Trapping techniques, handling methods, and equipment use in biotelemetry study of Long-eared Owls

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Introduction

Little biotelemetry work has been reported that deals with nocturnal raptors in the western United States. We discuss here the trapping techniques, methods of handling, and equipment which proved most effective in our efforts to monitor 8 Long-eared Owls *(Asio otus)* in their natural habitat without disturbing their normal activity. Trapping techniques and handling methods were experimented with at separate study sites in Elmore, Canyon, and Owyhee Counties in Idaho during 1979-80. Two of these sites (Poison Creek and Morrow Reservoir) were nesting areas whereas the third (Deer Flat National Wildlife Refuge) was a winter roost. All areas were in dense riparian willow *(Salix* spp) habitat and between 610 and 624 m in elevation.

Trapping and handling methods

We used two main trapping devices: a hand-net and a 10 cm mesh mist-net. The hand-net consisted of a round wire loop, approximately 75 cm in diameter with 10 cm mesh mist-netting attached, mounted on a 2 m long wooden rod. Balchatri and baited bownets were also tried. One handling method we experimented with was to allow the owls a period of time in a large box for recovery before being released.

Telemetry equipment

We used a 12-channel AVM model LA12 receiver with an operational frequency range of 150.6 to 151.0 MHz. Monaural headsets were used for monitoring the signals received. A standard 3-element hand-held or mast-mounted yagi antenna was used during all observations.

We chose the transmitter harness described by T.C. Dunstan (1972, *Raptor Research* 6:93-102). It is a double-loop backpack consisting of a neck loop (circumference: 17 cm) and a body loop (circumference: 21 cm) which were embedded in the acryllic plastic casing of the transmitter. The connecting strap was sewn together after the harness was in place.

The transmitter (model SM1) components and materials were from AVM Instrument Company. Batteries were type RM 630 T2 (weight 4.2 g). The total backpack-harness assembly weighed 15.0 to 16.4 g which averaged less than 7 percent of the bird's body weight, as recommended by Dunstan (1972). Range of the transmitters was 3 to 5 km line of sight and 1 to 1.6 km under normal ground-level conditions. Theoretical life of the transmitters was 118 to 122 days, depending on the current drain of the individual transmitters used. In practice the life of the transmitters proved to be adequate for the maximum of 2 months that we used them.

Two types of harness loop material were used: woven Teflon tubing (diameter 5 mm) and flat nylon webbing (width 6 mm). Of the two types of loop material we found the nylon webbing to be the more supple and inconspicuous, and we used it almost exclusively for the later packages. The wire antenna (16 cm long) trailed down the owl's back, ending just short of the tip of the tail feathers. A small pad made of nylon webbing (2.5 x 3.5 cm) was attached under the transmitter package to reduce abrasion.

Results and discussion

The most successful trap at the winter roost was the 10 cm mesh mist-net. Mist-nets were not as useful around the nests because the owls flew to a nearby perch before entering the nests, whereas they often flew directly into the winter roost areas. The most productive time to mist-net at the winter roost was just before dawn when the birds returned to roost.

The most successful method for capturing females on the nest was with the hand-net. The dense willow growth around the nests tended to limit exit routes for incubating or brooding females, causing them to fly directly into the hand-net. The capture of females at the nest was also facilitated by their reluctance to leave the nest during incubation and brooding, and their tendency to sit low and close on the nest.

The failure of the baited bownets was possibly due to the fact that we used Kangaroo Rats *(Dipodomys ordii)* which tended to burrow down in the dirt so the owls could not see them. We also used Deer Mice *(Peromyscus maniculatus)* and Meadow Voles *(Microtus montanus)* tethered near mistnets. Although these were good potential prey items, the tethered mice were not active enough to bait the owls.

Just before dark we placed our balchatri traps near perch sites and attached a small light that would come on when the traps were nudged so we could see when an owl landed on them. One owl did land on a trap but was startled off by the light. He flew back to the trap but did not become ensnared and did not try the trap again.

Generally, the owls did not seem to be disturbed by radio monitoring activities provided that only a minimum of work was done in the immediate vicinity of the nest. However, 1 of 6 nests with eggs studied at Morrow Reservoir in the spring of 1979 was completely abandoned. We did make more trapping attempts at this roost than at other study sites, but this particular nest was in a location frequented by campers, and abandonment may have been the result of this disturbance rather than of our trapping.

After the owls were fitted with radio transmitters, 2 owls were given a brief time (10 to 20 min) in a dark box before release. These 2 apparently fared better than those released directly. One female owl, released directly from the hand, flew to a tree, landed, and then fell backwards off the perch. She remained on the ground for a few minutes but apparently recovered and was monitored later at the nest site. Another bird, later found dead, would not fly at all when similarly released. The birds given time in the box prior to release were all seen to fly a greater distance directly to a perch and land successfully. This "box time" may allow the birds to stabilize from such trauma as fright or temperature disturbance before we forced them to take flight. However, we know of no other literature references to this technique.

Of 3 birds radio-tagged at Deer Flat National Wildlife Refuge, 1 died on the 6th day of monitoring. This owl had been handled for a longer period of time than most (30 to 40 min) and was released directly without recovery time in a box, as described above. Upon release, it initially made no attempt to fly. When later found, it had been partially destroyed and cause of death could not be determined.

The backpack harnesses were realtively easy to assemble and did not seem to annoy the birds during the 2 months of our monitoring. The long-term effects of the harness were undetermined. The main disadvantage in using the radio backpack is that it is generally difficult to retrap the bird and recover the transmitter. On the whole, biotelemetry proved an effective method of studying the Long-eared Owl, and we were able to obtain considerable information concerning their little-studied nocturnal activities. We are currently preparing this information for publication.

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