Aviculture Assisting Conservation

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What is Aviculture?

The term "aviculturist" has commonly been applied to people in the private sector. In actuality, it applies to anyone that is raising birds and would include zoological bird curators as well as government bird breeding facility managers. This article takes a brief look at how aviculture can fit into the conservation picture.

Who are Aviculturists?

Aviculturists are a diverse group of people. Some have a few pairs of birds while others have large collections. Some specialize in one family, genus or species of birds, while others have mixed collections. In general, aviculturists who concentrate their efforts on one or two species can usually make a greater contribution to species preservation than those who have large mixed collections.

Specialist aviculturists concentrating on a particular group of birds can accumulate vast amounts of vital information and frequently network with other aviculturists on a world wide basis. Groups of these specialists often form special interest organizations such as the Whooping Crane Association, the Trumpeter Swan Society or the World Parrot Trust. All of these groups are useful for dissemination of information to aid in the propagation of birds and education of aviculturists and the public.

Specialist associations can be of great benefit to ornithologists and field biologists who may spend years tracking down large numbers of birds in the wild to attempt studies which could easily be carried out in a captive setting. Often, provided that the constraints of the breeding season are respected, a large amount of data can be collected in one year's time with several aviculturists' participation. Information on sexual dimorphism, courtship, nesting behavior, nest building, clutch size, egg calibrations, weight gains, feeding of young, weaning age can all be collected in aviary settings. Eventually DNA, hormone and aging studies may be carried out. Captive bird photography often reveals what a researcher suspected, but could not observe in the wild.

Each species' biology is extremely complex. Success of future release programs is dependent on many other species (including man, the greatest predator of all) which interplay with the subject species. For many of the species in the greatest danger of extinction, little is known of their natural biology. Tracking tropical forest birds can be especially difficult for researchers.

Ideally, populations of specific bird species should be monitored and their habitats preserved when there are hundreds or, better yet, thousands of individuals left in the wild. More frequently, however, the population dips precariously close to extinction before a desperate, last minute avicultural intervention is implemented to save them. Current examples include the Whooping Crane *Grus americana*, Peregrine Falcon *Falco peregrinus anatum*, and the California Condor *Gymnogyps californianus*.

Photo by Joanne Abramson

This Buffon's Macaw is wearing a radio transmitter. It is on a brass collar which provides neck support for the transmitter cylinder.

A Recent Example of Aviculture Assisting Conservation

An example of one such opportunity for this author to assist in conservation research occurred in 1993. The author became aware of a radio transmitter that was to be used on Buffon's Macaws (*Ara ambigua*) in the wild by researchers Robin Bjork and George V.N. Powell working for RARE Center for Tropical Conservation. Buffon's Macaws are uncommon birds in captivity and in the wild which are, unfortunately, frequently misidentified as the more common Military Macaw (*Ara militaris*). RARE was contacted and it was determined that wild Buffon's Macaws were to be fitted in the wild and released. A suggestion was made that the researchers try the transmitters out on captive birds first to determine if the design was appropriate. Three prototype transmitters were tried prior to the final design. Details in the researchers own words are as follows:

Radio Telemetry Methodology*
Robin Bjork and
George V.N. Powell
RARE Center for Tropical Conservation

Radio-telemetry is being employed in this study to track habitat use by the Buffon's Macaw population in Costa Rica in order to identify movement patterns and quantify important food resources throughout the species annual cycle. The plan is to radio-tag adults and juveniles, and subsequently, monitor their movements and food selection; to date only juveniles have been radio-tagged.

To determine the safest, effective radio transmitter for use on the Buffon's Macaw, three prototype neck collar-mounted transmitters (manufactured by Holohil Systems, Ltd., Ontario, Canada) were tested on captive macaws before radio-tagging birds in the wild. Each of the three transmitters had a brass cylinder (42 mm long X 17 mm in diameter) encasing the transmitter and battery, which, by virtue of its weight, rests on the ventral side of the bird. The prototypes differed in collar and antenna design. The first prototype used a collar of multi-strand, stainless steel cable with a trailing cable antenna covered in plastic "shrink-wrap" material. The second

prototype used a brass collar and the trailing cable antenna. The cable collar did not provide adequate distribution of weight around the neck, and on both prototypes, the shrink-wrap on the collar and/or antenna was peeled off by the birds exposing the raw steel. Subsequently, the birds quickly chewed into the cable, leaving frayed steel ends exposed, a nonfunctional antenna with potential for injury to the bird.

