

First U.S. Breeding of Goliath Herons

(*Ardea goliath*)

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The goliath heron (*Ardea goliath*) is a little known species which is uncommon in captivity. No supporting publications have been located but inquiries have led to the confirmation of captive propagation in two countries. The Amsterdam Zoo kept a pair earlier this century which laid multiple clutches annually for several years, producing many offspring. More recently the species has been propagated at the Larvon Bird Gardens in Zimbabwe (CF Freiheit: pers. comm.). The Dallas Zoo and the San Diego Wild Animal Park are the only two U.S. institutions currently holding the species with a total of two male and six female wild caught individuals. The first U.S. captive breeding was accomplished at the Dallas Zoo in 1987 with the production of one male and two female offspring. In 1988, two more offspring were produced in Dallas where a total of two male, four female and two unknowns now reside.

Largest of the ardeids, the goliath heron measures 1.5 m tall and weighs 4 to 4.5 kg as an adult. The sexes are alike with slate grey and chestnut plumage. The head, face and hind and side of the neck are chestnut with a bushy crest on the crown. The chin, throat, foreneck and upper breast are white, with the latter two streaked black. The lower breast, belly and thighs are a dark chestnut. The lores and orbital area are yellow tinged with green. The eye is bright yellow and the legs, feet, and bill are black. The immature bird is similar to the adults but paler. The upper parts are browner and the lower breast and belly are buff white with indistinct black streaking. The upper mandible is black and the lower horn colored.

Ardea goliath is a frequent, sometimes common, resident of most of Africa south of the Sahara. It prefers the shallow shores of freshwater lakes, marshes, rivers, estuaries and coastal areas (Hancock & Kushlan). Solitary nests can be found on trees

overhanging water, on the ground (usually among the reeds), and on low bushes. The nest consists of a platform of sticks and reeds 1 to 1-1/2 m in diameter and is built by both sexes. A clutch of two to four pale blue eggs is laid at two or three day intervals. Incubation is by both adults and lasts 29 days. The chicks hatch at staggered intervals and are covered by long white down.

The Dallas Zoo acquired two female and one male wild-caught sub-adult birds in May 1986. The three birds were housed together outdoors in a covered enclosure which was moderately planted with grass and bushes. Their diet consisted of smelt, mice, and Nebraska brand bird of prey meat. Free access to a heated shelter was allowed during much of the winter; however, they were locked indoors during freezing weather. In January 1987, they began what appeared to be confused and erratic nest building behavior. The birds began constructing multiple nests at various locations in the exhibit. Before a nest was complete, it would be dismantled and the sticks from it used to begin a new nest. Often two or more nests would be worked on at the same time by all three birds. Behavioral interactions among the trio appeared equal; no pair bonding was observed.

Egg laying commenced in May. The three birds were not yet in adult plumage although the male and one female had begun to molt. Nest building had continued erratically with no one nest or location selected. The birds vigorously defended their nest sites which was contrary to observations of birds in the wild (Mock). Despite the large amount of nest building activity, the eggs were not laid in any of the partially constructed nests. The first egg was found broken, perhaps an accident, and the birds did not take care of the next egg. Although all three birds defended the egg, they frequently

moved it around and stepped on it, apparently uncertain of what to do with it. Due to this lack of proper parental care, each egg was removed as it was laid and artificially incubated. The first chick died in the shell but the next four hatched successfully. Three of these chicks were successfully hand-reared to independence. A fourth chick suffered fractures of both its legs and was eventually euthanized when it failed to respond to treatment.

In February 1988 the trio began nesting again. At this time the three birds were in nearly complete adult plumage and their nest building strategy had matured. A well defined nest was built using sticks for the main structure and grasses for the lining. Some of the eggs were destroyed before keepers were able to remove them. Apparently, both females were in breeding condition and it was believed the destruction of the eggs was due to nest site competition. For this reason, one female was removed from the enclosure for the remainder of the egg laying cycle.

It is known that copulations occurred with each hen. Additionally, the total number of eggs laid and the behavior of the two females indicates a possibility that both had been laying. Following the removal of one female, two more eggs were laid in the nest and left undisturbed. The parents shared incubation and successfully hatched one egg. The second egg failed to hatch and exami-

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Aug / Sept '91

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June 15 — display ADS

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Aug. 1 — editorial copy

Aug. 15 — display ADS

Dec '91 / Jan '92

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The first chicks hatched in 1987 on day 4 (left) and day 0 (right). They ate voraciously a few hours after hatching.



By 21 days, feathers are erupting from their sheaths and the eyes have changed from white to yellow.



The female regurgitates smelt which the 21-day-old nestling can now eat whole.

nation revealed a small puncture in the shell and a nearly full-term embryo. The surviving chick was reared by the parents without incident on a diet of vitamin supplemented smelt which was regurgitated directly onto the nest floor. Another chick was hand-reared after hatching from an egg which was laid prior to the second female's removal from the exhibit. Although it was not possible to weigh the parent-reared chick, it was very apparent that it grew faster than the hand-reared chick. The hand-reared chick was given a diet simulating that which was provided for the adults.

This early success marks the beginning of a captive propagation program for this species at the Dallas Zoo. Growth data has been collected from all of the hand-reared chicks. Data collection of this nature will continue and our research is being expanded to include behavioral studies of this little known ardeid species.

References

1. Hancock, James and James Kushlan. 1984. *The Herons Handbook*. Harper and Row, New York.
2. Mock, Douglas W. and Karilyn C. Mock. 1980. Feeding behaviour and ecology of the Goliath Heron. *The Auk* 97:433-448.



A 28-day-old heron stands and walks clumsily, frequently stepping on its long toes.



The 34-day-old chick has left the nest but is still dependent upon its parents.



The female performs a stretch display which culminates in this bow as part of a greeting ceremony when she relieves her mate at the nest. ●

Conservation Grants Awarded in 1990

The following small grants were awarded during 1990:

Natural History of the Plate-billed Toucan, researcher William Beltran, \$1,000

Bird Conservation in Grenada, researcher David E. Blockstein, \$1,000

Evolutionary History of the Genus Tragopan (pheasant), researcher Kamal Islam, \$1,000

Educational Materials for the Lesser Antilles, The Center for Tropical Bird Conservation (RARE), \$1,900

The Natural History and Ecology of the Yellow-lored Amazon Parrot, researcher Paul Wood, \$2,000

Food Habits of the Scarlet Macaw, researcher Mark Kainer, \$2,000

Small grant to offset cost of the proceedings for the First Workshop on the Conservation of Macaws in Mesoamerica, \$2,100

Total awarded, \$11,000

We would like to thank all those members who donated to the AFA Conservation Fund during 1989-90 and to those individuals who served on the small grants review board. ●



Plate-billed Toucan feeding upon a snail in Colombia, South America. Research as to this species' ecology was made possible due, in part, to a small grant from the AFA Conservation Fund.