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### PARENTAL CARE AND NESTLING DEVELOPMENT OF THE BEAUTIFUL JAY (*CYANOLYCA PULCHRA*) IN NORTHWESTERN ECUADOR

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**Cuidado parental y desarrollo de pinchones de la Urraca Hermosa (*Cyanolyca pulchra*) en el noroeste del Ecuador.**

**Key words:** Beautiful Jay, *Cyanolyca pulchra*, Ecuador, Andes, parental care, nestling.

#### INTRODUCTION

The Beautiful Jay (*Cyanolyca pulchra*) is a rare and local species found on the Pacific slope of the Andes in Colombia and northern Ecuador (Ridgely & Greenfield 2001). The genus *Cyanolyca* (family Corvidae) is comprised of nine species, all found in Central and South America (Sibley & Monroe 1990, Madge & Burn 1994, Dickinson 2003). The range of the Beautiful Jay overlaps with that of the more common Turquoise Jay (*Cyanolyca turcosa*), to which it is closely related (Madge & Burn 1994). Notably, recent phylogenetic research has indicated that *C. pulchra* is most closely related to the Azure-hooded Jay (*Cyanolyca cucullata*) from Central America (Bonaccorso 2009). The conservation status of the Beautiful Jay is near-threatened and has

faced population declines since the 1970s due to habitat loss (Birdlife International 2008).

We monitored the nest of a Beautiful Jay from 12–27 April 2009, from hatching to fledging within secondary montane forest habitat. We recorded rates of food delivery, fecal sac removal, time spent at the nest, and proximity to anthropogenic disturbances. This report is the first detailed description of the Beautiful Jay's parental behavior and nestling development; detailed information on the characteristics of the nest and eggs is being published elsewhere (Solano-Ugalde *et al.* in prep.).

#### METHODS

The cup-shaped nest was situated in the sub-canopy of a forested garden at the El Pahuma

Orchid Reserve (1900 m a.s.l.; 0°1.5218'N, 78°37.9573'W), Pichincha Province, Ecuador. The El Pahuma Orchid Reserve is a privately-owned tropical montane forest that has been protected since 2000 by a conservation easement with the Ceiba Foundation (Meisel & Woodward 2005). The garden area is comprised of secondary forest that has been selectively thinned to accommodate trails and botanical displays. The canopy height is approximately 12 m, and most trees are thickly covered with epiphytes (e.g., mosses, lichens, liverworts, orchids, etc.).

The Beautiful Jay is regularly observed in the reserve from 1900–2400 m a.s.l., foraging in small groups (Ridgely & Greenfield 2001). Reserve staff have observed the Beautiful Jay nesting in the same general area for the past three years. The Turquoise Jay is also present in the reserve.

D. Laufenberg compiled monitoring data collected by volunteers who observed the nest for 24 days; from hatching (12 April 2009) through fledging (27 April 2009). Over a five day period (17–18 and 20–22 April), DL collected 18.3 hours of data on nesting behavior (observation was not continuous, but represented all hours between dawn and dusk). The nest was located approximately 2.5 m high in a *Clusia crenata* tree, in clear view from a second story window of the visitor center about 8 m away, 25 m from a primary road and 20 m from a stream. DL recorded the frequency of feeding events (adults returning to the nest with food for the nestlings), the duration that an adult was present at the nest (in contact with the nest), and, when possible, the removal of fecal sacs and the types of food that were brought to the nest.

## RESULTS

At the start of intensive data collection on 17 April (five days after hatching), both chicks

could open their eyes and approximately 75% of their bodies were covered with light-colored crown feathers. Both adults attended the nest for the duration of the study, and generally foraged within visual range of the observer (within 15–100 m). We observed a total of 86 feeding events over the course of 18.28 h of observation (mean = 4.77 feeding events/h, SD = 1.50, Range = 2.77–6.67, n = 8). The two nestlings were fed alternately so that each received a similar amount of food. Throughout the monitoring period, each nestling reacted to the presence of an adult by consistently raising its head and begging until it was fed. Insects in the order Orthoptera (e.g., crickets, grasshoppers, and katydids), Odonata (e.g., dragonflies and damselflies), and Lepidoptera (e.g., moths and butterflies) were observed being fed to the chicks, but the contribution of insects to the chick's total diet could not be ascertained with certainty. Although fruit was not observed being fed to the nestlings, many times the adults would regurgitate unknown foods directly into the nestling's mouths.

