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Descriptive note of reproduction in the Peruvian Plantcutter (*Phytotoma raimondii*) in the Bosque de Pomac Historical Sanctuary, Lambayeque, Perú

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RESUMEN

Se describe algunas observaciones sobre la reproducción de *Phytotoma raimondii* colectadas en el año 2012 durante una investigación en curso para estimar el éxito reproductivo en el interior del área natural protegida Santuario Histórico Bosque de Pómac. Se reporta los primeros intervalos de anidación completos para la especie y se incluye información descriptiva adicional, con fotografías, sobre los huevos, polluelos, volantones y algunos detalles relevantes de la apariencia del plumaje hacia la adultez. Esta información es una contribución al conocimiento cada vez mayor para esta ave en peligro de extinción y para su conservación.

Palabras clave: *Phytotoma raimondii*, Santuario Histórico Bosque de Pómac, ciclo de nidificación, *Grabowskia boerhaaviaefolia*, *Prosopis pallida*, *Capparis aviccenifolia*.

ABSTRACT

Here we described some observations on the reproduction of *Phytotoma raimondii* collected in the year 2012 during an ongoing research for estimating reproductive success inside the protected area 'Bosque de Pomac' Historical Sanctuary. We report the first complete nesting intervals for the species and include additional descriptive information about the eggs, nestlings, fledglings and some relevant details on their plumage appearance to adulthood, with photographs. This information is a contribution to the increasing knowledge on this endangered bird and its conservation.

Keywords: *Phytotoma raimondii*, 'Bosque de Pomac' Historical Sanctuary, nesting cycle, *Grabowskia boerhaaviaefolia*, *Prosopis pallida*, *Capparis aviccenifolia*.

INTRODUCTION

What little is known about reproduction in the threatened Peruvian Plantcutter (*Phytotoma raimondii*) is from a few restricted locations at Talara (Department of Piura; Flanagan & Millen 2008) and El Gramadal (Department of Ancash; Rosina & Romo 2010, 2012). In Talara, two active nests were found in low algarrobo tree (*Prosopis* sp.), while in El Gramadal, nine nests were in canutillo shrub (*Grabowskia boerhaaviaefolia*). Active nests were found between December and April, indicating that the rainy and reproductive seasons coincide. Nests found in El Gramadal were built of twigs of *G. boerhaaviaefolia*, while the inside of the nest was lined with algarrobo and molle (*Schinus molle*).

Nests diameter were ~15 cm (Rosina & Romo 2010, 2012), at heights of 1.2 – 2.5 m, with clutch sizes of 2 – 3 eggs (2.4 x 1.8 – 1.9 cm; Flanagan & Millen 2008, Rosina & Romo 2010). Egg coloration was described as a slight gloss, light drab to drab varying to grayish olive, with fine to coarse dark brownish olive flecks at the larger end (Flanagan & Millen 2008), or light sky blue that turned greyer with time (Rosina & Romo 2010). Both parents take part in all aspects of nesting and care of young, except incubation which is only done by the female.

Here we describe 19 nests that we found between February and March 2012 during an ongoing study of the species in a protected area by the government called *Bosque de Pomac* (Pomac Forest) Historical Sanctuary (hereafter SHBP). The SHBP, located at NW Peru in the Department of Lambayeque (5887 ha; 6°28'25"S, 79°46'35"O, 70 m), is one of the last strongholds of the plantcutter (BirdLife International 2013) and the only place where it is actively being protected. Climate, as elsewhere in the plantcutter range, is hot, typical of the dry

tropical forest and vegetation is dominated by the trees algarrobo (*Prosopis pallida*, family Fabaceae), sapote (*Colicodendron scabridum*) and the shrub vichayo (*Capparis avicennifolia*, the latter two in the family Capparaceae; SERNANP 2011). We report the first complete nesting interval for the species and include additional descriptive information about the eggs, nestlings, fledglings and some details on their plumage appearance to adulthood, with photographs. This information is a contribution to the increasing knowledge on this endangered species and its conservation.

OBSERVATIONS

Nest description

The 19 nests had a flimsy appearance, cup-shaped, with an average diameter of 16 cm, height of 7.3 cm and interior depth of 3.5 cm. *G. boerhaaviaefolia* was the main material present in all nests (c.90%-100%). Ten nests were built exclusively with twigs from this plant, whereas the remaining nine were lined on inner cup with inflorescence peduncle of algarrobo (*Prosopis pallida*), and two of these nests had some very few twigs of this same plant, vichayo (*Capparis avicennifolia*) and other of unidentifiable origin. Twigs used in nest building varied in diameter from 1 – 3 mm, with the finest used for lining the nest. Nests were built on *G. boerhaaviaefolia* (n = 11), *P. pallida* (n = 4), *C. avicennifolia* (n = 2) and in a zone of contact between *G. boerhaaviaefolia* and *C. avicennifolia* (n = 2). All nests were more or less in the mid to higher levels of the plant, varying from 1.6 – 8.5 m in height (median = 2.4 m).

