

A comparative look at the nest and eggs of the Ecuadorian and Croaking Ground-Doves (*Columbina buckleyi* and *Columbina cruziana*) in Ecuador

UNA MIRADA COMPARATIVA AL NIDO Y LOS HUEVOS DE *COLUMBINA BUCKLEYI* Y *COLUMBINA CRUZIANA* EN ECUADOR

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Abstract

We present information on the nest and eggs of the Ecuadorian Ground-Dove (*Columbina buckleyi*) and the Croaking Ground-Dove (*Columbina cruziana*) in Ecuador. The Ecuadorian Ground-Dove constructs a substantial, cup-shaped nest, where the Croaking Ground-Dove builds a platform-shaped, sometimes rather flimsy nest. Eggs of both ground-doves are white and elliptical, typical *Columbina* eggs.

Keywords: Columbidae, nesting biology, nest construction.

Resumen

Presentamos información sobre el nido y los huevos de la Tortolita Ecuatoriana (*Columbina buckleyi*) y la Tortolita Croante (*Columbina cruziana*) en Ecuador. La Tortolita Ecuatoriana construye un nido de forma cóncava, mientras que la Tortolita Croante construye un nido de forma plana y a veces frágil. Los huevos de ambas tortolitas son de color blanco y de forma elíptica, típicos para las especies del género *Columbina*.

Palabras clave: biología reproductiva, Columbidae, construcción de nido.

Introduction

The Ecuadorian Ground-Dove *Columbina buckleyi* is endemic to the Tumbesian region, an important EBA (Endemic Bird Area) in western Ecuador and northwestern Peru (BirdLife International 2003). In Ecuador, it is fairly common in open, dry, deciduous and semi-deciduous woodlands, as well as thicker woodland with patchy tickets. It can be common even in gardens, clearings, agricultural areas, and young secondary vegetation in the more humid lowlands, from sealevel up to 2000 m.a.s.l. (Gibbs *et al.* 2001, Ridgely & Greenfield 2001).

The Croaking Ground-Dove *Columbina cruziana* is found in arid lowland habitats from extreme southwestern Colombia to western Ecuador and Peru, and south to northern Chile (Gibbs *et al.* 2001). In Ecuador, it is common to very common, and occurs in

arid scrub, riverine scrub, dry deciduous woodland, and in open hilly country with little vegetation. It is also frequent in areas of human disturbance such as open agricultural areas, gardens, parks, and roadsides in urban areas. Across its entire range, the Croaking Ground-Dove is sympatric with the Ecuadorian Ground-Dove, with the exception of the more arid, coastal regions of the Guayas and El Oro provinces, and the western part of the Loja province where the latter ground-dove is absent (Ridgely & Greenfield 2001).

The breeding season of both species seems to coincide and starts with the onset of the rainy season in December or early January. The nest of the Croaking Ground-Dove is described as a flimsy platform of twigs sometimes lined with rootlets. It is built in dense low bushes, on horizontal branches of a tree and even on ledges of buildings, banks and low cliffs, up to 20 m above the ground but usually lower (Gibbs *et al.* 2001).

The nest of the Ecuadorian Ground-Dove is described as a more substantial nest of grasses and plant stems sometimes lined with rootlets and grasses. It is built in dense low shrubs or vine-tangles, and placed from 1 to 8 m above the ground (Marchant 1958, Gibbs *et al.* 2001). In this paper, we present additional information on the nest and eggs of both ground-doves in Ecuador, with quantitative data on four nests and four eggs of the Ecuadorian and five nests and nine eggs of the Croaking Ground-Dove.

Methods

In 1987 the Western Foundation of Vertebrate Zoology (Camarillo, CA, U.S.A.) started a project to study the breeding biology of the birds of Ecuador. From 13 February until 12 March 1989, and from 11 March until 6 April 1991, JI and Lloyd F. Kiff collected nests and eggs in the western provinces Pichincha, Manabi, Guayas, Azuay, El Oro and Loja. Random searches for nests in all available habitats were performed mostly during the morning. We found five nests of *C. cruziana*, four in 1989 and one in 1991, and two nests of *C. buckleyi* in 1991. In February 2006, HFG visited the

Bosque Protector Cerro Blanco, 10 km west of Guyaquil in the Guayas province, where he found two nests of *C. buckleyi*.

Ground-doves sitting on the nests were identified by bill and iris colour. Although similar in size, *C. cruziana* has a thicker, drooped bill, coloured yellow and black, and the iris is distinctly pale, while *C. buckleyi* has an all blackish bill, thinner and not drooped and the iris is brownish (Gibbs *et al.* 2001).