At least one adult was present at the nest 35% of the time; however, the adults spent more time at the nest when it was raining (52%) than when it was not raining (22%). At most, two adults were observed simultaneously at the nest (32 occasions averaging less than a minute each time, representing 4% of the total time the nest was observed).

DL observed adults carrying fecal sacs away from the nest 16 times over the five days of observation. Occasionally, an adult aided a nestling by physically probing and pulling the fecal sac from the cloaca. Sometimes the fecal sac was carried away from the nest and presumably dropped while at other times it was apparently eaten.

The adults did not alarm call when reserve staff or researchers were within 10 m of the nest, but did alarm call when novel humans

were within 10 m of the nest. The birds did not appear to be negatively affected by automobile traffic; we estimated that at least one car per minute passed on the road approximately 25 m from the nest during the observation periods.

## DISCUSSION

This is the first detailed study of nesting behavior of the Beautiful Jay. Based on the behavior of this single nesting pair, the Beautiful Jay appears to share many attributes of nesting behavior with other *Cyanolyca* species. The pair we observed successfully reared two chicks that fledged 24 days after hatching. This is similar to other tropical jays, such as the Azure-hooded Jay, which was observed to fledge after at least 20 days (Winnett-Murray *et al.* 1988). Our study indicates that adult activity (feeding and nest-tending) is affected by weather, with reduced foraging activity on rainy days. The rate of fecal sac removal we observed (0.88 removal events per h) was similar to another member of the family Corvidae, the Florida Scrub Jay (*Apbelocoma c. coerulescens*; 0.91 removal events per h) (McGowan 1995).

Although colonial and communal sociality are present among some of the New World jays, particularly in the tropics (Brown 1974), we observed only two adults simultaneously at and around the nest, and detected no other Beautiful Jay nests nearby. If the parents had additional helpers, they were not present during the days of observation. Our observations suggest that the Beautiful Jay either does not employ a colonial or communal nesting strategy, or that helpers do not assist until after the nestlings have fledged. Additional research on the sociality of Beautiful jays is needed.

The observed nest was successful despite daily interaction with humans. Staff and tourists regularly walked in the immediate area

below the nest, and vehicles traveled on the nearby road. If the resistance to disturbance seen in this pair is characteristic of the species as a whole, it carries positive implications for the conservation of the Beautiful Jay in increasingly fragmented and populated habitats.

The Beautiful Jay is observed within the El Pahuma Reserve as early as January and may be a year-round resident of the reserve. The species has been observed nesting in the garden area in previous years, and a pair of adults nested in the same tree again in April 2010 since this study was conducted. Banding of the Beautiful Jays is required to assess site fidelity and to determine if the same individuals return to nest in the same site each year.

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## REFERENCES

- BirdLife International 2008. *Cyanolyca pulchra*. IUCN Red List of Threatened Species. Version 2009.2. Downloaded on 5 December 2009 from [www.iucnredlist.org](http://www.iucnredlist.org).
- Bonaccorso, E. 2009. Historical biogeography and speciation in the Neotropical highlands: Molecular phylogenetics of the jay genus *Cyanolyca*. *J. Mol. Evol.* 50: 618–632.
- Brown, J. 1974. Alternate routes to sociality in jays – with a theory for the evolution of altruism and communal breeding. *Integr. Comp. Biol.* 14: 63–80.

- Dickinson, E. C. 2003. The Howard & Moore complete checklist of the birds of the world. 3<sup>rd</sup> ed. Princeton Univ. Press, Princeton, New Jersey.
- Madge, S., & H. Burn. 1994. Crows and jays: a guide to the crows, jays and magpies of the world. Houghton Mifflin Co., Boston, Massachusetts.
- McGowan, K. J. 1995. A test of whether economy or nutrition determines fecal sac ingestion in nesting corvids. *Condor* 97: 50–56.
- Meisel, J., & C. Woodward. 2005. Andean orchid conservation and the role of private lands: A case study from Ecuador. *Selbyana* 26: 49–57.
- Ridgely, R. S., & J. P. Greenfield. 2001. The birds of Ecuador field guide. Cornell Univ. Press, Ithaca, New York.
- Sibley, C. G., & B. L. Monroe. 1990. Distribution and taxonomy of birds of the world. Yale Univ. Press, New Haven, Connecticut.
- Winnett-Murray, K., G. Murray, & W. Busby. 1988. Two nests of the Azure-hooded Jay with notes on nest attendance. *Wilson Bull.* 100: 134–135.

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