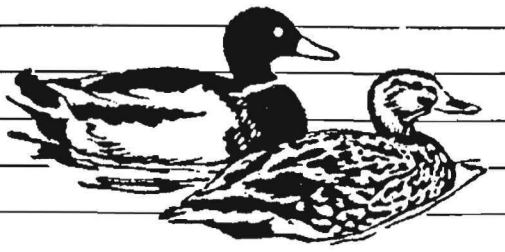
Research
Information bulletin
U.S. DEPARTMENT OF THE INTERIOR
NATIONAL BIOLOGICAL SURVEY



Number 72
1994

# A Radio Transmitter Collar for Parrots

A new transmitter attachment design and collar were used to radio-track parrots for 36–52 weeks. The system provides protection from chewing of the transmitter, batteries, collar, and base of the whip antenna.

## Parrots Difficult to Radio-mark

The powerful jaw muscles and large bills of *Amazona* sp. enable them to destroy bands and other radio devices. Few investigators have successfully attached radio transmitters to parrots. I designed a collar and case that foils destruction by the birds.

## Developing the Transmitter and Collar

The testing of two transmitters with collars similar to designs used on parrots in other studies provided clues for designing a virtually indestructible collar, antenna, and transmitter attachment. One transmitter design, previously used on fledgling parrots, failed on adults because of a weak connecting mechanism and poor design of collar and antenna. Parrots chewed through soldered collars that were a combination of brass bands and stainless steel wire (59 kg-test), through connecting mechanisms composed of six double loops and knots of nylon string covered with epoxy, and through the soldered connection of the antenna base. All wires and brass bands were covered with heat-shrink plastic tubing, which was also destroyed.

Another transmitter was attached to a sturdy brass band for the collar. No damage occurred to the collar or its connecting mechanism (nut and bolt), but the transmitter and antenna were heavily damaged by parrots chewing through the epoxy resin and removing transmitter components including batteries, wires, and in one case the entire transmitter. This collar damaged feathers on the parrots' necks.

The transmitter developed in this study was encased in a brass cylinder (Figure). A brass tube (2.3 mm in diameter) was silver-soldered longitudinally to the cylinder to attach the collar (59 kg-test stainless steel wire). The collar and antenna wires were covered with black,

heat-shrink plastic tubing. A 113 kg-test stainless steel wire antenna was designed to protrude from the cylinder at an angle parallel and adjacent to the collar on the right side of the parrot. The open end of the cylinder was soldered and sealed with green inert waterproof epoxy. The base of the antenna was protected with a small, 5-mm long brass tube (3.0 mm in diameter) that was attached around the collar wire and antenna and then crimped (Figure). The end of the antenna was silver-soldered to prevent unravelling. The adjustable collar was closed with two 6-mm long copper tubes (3.0-mm outside diameter and 2.0-mm inside diameter connector sleeves designed for fish line) that were placed on the overlapping collar wires next to the brass cylinder, opposite the antenna, and then crimped at different angles. An alternative method that allows the transmitter to fall free when the study is completed uses a crimped, nongalvanized steel tube instead of copper. The mean weight of the transmitter and attachments was 11.20 g ($n$ = 6, SD = 0.42). An even newer prototype, as yet untested, weighs 8.6 g. In this prototype, the battery case provides protection for the battery (eliminated brass case around battery) and the brass case provides protection of the battery connections.

## Successful Radio-tracking of Parrots

Five red-crowned parrots (*Amazona viridigenalis*) and one orange-winged parrot (*A. amazonica*) were radio-tracked for 36–52 weeks (mean = 44.3 weeks, SD = 4.2) by using the described transmitter and collar (Figure). Not one of the transmitters was damaged by parrots. This design of transmitter was the only type undamaged by parrots (total number of units tested = 15) during the predicted transmitter battery life of $\geq$36 weeks (Fisher's exact test, $P$ = 0.0003). The two other designs tested operated for less time (or were lost) because of damage from parrots (using ranks for analysis of variance, $F$ = 20.2; 2,11 df; $P$ = 0.0002).

Important movement, habitat, and behavioral data of parrots may be collected over longer periods with the two-stage transmitter and collar attachment (Figure). Less time was also required for capturing parrots and attaching transmitters that operated >36 weeks than for transmitters that operated for shorter periods (i.e., 20 weeks) because of collar or transmitter failure caused by the parrot.

For further information contact

J. Michael Meyers
Patuxent Environmental Science Center
P. O. Box N
Palmer, Puerto Rico 00721
Comm. (809)888-2930
FAX (809)888-2920

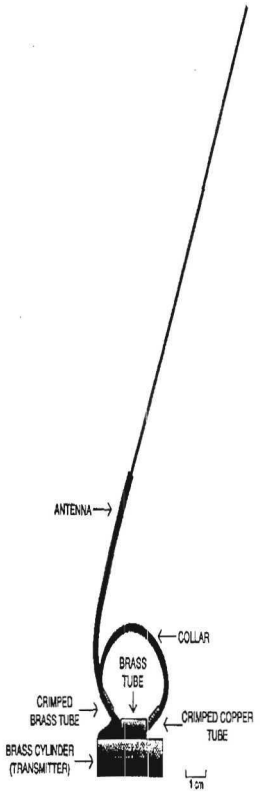



**Figure.** Radio transmitter design and attachment.