ORNITOLOGÍA NEOTROPICAL
(2020) 31: 76–78
SHORT NOTE

EARLY NEST RECORD AND ADDITIONAL NOTES ON THE BREEDING BIOLOGY OF THE CHESTNUT-CAPPED BRUSHFINCH (*ARREMON BRUNNEINUCHA SUTTONI*) IN SOUTHERN MEXICO

Ari A. Rice[1] · Nicholas T. Vinciguerra[2, 3] · Jenna M. McCullough[3] *

[1] Department of Biology, Villanova University, Villanova, PA 19085, USA.
[2] Department of Biology, San Diego State University, San Diego, CA 92182, USA.
[3] Department of Biology and Museum of Southwestern Biology, University of New Mexico, NM 87131, USA.
E-mail: Jenna M. McCullough · mcculloughj@unm.edu

Abstract · The Chestnut-capped Brushfinch (*Arremon brunneinucha*) is a widespread Neotropical species, yet our understanding of geographic variation in its breeding biology is not fully understood. Here, we provide additional notes on the breeding biology of *A. b. suttoni* from a nest found in the Sierra Madre del Sur of southern Mexico. This bulky, open cup nest with two pale blue eggs showed signs of incubation in early April. Our observation is considerably earlier than historical accounts of *A. b. suttoni* nests, suggesting that this subspecies exhibits a longer breeding season than previously appreciated. Future studies and more sampling across the range of *A. brunneinucha* will help clarify our findings within the context of phenological variation in the breeding biology of this species and possible causes.

Key words: Breeding biology · Breeding phenology · Eggs · Neotropical birds · Sierra Madre del Sur

The Chestnut-capped Brushfinch (*Arremon brunneinucha*) is a widely distributed understory species with nine subspecies currently recognized (Chesser et al. 2018). Subspecies of *A. brunneinucha* occur among disjunct montane regions from central Mexico to Peru at elevations ranging from 400 to 3500 m a.s.l. (Rising & Jaramillo 2011). Descriptions of the nests of four subspecies indicate that *A. brunneinucha* builds bulky, open cups, lays a clutch of one or two eggs, and incubates them for c. 14 days (Carriker 1910, Edwards & Tashian 1959, Rowley 1966, Skutch 1967, Rising & Jaramillo 2011). Few studies, however, have described the breeding phenology of *A. brunneinucha* or compared phenological variation among populations and subspecies. Most documented nests were initiated in May and June, with few records preceding April. Here, we provide additional notes on the breeding biology of *A. b. suttoni* based on a nest encounter in the Sierra Madre del Sur, Oaxaca, Mexico.

On 1 April 2019, while surveying the avifauna of the Sierra Madre del Sur, we discovered a nest of *A. brunneinucha suttoni* in a late stage of incubation. The nest was a bulky, open cup lined with several herbaceous stalks c. 1 m above the ground and positioned c. 0.5 m inside a medium-sized shrub thicket (genus *Salvia*) adjacent to a dirt road (Figure 1). The site was located in a transition zone characterized by pine-oak woodland and evergreen montane forest at 2300 m a.s.l. (16°4’26.88”N, 96° 29’31.86”W). The nest had an outer cup (external diameter: 196 mm) of twigs, thick grass, and dead leaves, and a deep inner cup of tightly woven pine needles (internal diameter: 107 mm; approximate depth: 50 mm). The two eggs in the nest were pale blue with sparsely-scattered light brown specks. We used a standard ruler to measure the eggs (25 x 19 mm and 26 x 19 mm, respectively). They appeared to be in a late stage of development, as indicated by the presence of blood vessels and dark mass of the developing embryo when illuminated. Over the course of several hours, we observed an adult incubating the eggs and adjusting fibers of the nest’s outer layer, but we were unable to determine its sex. When disturbed, this bird would quietly slip off the nest, retreat further into the thicket, and return within a few minutes. When we returned on 4 April, the eggs were still being incubated. Overall, the extent of egg development and parental behavior suggests that the clutch was initiated during the second half of March.

Although our observations of nest structure and clutch size align with previous descriptions of *A. brunneinucha* (Skutch 1967, Stiles & Skutch 1989, Rising & Jaramillio 2011), the apparent timing of the nest’s initiation is early for this subspecies. Rowley (1966) documented 15 nests of *A. b. suttoni* in the Sierra Madre del Sur, some of which were less than 10 km away from the nest we describe here. Rowley (1966) encountered these nests in various stages of incubation from late April through July, the majority being found in May and June. Our observation of eggs close to hatching at the onset of April precedes the earliest known nesting date by approximately one month. Historical records from other *A. brunneinucha* subspecies imply that the majority of nesting occurs from late April through June (Table 1; Carriker 1910, Edwards & Tashian 1959, Rowley 1984, Skutch 1967). However, our observation does not mark the earliest nest record for the species: Baepler (1962) found a nest in

Receipt 20 June 2019 · First decision 23 September 2019 · Acceptance 21 October 2019 · Online publication 14 April 2021
Communicated by Paulo Pulgarín & Camila Pardo

Figure 1. The nest and eggs of *Arremon brunneinucha suttoni*. A) A two-layered bulky cup nest containing woven herbaceous stalks, pine needles, and two bluish-white eggs. B) Photograph showing the nest's surrounding habitat, placement, and proximity to a dirt road.

