Plush Crested Jays at Audubon Zoo

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Plush-crested or Uracca jays *(Cyanocorax chrysops)* are native to South America, where they can be found throughout the central portion of the continent from central Brazil to north-central Argentina. They are woodland birds, often found in rainforests; noisy and active, they provide Zoo visitors with a fascinating display.

Audubon Zoo has had Plush-crested jays since early 1977, when a female was introducted into our free-flight rainforest exhibit. Over the next three years she laid eggs in the rainforest, although they were, of course, infertile. In early January 1980 the female was removed from the rainforest and housed in a smaller exhibit with a wild-caught male.

Exhibit

The exhibit is 9 feet (2.74 meters) long, 5 feet (1.52 meters) wide and 9 feet (2.74 meters) high. It is wire-fronted and faces the public hallway; 14-gauge music wire stretched taut provides the necessary barrier between the public and the birds. The wire front allows free circulation of air within the exhibit and also allows the public to hear the birds. The floor of the exhibit has a drain in the middle and is covered by a layer approximately 1 foot (4.68 cm) of gravel and 1 foot (4.68 cm) of topsoil.

The exhibit is planted; this can be a problem since the jays tear up plants at a terrific rate, often eating bits of stems and leaves. Species of plants found to be successful in the exhibit include wild Ginger *(Alpinia sp.)*, Bamboo *(Bamboo sp.)* and Coffee *(Coffea arabica)*. Almost any non-poisonous plant is acceptable for the exhibit and old plants are replaced as they are torn apart. Lighting is provided by six double fluorescent fixtures, each with one Gro-light and one white fluorescent tube. This provides enough light for the plants and does not seem to harm the birds in any way. Three perches pruned from oak and hackberry trees in the park are placed so that the birds must jump or fly from one to the other.

Diet

The jays' diet is prepared in the Zoo commissary and brought to the Bird House in the morning. Their diet consists of Bird of Prey meat (Nebraska Brand), diced fruit (grapes, banana, apple and orange), raw peanuts, moistened dog kibble, a small amount of chicken scratch grains, hardboiled egg (including shell), crickets and mealworms. Normally the birds sample all of the various types of food, but while incubating and rearing chicks they eat more of the meat and live food. During the day, the adult jays consume about 1½ cups total food, half of which is meat and live food. The birds are also given small mice or pinkies when available. the mice are killed, the pinkies served live. Vionate (Squibb Laboratories) is sprinkled on top of the food before serving. Water, to which Avitron (Lambert-Kay) is added, is provided in a crock and changed daily. No food is left in the exhibit at night.

Breeding Activities

During 1980 a wooden nesting platform about 18 inches (7.02 cm) square was installed against one wall of the exhibit. In early March the female was seen sitting in this "nest" and when we added twigs to the exhibit two days later, she immediately started to carry them to her ledge. Her first egg was laid on 12 March, and was broken and eaten the same day. Two more eggs were laid on successive days; they also disappeared. A month later she recycled and by 19 April had three eggs; however, two days later only one was left, and this remaining egg was deserted by 22 April. There were no more eggs that spring.

Throughout the summer some courtship behavior could be seen. The male fed his mate, the female carried sticks to the nest ledge and then dropped them off, and an attempted copulation was seen at the end of August.

No more breeding activity was recorded until the end of November, when the female was observed trying to entice the male to mate by backing up to him, tail raised, making the long, drawn-out "begging" call used by juvenile jays to demand food.

At this time the type of nest was changed from the wooden platform on the wall to a more naturally-shaped cup nest attached to one of the perch trees. The nest was constructed from a 12 inch (4.68 cm) wire hanging plant basket. Because the space between the wires was greater than the diameter of the eggs, the bare wire was covered with window screening material to prevent the eggs from slipping out of the nest. The female jay was very excited when the new nest was installed; she immediately flew to it and crouched down in it, making the begging call and fluttering her wings. The male, too, was interested, and he carried sticks to the female in the nest who, more often than not, tossed them out again. By the end of December both birds were decidedly more aggressive, and would not hesitate to attack a keeper coming in to check the nest. Because of this, and hoping to avoid a repeat of the previous year's egg-breaking cycle, nest checks were kept to a minimum.

On 2 January 1981 two eggs were found in the nest. The female did not use any nesting material (various types of material, including sticks, shredded burlap, hay and fur were provided in the exhibit); the eggs were laid on the bare window screening. She was very attentive, although she did get off several times during the day to stretch and eat. While she was off the nest the male showed no interest in the eggs. Two more eggs were found on 5 January. According to information from other zoos, the incubation period should have been 17 days, and on 27 January all four eggs were candled. All were infertile. The first egg of the second 1981 clutch was laid on 4 Feburary and by 8 February the clutch was complete with five eggs. We candled these eggs on 14 February, not wanting the female to sit if they were all in-

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Photos by Steve Dorand, staff, Audubon Zoo

Female Plush-crested jay (Cyanocorax chrysops).

fertile. However, three eggs were definitely fertile, and all five were returned to the nest. The female accepted them readily.