Eggs were weighed to the nearest 0.01 g with an Ohaus 10.10-10 metric balance, and dimensions of eggs and nests were measured with calliper and sliding calliper to the nearest 0.01 and 1 cm respectively. Means \pm standard deviation (SD) are given for the weights and linear dimensions of eggs, and for nest dimensions. Eggs were blown with a blowpipe through one hole made with an egg drill on the side of the egg. We give the WFVZ collection number (where appropriate), the date when the nest and eggs were found and eventually collected, the name of the observer or collector, the locality and province with approximate altitude, and details of the nest situation.



Figure 1. Cup-shaped nest of the Ecuadorian Ground-Dove (*Columbina buckleyi*), left: WFVZ No. 162,160, and platform-shaped nests of the Croaking Ground-Dove (*Columbina cruziana*), upper: WFVZ No. 158,317, right: WFVZ No. 162,155 and lower: WFVZ No. 158,347 (Photo: R. Corado).

Results

Nests - Ecuadorian Ground-Dove

Nest 1: WFVZ No. 162,159, found 29 March 1991 by JI with two fresh eggs in a hilly area with pastures, 4 km SW of Sabanilla (04°12' S, 80°08' W) (Loja, ~ 500 m.a.s.l.). The nest was situated ~ 2.25 m above the ground in the top of a thornless *Acacia* bush surrounded by low weeds. Bushes in the surrounding pasture were less than 2 m high, with additional, somewhat higher *Acacia* thickets, a few isolated trees and remnant patches of forest. The nest was bulky and composed of dead plant material lined with half-dry grasses.

Nest 2: WFVZ No. 162,160, found 29 March 1991 by JI with two fresh eggs, in the same pasture as nest 1. It was situated ~ 1 m above the ground in a low, leafy bush and was well hidden. It was first found on 27 March when a ground-dove was flushed from an empty nest. The bulky nest was made of fine dry sticks and tiny branches well fixed between fine branches of the bush (Fig. 1).

Nest 3: found 26 February 2006 by HFG, in the Bosque Protector Cerro Blanco (02°10' S, 80°02' W; 350 m.a.s.l.). The nest was a thick structure of sticks with a diameter of ~ 7 cm, situated 5.5 m above the ground on a horizontal fork formed by two branches, with diameters of 1 and 2.5 cm respectively. At the time of discovery, the female was incubating two eggs. When the male alighted on a perch ~ 4 m from the nest, the female left the nest and alighted next to the male. She then leaned forward and lifted her tail. The male mounted her and copulated for ~ 2 sec, after which they preened each other's neck for several seconds. Then the male mounted again for ~ 1 sec, but did not appear to copulate successfully this time. Thereafter they preened each other for another ~ 10 sec, then separated ~ 15 cm on the same branch and preened themselves for another ~ 15 min. After this the female returned to the nest to continue incubation and the male left the area.

Nest 4: found 28 February 2006 by HFG in the Bosque Protector Cerro Blanco. The nest was built 7 m up in small branches of a ~ 25 m tall *Delonix* tree (Caesalpinoidea, Leguminaceae). An adult was observed sitting for long periods, most likely incubating.

Nests-Croaking Ground-Dove

Nest 1: WFVZ No. 158,379, found 21 February 1989 by JI with two fresh eggs, at La Libertad (02°15'S,

80°56'W) (Guayas, ~ 5 m.a.s.l.). The nest, a platform of fine dry sticks, ~ 10 cm in diameter, was located ~ 3 m up in a fork of a Bignoniaceae tree, growing in a hotel garden.

Nest 2: WFVZ No. 158,317, found 5 March 1989 by JI with two fresh eggs, near San Pedro de la Bendita (03°56'S, 79°26'W) (Loja, ~ 1800 m.a.s.l.). The nest, a ~ 4 cm thick platform of fine dead sticks, 10 cm in diameter (Fig. 1), was situated ~ 2.5 m up in an *Acacia* tree in dry *Acacia* scrub habitat.

Nest 3: WFVZ No. 162,155, found 20 March 1991 by JI with two slightly incubated eggs, near Saucillo, 16 km SW of Sabanillo (04°17' S, 80°12' W) (Loja, ~ 300 m.a.s.l.). The nest, a flimsy platform (Fig. 1), was situated ~ 2 m up on a ~ 15 cm thick, horizontal branch of a dead tree, within a tangle of cactus and shrubs, in mixed forest of thorn scrub, leafy bushes, *Acacia*, and large-leafed low bushes.

