

A hot melt glue technique for attaching radiotransmitter tail packages to raptorial birds

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Radiotransmitters have been used in a number of studies dealing with birds of prey. The techniques for attachment are usually of a back pack or tail package arrangement. This paper reports only on a tail package technique. Dunstan (1973, 1974) discusses the use of tail feather packages for radio-tagging raptorial birds. His techniques involved either suturing or gluing, and/or wrapping the transmitter to the upper or lower surface of the calamus of the central tail feather(s). In a 1976 study of Swainson's hawk (*Buteo swainsoni*) movements, we experimented with a variety of tail feather attachment techniques and found hot melt glue to be the most satisfactory method for durability and ease of attachment.

The transmitters used in the tail packages were developed by Cedar Creek Bioelectronics Lab, University of Minnesota, Bethel, Minnesota 55005. Transmitters weighed between 7 and 8 g and had a life expectancy of 30 days. The Broadcast range varied with terrain, but flat country, ground-to-ground receiving averaged 3.3 km while ground-to-air often reached 16.7 to 25.0 km, depending on the height of the flying bird and interference from other radio signals. Transmitters were priced at \$70.00 per unit. The Thermogrip® electric hot melt glue gun and glue sticks were purchased from the USM Corp., Consumer Products Division, P.O. Box 1139, Reading, PA 19603. The total cost of the gun and glue (enough for 20 birds) was less than \$10.00.

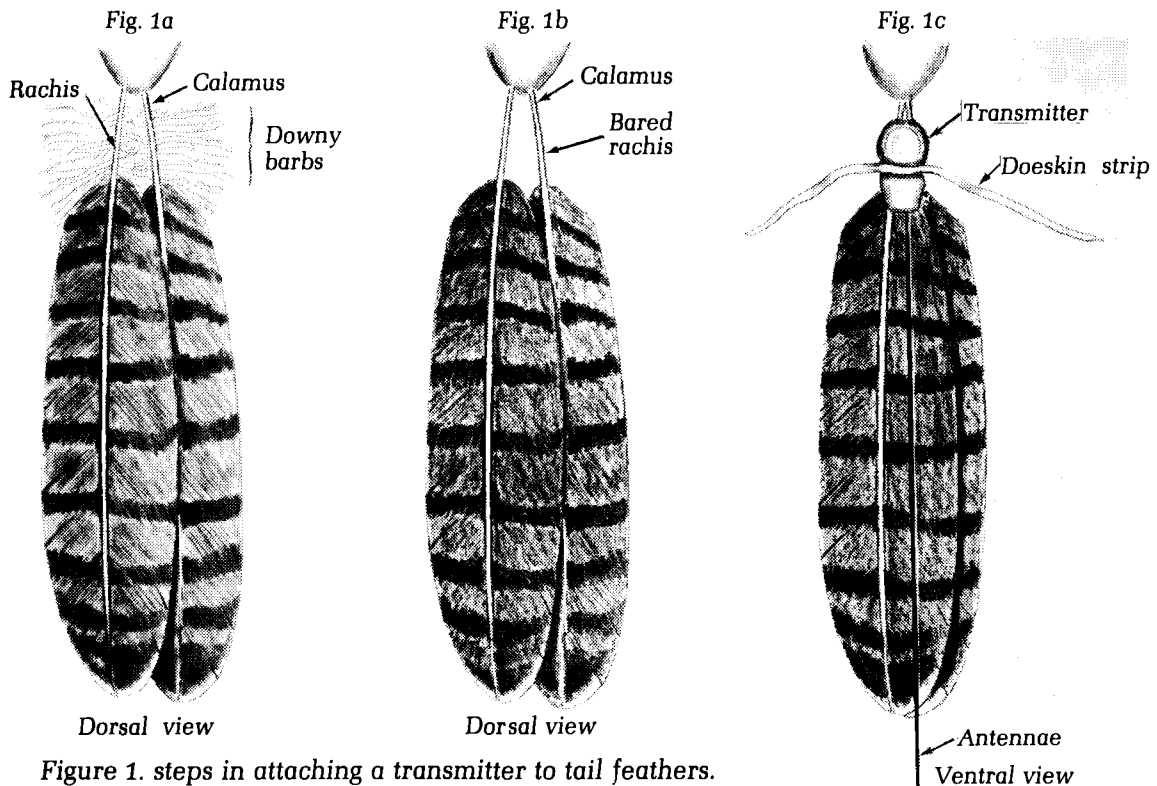


Figure 1. steps in attaching a transmitter to tail feathers.

Fig. 1a. Central tail feathers showing location of downy barbs.

Fig. 1b. Central tail feathers after removal of downy barbs.

Fig. 1c. Tail package being applied to under surface of tail feathers.