During incubation, the female sat continuously, getting off the nest only about once every 1½ hours to eat or drink. The male often came to her at the nest with tidbits. At these times she fluttered and gave the "begging" cry, whereupon he would feed her. The first chick hatched on 24 February 1981 between 10:00 am and noon, 20 days after the first egg was laid. The female, after looking closely at the new arrival, settled back down on the nest and continued to incubate.

The second chick was hatched sometime during the following morning. The first hatchling was able to stand upright in the nest by this time, cheeping with its wings and neck outstretched. The other three eggs subsequently disappeared.

The male brought food to the nest about every 15 to 30 minutes; the female would accept it, then eat it herself or feed the chicks. Only rarely did she allow her mate to feed the chicks himself. Several times a day she could be seen withdrawing and eating fecal sacs. While brooding she would not leave the nest at all, in contrast to her incubation behavior.

On 1 March one chick was found caught in a fold of window screening in the nest. Although cold it was alive when found and put back in with the other chick. It died the following day, and the parents presumably ate it. The remaining baby grew fast, with wing and body contour feathers appearing by 13 March. The chick also did a lot of flapping in the nest. It was out of the nest for the first time on the morning of 21 March. That afternoon we noticed it acting lethargic, and upon examination it was found to have a severe mite infestation. It was dusted with 5% Sevin dust (Chevron Laboratories) and returned to the exhibit. The parents immediately tried to feed and brood it, but it would not accept food. The following morning the chick could not stand and was removed from the parents. It appeared paralyzed on the right side, perhaps from hitting the wall during its maiden flight, and never recovered. It died on 10 May.

In the meantime, the parents had started all over again. The first egg of their third 1981 clutch was laid on 6 April. A second was laid two days later, and both disappeared the following week. Clutch #4 began on 19 April and was completed on 25 April with a total of four eggs. They were candled on 28 April, found to be fertile and on 9 May 1981 two healthy baby jays were seen in the nest.

The birds' normal diet had to be supple-

Juveniles, shortly before fledging. Note the placement of the nest and the attending parent.

mented to accommodate the babies and the following regimen was set up: at 8 am a dish of diced rodent (mouse, mouse pinkies or rat) was offered. At 10 am they received the normal adult diet. At 4 pm they received a dish of Bird of Prey meat, crickets and mealworms, enough to last until the following morning. Uneaten food was removed when fresh food offered. The parents were painstaking in preparing the chicks' food, manipulating the bits and pieces until they were just the right size and shape to be comfortably accepted by the chicks.

The two chicks were out of the nest for the first time on 30 May, and appeared to be much better co-ordinated than the first chick had been.

Almost a month later, on 24 June, another egg appeared in the nest. Since we had to move the birds to a different exhibit this egg was discarded. Two days after the move one of the youngsters was seen eating on its own for the first time. When the four birds were moved we did not move the nest. The female had obviously lost weight during the brooding period, and continuous egg-laying was felt to be detrimental.

The two youngsters grew rapidly, attaining adult size at around 83 days. At this time we noticed that the juveniles' vocabulary contained sounds not present in the adult repertoire. This was attributed to the chicks having heard and mimicked sounds from the rainforest.

The old wire nest was rebuilt, this time with three layers of burlap between the wire and window screening, and placed in the new exhibit on 4 August. The female has laid eggs on the average of one a week since then, but the curiousity of the young birds has drawn them to the nest every time she gets off for something to eat or drink. At these times the eggs fall prey to the younsters' investigations and the female has not been able to keep an egg more than two days. This is disappointing, since in the wild *Cyanocorax* juveniles are often nest helpers, learning to become breeders themselves by assisting their parents raise the next clutch (Hardy 1976). In the confinement of captivity they do not have the same room to explore, and invariably end up at the nest, poking at the new clutch and breaking the eggs. They do, however, bring food to their mother as she incubates the new eggs. She begs to them, making the same sounds they did when they were in the nest. We suspect that once the juvenile birds are removed from the exhibit, the parents will hatch and rear another clutch.

Plush-crested jays do not appear to be difficult to maintain in captivity. Omnivorous and opportunistic in their feeding habits, they readily consume most of a varied diet. While breeding, although it is definitely preferred, live foods do not appear to be necessary, as our birds were seen feeding bits of Bird of Prey to the chicks as often as mouse or cricket.

Space, however, does appear to be a consideration, especially once the young birds are grown up enough to leave the nest. It is then that they should be watched carefully, for aggression between the adult birds and the juveniles is not uncommon. In addition, for the entire cycle of egg to chick to nest helper to occur there must be enough space and diversions for the young birds to be occupied without coming to the nest every time the female leaves to eat.

Although still common in the wild, Plush-crested jays are not often kept in zoo collections. Perhaps, considering their bright, active demeanor, and the ease with which they can be maintained, more zoos and private aviculturists will encourage an interest in jays in general, and Plush-crested jays in particular. •

Juvenile Plush-crested jay, just after fledging. About 3½ weeks old.

Reference

Hardy, J.W. 1976. Comparative breeding behavior and ecology of the bushy-crested and Nelson San Blas jays. Wilson Bull. 87:96-120.

Male feeding juveniles, approximately 3 weeks old.

Photos by Steve Dorand, staff, Audubon Zoo