Nest 4: WFVZ No. 158,347, found 6 March 1989 by Lloyd F. Kiff with two fresh eggs, 1 km SE of Santa Elena (02°15' S, 80°51' W) (Guayas, ~ 50 m.a.s.l.). The nest was a thick platform, made of dead plant material (Fig. 1), and was located ~ 3 m above the ground on the horizontal limb of a bushy, deciduous tree.

Nest 5: WFVZ No. 158,576, found 7 March 1989 by JI with two fresh eggs, 25 km E of Santa Elena (Guayas, ~ 50 m.a.s.l.). The nest was located ~ 2 m up in an *Acacia* tree in deciduous, thorn scrub habitat.

One nest of *C. buckleyi* and three nests of *C. cruziana* were collected for the WFVZ collection (Fig. 1). The single *C. buckleyi* nest had a diameter of ~ 11 cm, and was ~ 13 cm high with a nest cup ~ 4 cm deep. Three nests of *C. cruziana* had diameters of 10, 9 and 10 cm (9.7 ± 0.8 cm) and were 4, 4 and 2 cm thick (3.3 ± 1.6 cm) respectively. All three nests were nearly flat or had only shallow depressions as nest cups.

Eggs

The weight of four fresh *C. buckleyi* eggs ranged from 3.51 to 4.36 g (3.76 ± 0.41 g). The weight of seven fresh *C. cruziana* eggs ranged from 3.53 to 4.76 g (3.97 ± 0.44 g). Length and width of four *C. buckleyi* eggs ranged from 18.12 to 25.08 mm (23.31 ± 2.32 mm) and from 16.98 to 22.12 mm (17.29 ± 0.97 mm) respectively. The largest egg measured 25.08 x 18.12 mm. The length and width of nine *C. cruziana* eggs ranged from 18.77 to

26.12 mm (24.47 ± 2.31 mm) and from 16.47 to 23.64 mm (17.29 ± 0.87 mm) respectively. The largest egg measured 26.12 x 18.61 mm.

Discussion

Eggs of both ground-doves are typical of *Columbina* eggs, elliptical and white (Gibbs *et al.* 2001). Although *C. buckleyi* is slightly larger and heavier (18 cm and ~ 57 g), when compared to *C. cruziana* (15 cm and 46-52 g) (Baptista *et al.* 1997), our small sample of collected eggs suggests that those of *C. cruziana* are slightly heavier and larger (3.97 g and 24.47 x 17.29 mm, vs. 3.76 g and 23.31 x 17.29 mm, respectively). Gibbs *et al.* (2001) describe the nests of *C. buckleyi* and *C. cruziana* as a platform of grasses and plant stems sometimes lined with rootlets and grasses, and as a fragile platform of twigs sometimes lined with rootlets, respectively. Additionally, Baptista *et al.* (1997) report that *C. buckleyi* builds very substantial nests, referring to a paper by Hanover (1970) on the breeding of this ground-dove in captivity.

Our observations confirm that Ecuadorian Ground-Doves build a substantial nest with a nest cup, unlike most dove nests but instead more similar to many Passeriformes. The structure of Croaking Ground-Dove nests greatly depends on the support given by the substrate on which the nest is placed. When built on a ~ 15 cm thick branch, giving good support, the nest is a tiny platform of dead plant material (WFVZ No. 162,155, Fig. 1). When built on twigs or fine branches of

trees, giving less support, the nest is a more substantial platform-like structure (WFVZ Nos. 158,317 and 158,347, Fig. 1). These observations agree with the structure of nests built by Croaking Ground-Doves in captivity (Eitnietar 2006). These slight differences, both between and within species, emphasize the continued need for further descriptions of even the most common nests, as well as the importance of small structural differences even within groups building superficially similar nests (i.e. Columbidae).

Acknowledgments

Comments by Des Jackson and Lloyd F. Kiff greatly improved our paper. JI sincerely appreciates the generous support of the Western Foundation of Vertebrate Zoology (Camarillo, CA, USA) and extends many thanks to the Museo Ecuatoriano de Ciencias Naturales (Quito) for their collaboration and assistance during fieldwork in Ecuador, and to the Ministerio de Agricultura (Quito) for their cooperation and permission to work in Ecuador. In the field, JI enjoyed companionship of Juan Manuel Carrión, René Corado, Dana Gardner and Lloyd F. Kiff. JI thanks Linnea S. Hall and René Corado of the Western Foundation of Vertebrate Zoology for providing weights and dimensions, as well as the photo used in this paper. HFG acknowledges the support of Matt Kaplan through the Population Biology Foundation. We also thank Lloyd F. Kiff for permission to include his unpublished observations and Jack C. Eitnietar for providing copies of important literature.

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