Backpack radio transmitter attachment success in Screech Owls *(Otus asio)*

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A variety of techniques have been developed for the attachment of radio transmitters on avian species. Dunston (1972, 1977) described methods for backpack and tail feather attachment of radio transmitters on several raptor species. Nichols and Warner (1968, 1972) reported success of a breast harness for Great Horned Owls *(Bubo virginianus)* and Barred Owls *(Strix varia)*.

Herein we report materials and comparative success of backpack harness techniques on Screech Owls.

Methods and Materials

Screech Owls were captured in nest boxes or with a modified Bal-Chatri trap previously described (Smith and Walsh, 1981). 12 captured Screech Owls were banded and fitted with radio transmitters. Weight of transmitter packages averaged 5.6 gms (range 4.6-6.3 gms) or approximately 3-5% of body weight. Transmitters on 4 owls were attached with braided nylon approximately 2.0 mm in diameter and on 8 owls using Teflon-coated flexible antenna wire. The 3 harness designs used are shown in Figure 1. 7 owls were fitted with a double-loop criss-cross harness over the breast with straps running over each shoulder, across the breast and under the opposite wing, to be crossed again on the back and then connected to the transmitter (A). Straps were taped where they crossed on the breast to prevent shifting of the harness. 2 owls were fitted with a harness consisting of a chin and belly loop connected by a single strand secured along the sternum (B). A third harness on 3 owls consisted of separate loops running over each shoulder and under the wing in parachute style (C). Shoulder straps were connected by a single strand across the breast on 2 of the 3 owls. Flight efficiency of Screech Owls fitted with radio transmitters was visually tested in a 7 x 12 x 3.5 m enclosure prior to release at the capture site.

Results and Discussion

All of the Screech Owls pulled and bit the harness when they were first released in the enclosure. Although none persisted in this behavior more than 10 min., we occasionally observed some of the released owls pulling or biting the harness while roosting.

Harness material proved to be a critical factor in duration of backpack attachment. Braided nylon harnesses lasted from 1-11 days before the owls were able to remove them, either by biting through the strands or pulling the harness off entirely. Flexible antenna wire coated with Teflon was very effective: duration ranged from a minimum of 38 days to a maximum of 11 months. None of the harness materials caused unusual loss of feathering or other external evidence of damage.

Observations of Screech Owls flown in captivity plus our occasional sightings of the same owls in flight in the wild suggested that all 3 harness designs had little or no effect on the Screech Owls' flight ability. Of the 3 harness designs, the parachute style minus the connecting strand was least successful, and the single owl fitted with this design removed it (apparently by pulling the harness off) within 24 hrs. Both other designs were equally successful although the criss-cross double loop design showed the least shifting.

We periodically captured several individuals to weigh them and to replace transmitter batteries. Most of the owls showed little weight variation between captures, suggesting that the backpack did not substantially interfere with hunting.

A female fitted with a criss-cross double-loop backpack harness was monitored from 7 January 1980 to 23 July 1980. She mated in March and laid a clutch of four eggs in a dead tree cavity. She successfully hatched all four eggs, but the young were killed and apparently eaten by a raccoon *(Procyon lotor)* just prior to fledging. These observations suggest that backpack attachment of radio transmitters to Screech Owls does not unduly interfere with their behavior.

Acknowledgment

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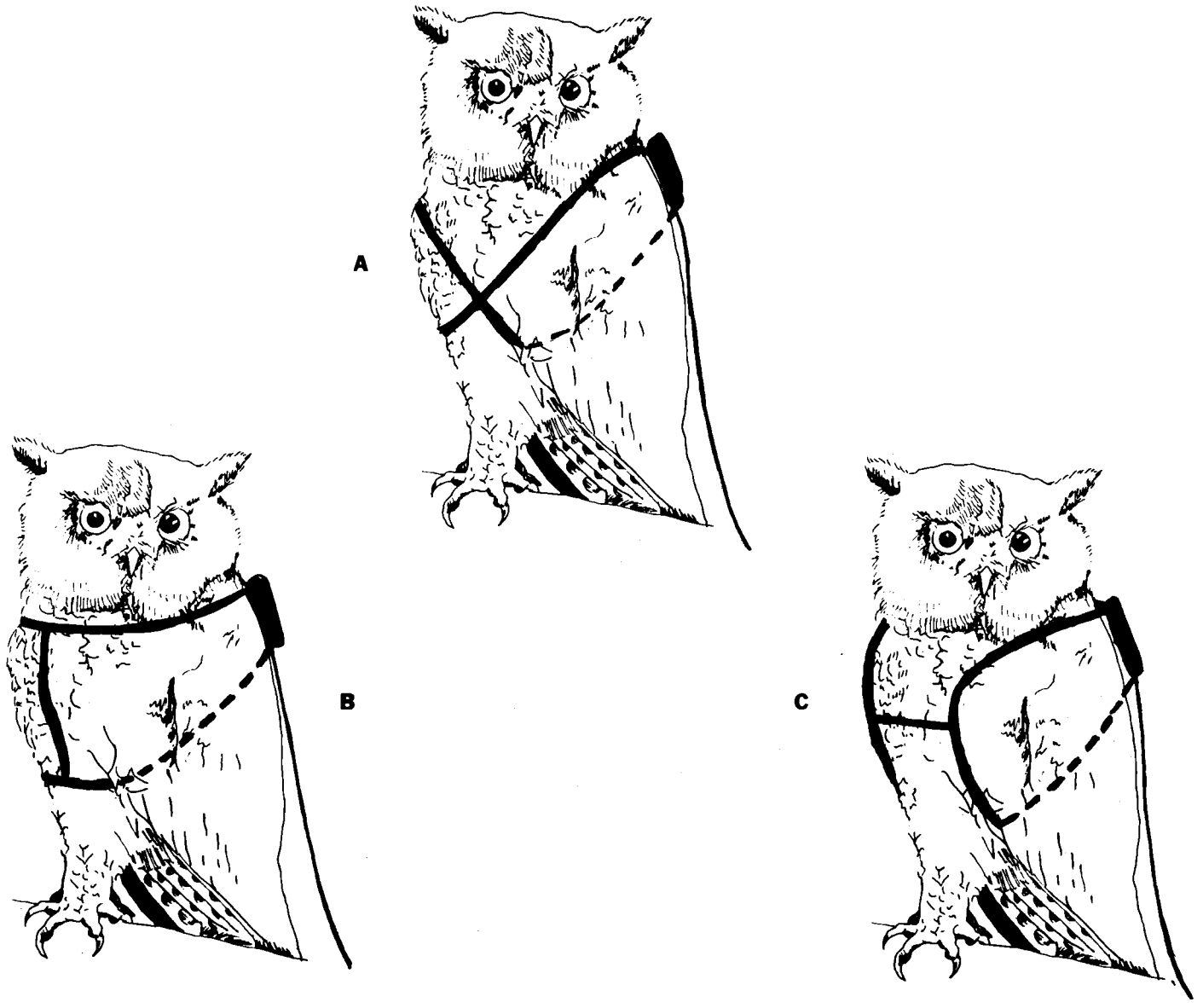

Figure 1. Backpack harness styles tested on Screech Owls: A = Criss-cross; B = Double loop; C = Parachute

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