News, Notes, Comments

Rope Dragging Technique for Locating Short-eared Owl Nests

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The Short-eared Owl *(Asio flammeus)* is a ground-nesting owl that inhabits grasslands, marshes, tundra, and other open country habitats throughout the Americas and Eurasia (Holt et al. 1999, Wiggins et al. 2006). Monitoring Short-eared Owls is difficult due to their nocturnal behavior, expansive range, irruptive distribution, and the remoteness of much of its preferred habitat. However, monitoring Short-eared Owl populations is important in light of their range-wide population decline in North America (Booms et al. 2014). Visual surveys during the pre-nesting period are an efficient way to locate Short-eared Owls (Larson and Holt 2016) and initial results for population estimates from large-scale application of this method are promising (Miller et al. 2016). Breeding information is still relatively scant, but needed to further assess the Short-eared Owl's status and to address specific questions regarding the factors influencing their decline and potential response to management. However, locating nests on foot or by behavioral observation can be difficult and time consuming.

This paper is intended to describe the rope-drag technique, a modification of the cable-chain drag technique for locating Short-eared Owl nests in open-country, grassland-like habitats.

Study Area and Methods

Nest searching, trapping, and banding of Short-eared Owls took place on an approximately 175-km^2 area surrounding the Ninepipe National Wildlife Refuge in the Mission Valley of western Montana. The study area was located within the Flathead Indian Reservation and occurred primarily on private land and Waterfowl Production Areas managed by the U.S. Fish and Wildlife Service. After pre-nesting surveys (see Larson and Holt 2016), nest searches were done during the first two weeks of May and through mid-June using a modified cable-chain drag technique (Higgins et al. 1977, Leasure and Holt 1991). Depending on terrain, two or three 60m-sections of climbing rope were tied together and attached at each end to an open-topped four-wheeled ATV. One ATV driver began by starting along the edge of area to be searched. The second driver kept parallel to the first with enough tension to allow the arc of the dragging rope to extend approximately 5-10m behind, while maintaining an ideal speed of 5-10km/h. At the end of first pass, the second driver would turn around and follow their tracks while the first driver would maneuver to the opposite side and maintain distance going in the reverse direction of the first pass. This was repeated until the entire area was searched. In smaller areas or areas where the use of ATV was not permitted, we tied the rope ends to our waists and walked areas using the same method.

When an owl was flushed, dragging was immediately stopped, which allowed researchers to follow rope to near where the owl was flushed and look for eggs or evidence of a nest. If a nest was found, it was marked with 2m length of green fiberglass rod placed in the ground 4m north of the nest-center to facilitate relocation for capturing and banding adults and chicks. Clutch size or number and age of nestlings were recorded and location marked with a handheld GPS.

When possible, females were captured at least one day after nest discovery following techniques described by Leasure and Holt (1991). Young were captured and banded while still at the nest or found by vocalizations after dusk. Several adults, both male and female, were captured after dark using a Great Horned Owl *(Bubo virginianus)* decoy placed near a 9m mist-net in the proximity of a nest with recently dispersed young.

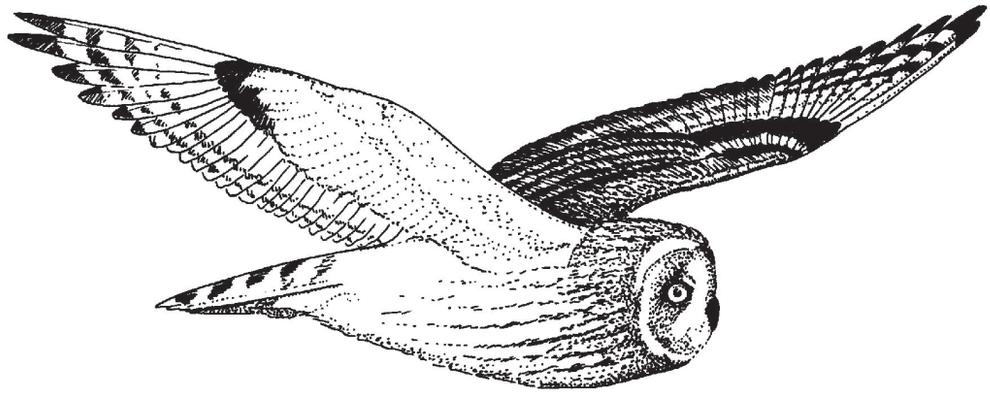
Results And Discussion

Rope dragging with ATV vehicles is 2.6 times more efficient than the cable-chain drag technique, and 4.3 times more efficient than rope dragging by walking..

Table 1: **Average time required to complete nest searches of a 1km² area using three different drag techniques.**

	Cable-chain (ATV)	Rope (Walking)	Rope (ATV)
Drag Length (m)	60	60	180
Number of passes	17	17	6
Speed (km/h)	8	5	8
Time per pass (min)	7.5	12	7.5
Total time (hr)	2.1	3.4	0.8

Short-eared Owls are regular breeders within our study area, but numbers can vary dramatically from year to year. For example, the number of nests found between 1989 and 1990 (via cable-chain drag technique) varied from 2 to 33 (DWH, unpublished data). In three years of this study (2014-2016), 16 nests were found in four tracts of searched habitat that was roughly 30 km^2 in total land area. However, comparing the efficacy of cable-chain drag to rope dragging based on number of nests found per year is largely irrelevant given the known population fluctuations associated for Short-eared Owls. Locating nests using behavioral observations or by foot is time consuming and difficult given the large area usually required to search, even when detection locations from pre-nesting surveys are available. Leasure and Holt (1991) noted the success of a dragging technique for locating Short-eared Owl nests and although they reported no egg breakage, nest mortality or nest abandonment in their study, others reportedly have (Higgins et al. 1977). Similar to Leasure and Holt (1991), we saw no evidence of egg breakage, nest mortality, or nest abandonment from rope dragging. At one nest in this study, an unharmed egg was found outside of the nest, presumably flipped out as the female flushed off the nest. The egg was returned and later hatched. On several occasions, nests of Short-eared Owls, waterfowl, and passerines were directly in the path of the ATV, but were avoided because of the slow driving speed and quick turning and stopping ability of the small ATV. Although direct comparison of the effectiveness of cable-chain vs. rope dragging techniques are not currently available, it is our opinion that both methods can reliably locate every Short-eared Owl nest, or nearly so, within the searched area. This opinion is based on our experience during pre-nesting surveys and behavioral observations during nest monitoring throughout the breeding season. Of course, it is possible to overlook or miss nests with any technique. For example, on two occasions a female Short-eared Owl was observed to jump over the passing rope and return instantly to her eggs, which could have easily been missed without diligent watching. Also, some individuals tended to flush well before the rope passed over making it difficult to find exact nest-site. In both scenarios, nests would be overlooked without further investigation. It is also possible to miss late-nesting that occurs after rope-dragging, or nests which failed prior to searching. Rope dragging is more efficient and less impactful than cable-chain dragging. The light weight of the climbing rope allows it to ride relatively high in the vegetation, compared to a cable-chain drag, and likely reduces the chance of egg breakage. Furthermore, several ropes can be tied together to cover more ground with each pass, minimizing time and impact to vegetation from driving, whereas the weight and maneuverability of a cable-chain is prohibitive to longer lengths. This technique can be used throughout much of the Short-eared Owl's breeding range and is an effective tool for gathering important breeding data on an elusive and far-ranging predator.



Short-eared Owl
by George West

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