The third radio transmitter prototype, which remained intact throughout the captive testing and was consequently placed on birds in the wild, is composed of the brass cylinder unit (with a battery functional for 12 months) and a brass collar (1 cm wide) that functions as an antenna. The collar is attached to one end of the cylinder, wraps around the back of the neck of a bird and fastens on the other end with a locking nut which completes the circuit. The unit weighs 30 grams or less than 3% average body mass of a captive adult Buffon's Macaw (1200-1500g, J. Abramson unpubl.). To maximize signal range, collar/antenna length must be preset which makes the collar non-adjustable. The collars were prepared in two sizes to fit the size range of adults determined from measurements of six captive adult male and female Buffon's Macaw. The collars were sized to allow the fore and index fingers to slide snugly between the collar and the bird's neck to insure that the crop and airways were not restricted. Inside dimensions of the closed collars are 161 mm and 168 mm; the smaller transmitter fit the majority of birds tested in captivity. One note of caution: the fit of the collar on the bird is critical; researchers using collar-style radio transmitters on Yellow-naped Amazon (Amazona auropalliata) experienced occasional problems with the lower mandible of a bird becoming stuck under the collar if it was too loose (A. Brice & K. Joyner pers. comm. 1994).

As a pilot study in 1994, three juveniles were radio-tagged with the collar-mounted transmitters. One individual was captured manually in a tree the day after it fledged. Two siblings from a second nest were radio-tagged two weeks before they fledged; one person climbed the nest tree to the nest cavity using vertical rope climbing techniques, then each nestling was manually removed from the nest, lowered to the ground in a pillow case on a rope-pulley system where a two-person team attached the transmitter in less than five minutes and sent the nestling up the rope where it was placed back in the nest. Observations of parental preening and feeding behavior of the radio-tagged fledglings indicated apparent acceptance of the transmitters by both adults and fledglings. Range of signal reception has been up to 5 km by ground and a minimum of 10 km from an airplane.

Behavior and Movements

During the field seasons of 1994, the movements and food selection of the radio- tagged birds were monitored on at least a weekly basis. For about the first two weeks after fledging, the young birds stayed within a very localized area (about 1 km²) around the nest tree while the adults left and returned with food throughout the day. By 16 days post-fledging, the young birds began accompanying their parents on flights. Within five weeks after fledging, these families were joining other Buffon's Macaws in feeding trees and at six weeks the young were first observed foraging. At eight weeks after fledging, the families were covering about 14 km² area per day.

*From The Large Macaws; Their Care, Breeding and Conservation by J. Abramson, B.L. Speer and J.B. Thomson.

Clearly the Buffon's Macaw transmitters could have been tested on wild birds. The use of captive bred and captive held wild caught birds, however, allowed the researchers the opportunity to design a superior transmitter without endangering any rare wild birds.

The researchers also had the opportunity to visit the captive breeding facility and gain hands on experience capturing and holding large macaws. Variations in neck sizes were measured and noted. Individual variations did occur which required proper sizing by the transmitter manufacturer of several neck band sizes. These changes were relatively easy to correct while the researchers were in the United States, but could have delayed field research in the wild if the transmitters had to be returned to the manufacturer for refitting.

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Cooperation of the Avicultural Community with Other Entities

Why aren't there more cooperative efforts to study avian species between wildlife biologists, zoologists, ornithologists, conservationists and private aviculturists?

Perhaps it is because many field researchers are unaware of the potential benefit of networking with members of the avicultural community. Members of the conservation community are often comfortable contacting other conservation researchers or members of the established zoo community, but may fail to recognize that the avicultural community might also be able to assist them in their research.

The avicultural community has no directory to alert other specialties to where information can be found to assist them. The avicultural community is diverse and has yet to create a cohesive network linking the specialty organizations. Specialty bird magazines and journals abound, but with no central location of dissemination.

Global research, using the media and the internet, can incorporate a number of diverse disciplines for the purpose of solving some of the difficult conservation issues. While the information gained from captive bird populations will not replace research gained in the wild, it can augment that research and provide comparisons between captive kept birds and their wild counterparts.