

AN ADJUSTABLE RADIO-PACKAGE FOR DUCKS

By THOMAS J. DWYER

INTRODUCTION

Several methods have been described for attaching miniature radio transmitters to various bird species (Cochran et al., 1963; Brander, 1968; Brander and Cochran, 1969; Hessler et al., 1970; Godfrey, 1970). In studies of the ecology and behavior of prairie-nesting ducks, however, it was desirable to have a radio-package (transmitter, battery, harness) that could be used interchangeably on several species. The purpose of this paper is to describe a back-mounted, adjustable, radio-package that is currently being used successfully on Mallards (*Anas platyrhynchos*), Pintails (*A. acuta*), Gadwalls (*A. strepera*), and Blue-winged Teal (*A. discors*) in south-central North Dakota.

MATERIALS AND METHODS

Materials needed to construct the radio-package are: "Scotchcast #5" epoxy resin (3-M Company, Minneapolis, Minn.), "RTV-11" liquid silicone rubber (General Electric Co., Waterford, N. Y.), "Alphlex" PVC (polyvinyl chloride) tubing (Allied Electronics, Chicago, Ill.), PVC solvent and cement (Certainteed Corp., McPherson, Kan.), a Dremel "Moto-tool" (Dremel Manufacturing Co., Racine, Wis.), and beeswax.

The first step in construction of the radio-package is to cast a mold of the "RTV-11" rubber compound around a dummy transmitter that is slightly larger than the dimensions of a real transmitter. A disposable plastic drinking cup is used to contain the casting. The mold is cut lengthwise and later held together with rubber bands.

A 24-inch piece of 24-gauge, teflon-coated extruded wire, which forms the neck and body loops and doubles as the capacitance wire on this transmitter, is enclosed in size 16 (0.063 in ID) PVC tubing. Three pieces of size 12 (0.085 in ID) PVC tubing are cut, two pieces 2 inches long and one piece 3/4 inch long. Both ends of one 2-inch piece and the 3/4-inch piece are plugged with melted beeswax. The unplugged 2-inch piece of tubing is slipped over the enclosed teflon coated wire and pushed up to the point where the wire joins the transmitter. The other plugged pieces are attached to the transmitter with drops of melted beeswax as shown in Figure 1.

The transmitter is energized, placed in the mold, and covered with "Scotchcast #5." After the "Scotchcast" has hardened, the transmitter is removed from the mold and any excess "Scotchcast" removed from the top and sides of the package with the "Moto-tool." The bottom of the radio-package is sanded flat and completely smooth to prevent feather-wear on the duck's back. The beeswax plugs are removed from the tubing, and the wire is threaded first through the 2-inch piece of tubing and then through the 3/4-inch piece to form the adjustable neck and body loops and the completed radio-package (Figure 1).

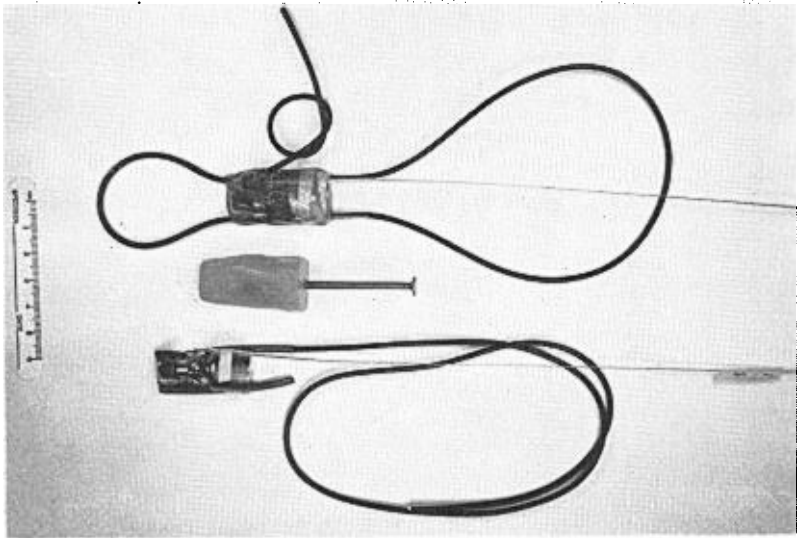


FIGURE 1. Transmitter ready for potting, dummy transmitter used to form the mold, and completed adjustable radio-package after potting.

ATTACHMENT TO THE DUCK

The transmitter rests on the duck's back between the wings. The body loop is opened wide and slipped over the duck's body from the front. It is adjusted to a snug fit behind the wings and in front of the duck's legs. The fit should be tight enough so the duck cannot get its legs between the loop and its body. The neck loop is next adjusted around the neck and left large enough so that the duck can fly with its neck outstretched in the normal position. The neck loop is preened under the upper breast feathers by the duck after a short period of time.

A drop of PVC solvent and cement is applied to the point of slippage between the size 12 and 16 PVC tubing at the rear of the transmitter and to the knot which secures the trailing end of the neck loop to prevent any loosening of the fit.

DISCUSSION

Completed radio-packages weigh between 17 and 26 g depending on whether 8 or 12 g batteries are used. Different size batteries also require different size molds.

The pieces of size 12 PVC tubing in addition to allowing adjustment of the harness also reinforce the neck and body loops at points of flex with the potting compound.

The advantage of this radio-package over nonadjustable ones is its custom fit to different size birds; this eliminates the need for different size harnesses for each species. This package, with suitable reduction in the size of components, could also be used on species of birds smaller than ducks.

Ducks equipped with this adjustable package during two field seasons have been tracked for periods of up to three months. Individuals are preoccupied with the radio-package as with any marker for a few hours immediately after release, but discomfort appears temporary. Flight behavior is not noticeably affected, and hens nest and rear broods in an apparently normal manner. Data on home range size, daily movement patterns, social behavior and habitat use are being gathered successfully by using this package.

Recoveries from radio-equipped ducks marked in North Dakota and shot during the 1971 hunting season have been reported from Minnesota, Missouri, Texas, Louisiana, and Nebraska. Questionnaires sent to the hunters indicated no physical or behavioral problems associated with the radio-package.

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