Table 1. All known nest records for described subspecies of *Arremon brunneinucha*. No records exist for subspecies *alleni*, *allinornatus*, or *inornatus.*

Subspecies	Reported nests	Earliest breeding date	Breeding stage	Locality	Authors
A. b. apertus	1	21 Jul 1954	Eggs	Veracruz, Mexico	Edwards and Tashian, 1959
A. b. brunneinucha	1	10 Jun 1966	Eggs (fresh)	Cerro San Felipe, Oaxaca	Rowley 1984
A. b. elsae	7	16 Mar 1965	Fledgling	Chiriqui, Panama	Carriker 1910; Skutch 1967; Wetmore et al. 1984
A. b. frontalis	2	16 Jan 1878	Nestling	Peru	Taczanowski, 1884; Wetmore et al. 1984
A. b. macrourus	7	28 Mar 1958	Eggs (late incubation)	Huehuetenango, Guatemala	Baepler 1962; Skutch 1967
A. b. suttoni	15	24 Apr 1965	Eggs (early incubation)	Sierra Madre del Sur, Mexico	Rowley 1966

late incubation for *A. b. macrourus* in Guatemala on 28 March, Wetmore et al. (1984) found a fledgling of *A. b. elsae* in Panama on 15 March, and Taczanowski (1884) found an *A. b. frontalis* nestling in Peru on 16 January (Table 1).

Our finding, together with the accounts by Baepler (1962), Wetmore et al. (1984), and Taczanowski (1884), suggests that *A. brunneinucha,* specifically *A. b. suttoni,* exhibits flexibility in the timing of breeding. Skutch (1967) observed subspecies *A. b. elsae* in Costa Rica breeding earlier than *A. b. macrourus* in Guatemala and proposed that more consistent rainfall and less pronounced dry seasons contributed to earlier nesting. Even within similar habitat in neighboring mountain ranges, Baepler (1962) and Skutch (1967) observed *A. b. macrourus* begin breeding nearly two months apart (March vs. May). Because *A. brunneinucha* inhabits disjunct mountain ranges with different climate and rainfall regimes, it should be no surprise that its breeding phenology varies with local conditions. The Sierra Madre del Sur is characterized by pronounced wet and dry seasons; if *A. b. suttoni* times breeding in response to rain and food availability, our nest record suggests that the locality may have experienced levels of rainfall or insect abundance more typical of May and June or that the population's phenology could have shifted. Alternatively, instances of early breeding may be a phenomenon that occurs uncommonly but regularly in *A. b. suttoni*, and is triggered by factors other than rainfall or weather. As information regarding phenological variation in Neotropical birds is limited, this earlier than expected nest record hints at a possible shift in the nesting phenology of *A. b. suttoni*, or a longer, more flexible breeding season. Our findings highlight the need for further work on the breeding biology of this species and factors that influence timing of reproduction.

ACKNOWLEDGEMENTS

We thank the Museum of Southwestern Biology, specifically Michael J. Andersen and Andrew B. Johnson for access to literature, and Tim K. Lowrey for plant identification. We would like to thank Phil Unitt of the San Diego Natural History Museum, and Xena Mapel for helpful comments on this manuscript.

REFERENCES

Baepler, DH (1962) The avifauna of the Soloma region in Huehuetenango, Guatemala. *The Condor* 64: 140–153.

Carriker Jr, MA (1910) An annotated list of the birds of Costa Rica, including Cocos Island. *Annals of the Carnegie Museum* 6: 314–915.

Chesser, RT, KJ Burns, C Cicero, JL Dunn, AW Kratter, IJ Lovette, PC Rasmussen, JV Remsen, DF Stotz, BM Winger & K Winker (2018) Fifty-ninth Supplement to the American Ornithological Society's Check-list of North American Birds. *The Auk: Ornithological Advances* 135: 798–813.

Edwards, EP & RE Tashian (1959) Avifauna of the Catemaco basin of southern Veracruz, Mexico. *The Condor* 61: 325–337.

Rising, JD & A Jaramillo (2011) Genus *Arremon*: species accounts. Pp. 572–580 *in*: del Hoyo, J, A Elliot & DA Christie (eds). *Handbook of the Birds of the World*. *Vol 16*. *Tanagers to New World Blackbirds*. Lynx Edicions, Barcelona, Spain.

Rowley, JS (1966) Breeding records of birds of the Sierra Madre del Sur, Oaxaca, Mexico. *Proceedings of the Western Foundation of Vertebrate Zoology*. 1: 107–204.

Rowley, JS (1984). Breeding records of land birds in Oaxaca, Mexico. *Proceedings of the Western Foundation of Vertebrate Zoology.*

Skutch, AF (1967) *Life histories of Central American highland birds.* Nuttall Ornithological Club, Cambridge, Massachusetts, USA.

Stiles, FG & AF Skutch (1989). *Guide to the birds of Costa Rica*. Cornell University Press, Ithaca, New York.

Taczanowski, L (1884) *Ornitologie du Pérou, vol. 2. Friedländer & Sohn Typographie Oberthur à Rennes*. Paris, France.

Wetmore, A, RF Pasquier & SL Olson (1984) *The birds of the Republic of Panamá. Part 4. Passeriformes: Hirundinidae (swallows) to Fringillidae (finches)*. Smithsonian Institution Press, Washington, DC, USA.