Clutch size and egg description

Clutch size varied from 2 – 4 eggs (median = 3, n = 19). Egg color is similar to that in the literature (Flanagan & Millen 2008). All 46 eggs had a background of faint olive green

and were spotted with dark brown and grayish brown mostly at the rounded end of the egg (but may vary over the entire egg). Variation in spotting pattern appeared to be independent of the nest as the variation within a clutch was similar to that between clutches (Fig. 1). Eggs sizes varies from 2.5 - 2.7 cm in length and by 1.9 - 2.2 cm in width (n = 5).



Figure 1. Peruvian Plantcutter nest with a clutch of four eggs, showing the variability of spotted pattern that is similar to the variability among clutches as well.

Nesting period and description of nestlings

With 2 - 4 days of egg-laying, 16 days of incubation starting from last egg laid (n = 1 nest) and 15 - 16 days of the nestling period (n = 2 nests), the interval from the first egg to fledging takes from 34 - 36 days.

Nestlings have brown irises that gradually change to dark olive a few days before fledging. They hatched naked and are very darkly pigmented on their dorsal side (Fig. 2A-C). The first feathers began to appear on the fourth day after hatching and eyes are first open the following day (Fig. 2D-E). First downy and flight feathers began to open by day 8 or 9 (Fig. 2H-I). At around day 13, their bodies are fully feathered and flight feathers have mostly unsheathed (Fig. 2M-P). Prior to fledging, the sexes are already distinguishable by the plain, beige color of the breast and belly of the male, and the stripes on the breast of the female (Figs. 2P, 3). Tail feathers remain short and do not reach full size until several days after fledging (Table 1). Shortly after fledging, dark olive iris color begins to lighten and soon becomes more similar in color to that of adults, of greenish yellow (Fig. 4).



