owl tolerates the proximity of moderate to heavy human activity so long as the owls remain undetected and undisturbed. In the southwest United States, Johnson, Haight, and Simpson (1979) reported that the Saw-whet Owl inhabits Ponderosa Pine and mixed coniferous forests throughout the year, sometimes wintering in Pinyon-Juniper woodlands. Similarly, Miller (1937) reported a Saw-whet Owl in late spring in a dense stand of Douglas Fir (*Pseudotsuga menziesii*) in the Chiricahua Mountains of southeastern Arizona. Hayward and Garton (1984) have studied this species in Douglas Fir and Lodgepole Pine (*Pinus contorta*) forests in the vast wilderness forests of central Idaho. In the eastern United States, Saw-whet Owls have wintered in the Tamarack (*Larix laricina*) bogs and young Red Pine plantings in southern Michigan (Mumford and Zusi 1958), and in young pine plantations in southwest Ohio (Randle and Austing 1952). This species has also been heard calling from April to June in the coniferous forests atop North Carolina's Appalachian Mountains (Stupka 1946 and Simpson 1972).

In summary, Saw-whet Owls are a widespread and widely adapted species of forest owl. They show a marked preference for conifers, if only because these trees afford better cover, at least in winter. Since they are cavity-nesters, preferring a flicker-sized hole, the breeding range must also include adequate nesting sites.

DETECTION METHODS

In the course of other activities, a birdwatcher may certainly chance upon a Saw-whet Owl, but usually this owl is detected through means designed specifically for this species.

The first method is searching during the day for the Saw-whet Owls, their roosts and pellets in suitable habitat. Theoretically, if the owl spends very much time on a perch, there will be fecal whitewash splashed on the area underneath, and 1-2 times per day, the owl regurgitates a pellet. In fact, we have seen owls with no apparent wash beneath them and we have found isolated pellets with no wash -- or owl! -- apparent in the immediate vicinity. These are indications that this method is not as easy as it sounds. If the trees are relatively short and dense, the Saw-whet Owls will likely be closer to the ground, and therefore easier for a person to find. However, the forest itself will likely be more difficult to traverse. Conversely, a more mature forest or plantation is easier to walk through, but it will be more difficult to find the owls, as they are higher in the trees where the best cover is. Furthermore, in such older forests, the fecal wash and pellets are more difficult to see, since fewer of both filter down below eye level and they also scatter more widely.

Another method of detecting Saw-whet Owls is to listen for their vocalizations (Vanderschaegen 1981 and personal experience). First, it is useful to determine when Saw-whet Owls are likely to call in that area, generally when late winter and spring occur locally and, of course, mostly between sunset and sunrise. We have only censused during the evening hours. Listen quietly and carefully -- the owls' calls can be muffled by the forest and blend in with a chorus of Spring Peeper frogs. Again, theoretically, nestlings and fledglings should make food-begging calls that keen observers can discern. We have not been able to hear this and I suspect that the increased human and natural noises on late spring and summer evenings effectively drown out the juvenile owls except at close range.

Auditory censusing either with tape playback (personal experience) or imitated call (Simpson 1972) can also be effective during the species' vocal season. In theory, territorial owls will defend their ground by responding in kind to the "foreign" calls from the tape or imitation. Since the Saw-whet Owl may behave similarly to other species that have been censused in this manner, some precautions are necessary. Calling too often to an individual may cause accommodation, i.e. the owl will stop responding to the call. Overcalling may also disrupt breeding or even drive the owl off the territory. The owl may approach the tape if played long enough, but we have not attempted this since it could be disruptive for the owls. Also, we want to know where the owl usually roosts, not where we can lure it to. Responsiveness may vary not only season to season, but apparently year to year as well. In 1986 during the peak calling period we experienced a 90-100% response rate; the following year we have had very little response from the owls known to be present from sightings and pellets.

Under requirement of special permit, scientists also use a fourth method, live trapping, to detect Saw-whet Owls. They then either band the owl and/or affix a battery-powered radio to the owl in order to study the owl's movements. We have not used this method and I will not consider it further in this discussion since it is not an option for most birdwatchers.

ADVANTAGES, DISADVANTAGES, AND LIMITATIONS OF THE DETECTION METHODS

Circumstances and objectives affect the choice of detection method. For example, the correct time of year is critical for accomplishing censusing based on

vocalizations effectively. If it is the calling season, these methods can be much more efficient for locating the owls than daytime searching; the reverse, however, is true outside of the calling season.

Although daytime searching is the best method to use in the summer, it is especially time-intensive and low-yield at that time of year. The warm rains melt away the fecal whitewash quickly and help decompose the pellets, a process also accelerated by beetles, worms, and other hungry creatures. In fact, Wilson (1938) found that pellets survived 3-5 months in the winter, no doubt preserved in a frozen state, but decomposed in 4-6 weeks in the spring. It is quite probable that they are erased even more quickly in the summer, when there is also more undergrowth to obscure them.

The least intrusive method -- least disturbing for the owl -- must be listening for voluntary vocalizations, unless of course the observer attempts to approach the owl closely. Disturbance from auditory censusing with tape or call imitation can be minimized by limiting use of the stimulus call only to elicit response and not to lure the owl nearer, and by not returning repeatedly to the same area for censusing. Disturbance during daytime searches may be unavoidable since an owl may be visible only at close range. Once seen, of course, the observer must decide whether to disturb further by approaching closer or to depart. Remember that the effect of the disturbance may not be immediately evident -- we have noted a cumulative effect of increasing wariness from repeated sightings, even though the owl did not seem upset the first few times. Disturbance of nests should, of course, be avoided as much as possible.

All of the methods suffer to some degree from inconclusiveness of negative results. If no vocalizations are heard, it is not clear whether the owl elected not to call or was not present. A daytime search that fails to yield a sighting, a roost, or a pellet, especially in the warmer months, also does not prove the absence of the species since this is a difficult method that is often only marginally productive.

The objectives of the observer also affect the choice of method since the different methods yield different results. A nesting study requires diurnal observations, although vocal data can also be helpful. Diet and roost data are also generally studied from pellet analysis and roost measurements, a diurnal pursuit. Censusing may be most efficiently determined from vocal records, but only if the owls are calling; otherwise, censusing necessitates daytime searches also.

IMPORTANCE OF DOCUMENTING SAW-WHET OWLS

In addition to the pleasure of seeing Saw-whet Owls, birdwatchers' records provide sorely needed additional data on this species. The range of this owl has not been completely determined, nor its status as migrant or resident in many locations. Furthermore, the population density in different habitats and different times of the year is virtually unknown. Thus, it is of great benefit for birdwatchers to remain alert for the signs that this species is present in an area. The Saw-whet Owl will always be an elusive species, but it can be much better understood.

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Saw-whet Owl photo by C.A. Kemper.