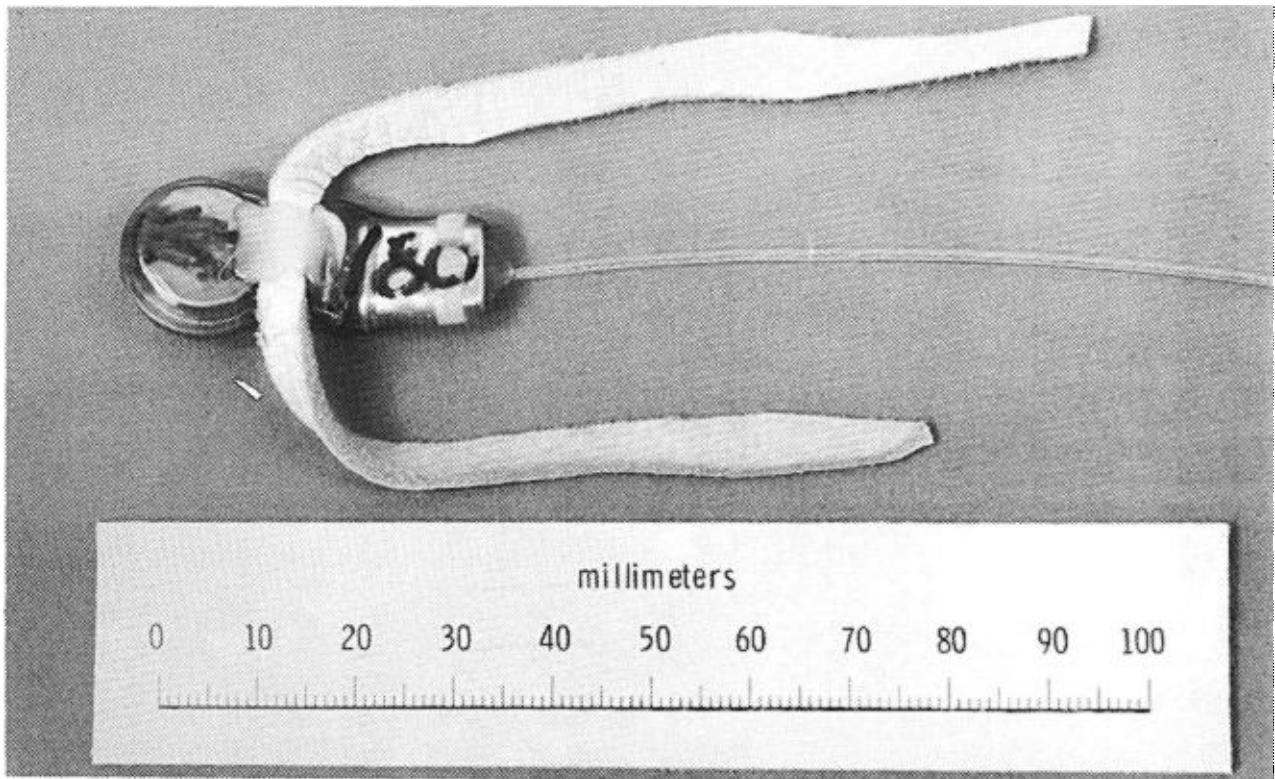


Figure 2. Transmitter used in the tail mount on Swainson's Hawks.

Once an adult bird had been captured, it was immediately placed in a cloth bag. This enabled us to confine its legs and wings and to have easy access to the tail feathers, which were left protruding through the bag opening. Next, the two central deck tail feathers were prepared for transmitter attachment: The base of each feather shaft was exposed immediately distal to the calamus (Fig. 1a), and between 10 and 15 mm of the rachis was shaved of its barbs (generally downy barbs) (Fig. 1b.) The tail package (Fig. 2) was prepared by gluing a 2.5 mm x 150 mm strip of doe skin leather around the center of the transmitter as follows: Using a hand-held glue gun powered by a Honda® portable generator, glue was spread on the center portion of the doe skin strip which was then stuck tightly around the transmitter body leaving the two ends free. The preliminary preparations completed, a drop of glue was placed on the center of the transmitter body and the entire package was pressed against the underside of the bared feather shafts (Fig. 1c). The inside surface of the doe skin stripping was coated with a film of glue and a square knot tied over the upper surface of feather shafts to secure the attachment. The glue was dry within 90 seconds and the bird was released.

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The hot melt glue technique of transmitter attachment is advantageous because the method is quick, the glue remains semi-flexible even at temperature extremes (thereby eliminating the possibility of fracture), and it is waterproof. The method should prove to be satisfactory on all large birds which are not undergoing a molt, and which have hard penned feathers.

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