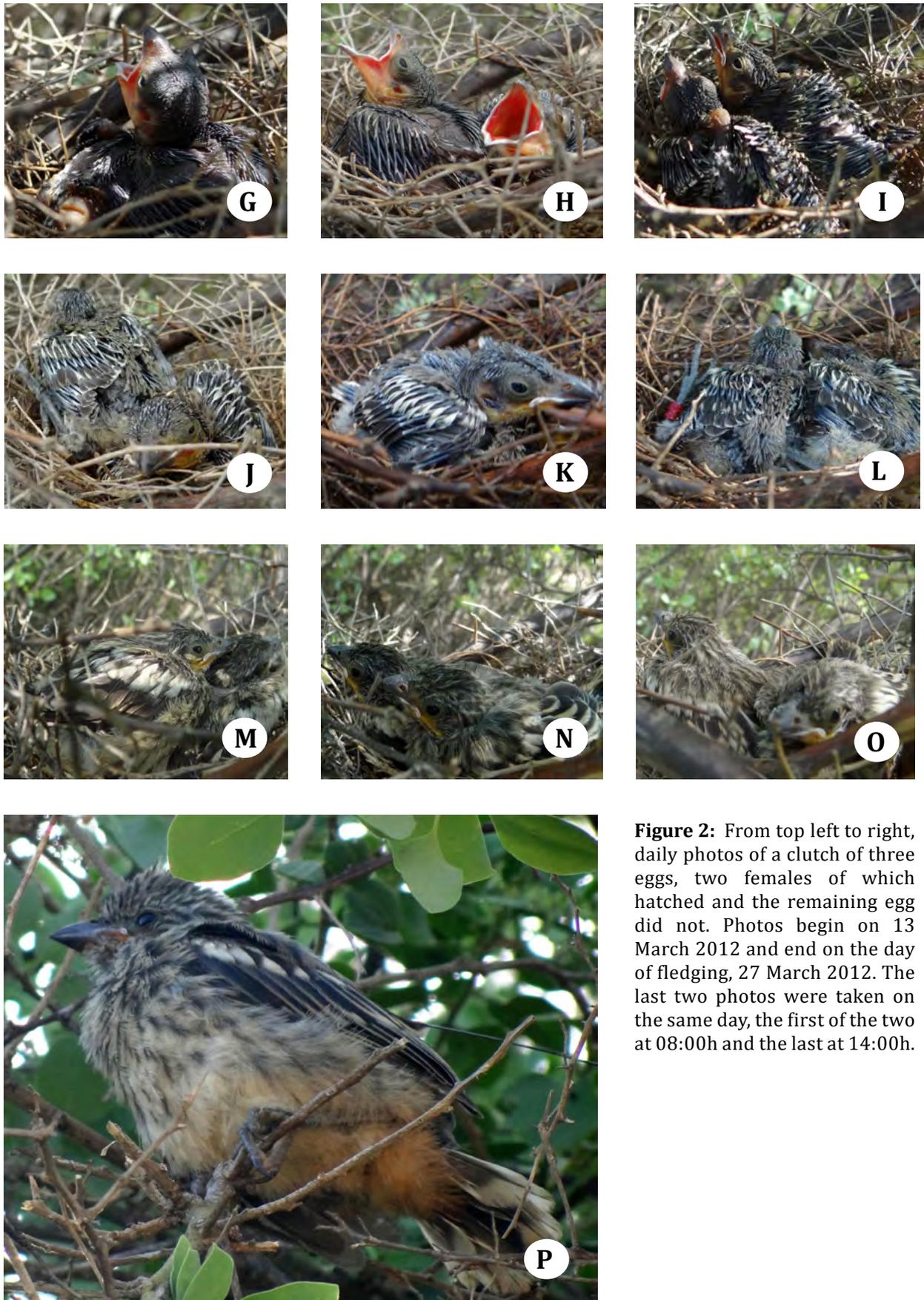


Figure 2: From top left to right, daily photos of a clutch of three eggs, two females of which hatched and the remaining egg did not. Photos begin on 13 March 2012 and end on the day of fledging, 27 March 2012. The last two photos were taken on the same day, the first of the two at 08:00h and the last at 14:00h.



Figure 3: Nestling male at 13 days after hatching. Note the lack of marks on the breast that the females had in Figure 2, showing that sexual dichromatism begins with the first feathers.

Tabla 1. Comparisons of morphological measurements of Peruvian Plantcutter nestlings (on the day they fledged) and of their parents (n = 2 nests). Bill and wing length of adults were not measured to minimize stress and handling time.

Nest	Sex	Bill length (cm)	Wing length (cm)	Tail length (cm)	Body length (cm)	Weight (g)
1	F	1.3	5.4	2.5	11.8	24.7
	F	1.2	5.4	2.5	12.4	26.5
	M	1.3	5.6	2.8	12.0	28.3
Adult	F			6.5	18.5	42.2
	M			7.0	20.0	38.4
2	F	1.2	5.5	2.7	12.0	25.3
	F	1.1	6.1	2.7	12.1	27.3
Adult	F			7.1	18.5	46.6
	M			6.7	18.0	37.2

However, iris color does not become as bright yellow to orange-yellow of the adults for some time after fledging as well as the characteristic rufous patch on breast and belly of males. Males underparts turns grayish soon after fledging, excepting the pale rufous under tail coverts, and rufous patch starts to appear later but with a beige uniform pattern that turns gradually and randomly rufous. Young birds may attempt to form pairs and reproduce, but apparently successful reproduction only occurs after reaching at least one year in age.

This assumption is based on the fact that if the peak of reproduction occurs in February and birds usually fledge by the end of this month and March, this recruitment into the population is expected to reproduce during the same season after a year (Nolazco & Roper, in prep.). However, this could be less probable for first year males that are expected to defend a pair bond territory (Nolazco & Roper 2011), than for females which occasionally form pairs at an earlier age with adult males (Nolazco, per. obs.).



Figure 4: Left (above), female, 27 days after hatching. Right (above), male somewhat older (born the same year, but uncertain as to fledging date) than the female at left. Note that both show tendencies towards adult coloration patterns which also look heavier (below).

DISCUSSION

Grabowskia boerhaaviaefolia is possibly a key plant for successful Peruvian Plantcutter nesting and reproduction at this protected area and not just because it also figures largely in the diet (Nolazco & Roper 2011). Nest substrate and nesting material are often dominated by this plant when available. However, other plants and materials used in nests were more available in terms of abundance in the places that the birds favored *G. boerhaaviaefolia*, and this suggests preference. Indeed, when nests were in *P. pallida*, they were usually higher in denser vegetation and more difficult to find, but they were still built using *G. boerhaaviaefolia* as the main material. *G. boerhaaviaefolia* availability apparently does not limit reproduction in all populations, because the plantcutter can be found at regions where some territories completely lack it, but other similar resources replace its selective usages such as *Scutia spicata* in Paiján (Department of La Libertad; Nolazco & Roper, in prep.) and probably *Maytenus octogona* in Cerro Illescas (Department of Piura; Nolazco, pers. obs.). We recommend further examination of *G. boerhaaviaefolia*, *S. spicata* and *M. octogona* use by the birds to determine whether habitat restoration using these plants may ensure the recovery and conservation of the Peruvian Plantcutter.

Egg sizes found here were slightly larger than those previously reported for the species (Flanagan & Millen 2008), but this is probably a matter of typical variation in small sample sizes. On the other hand, the nesting cycle is fairly long (34 -36 days) when compared to other similar sized passerines of South America (examples in Marini *et al.* 2012), suggesting that no more than one successful nest per year will be possible. Although, a long-term capture-recapture study will be necessary

to understand population dynamics in this species, especially to elucidate if birds can begin to reproduce in their first year and if they are long-lived, factors that will increase its prospects for conservation.

This contribution towards understanding the life history of the endangered Peruvian Plantcutter provides important information for future studies and first steps in management. Clearly, maintaining good nesting habitat will be fundamental, but also understanding nesting success and longevity of the species are also important.

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