Short Communications

The Wilson Journal of Ornithology 120(1):190–195, 2008

First Description of Nests and Eggs of Two Hispaniolan Endemic Species: Western Chat-tanager (*Calyptophilus tertius*) and Hispaniolan Highland-tanager (*Xenoligea montana*)

Christopher C. Rimmer,[1,6,7] Lance G. Woolaver,[2] Rina K. Nichols,[2] Eladio M. Fernández,[3] Steven C. Latta,[4] and Esteban Garrido[5]

ABSTRACT.—We present the first nest descriptions for two Hispaniolan endemic songbirds, the Western Chat-tanager (*Calyptophilus tertius*) and Hispaniolan Highland-tanager (*Xenoligea montana*) from a montane broadleaf forest site in the Sierra de Bahoruco of the Dominican Republic. Single Western Chat-tanager nests were found on 17 May 2002 and 9 June 2004. Both were coarsely-built, partially-domed, bulky structures 1.0–1.5 m above ground. One nest was freshly-depredated when found, whereas the second contained two eggs which hatched on 19 and 20 June. The nestlings were depredated on 25 June. A Hispaniolan Highland-tanager nest found on 27 June 2004 fledged a single chick the following day. This nest, in a vine tangle 2.5 m above ground, was an open cup structure composed of moss, small herbaceous stems, leaf fragments, lichens, and other plant fibers. We describe the eggs of both species, the nestlings of Western Chat-tanager, and the juvenal plumage of Hispaniolan Highland-tanager. We believe that depredation by introduced feral cats (*Felis domesticus*) and rats (*Rattus* spp.) is a serious problem in these montane forests. *Received 26 December 2006. Accepted 16 April 2007.*

Hispaniola supports more endemic bird species than any other Caribbean island, but the breeding biology of its avifauna remains poorly known. Breeding bird communities in the island's high elevation broadleaf and mixed pine-broadleaf forests have received little study because of the remoteness and difficulty of access of these forests. We documented previously undescribed nests of two species during investigations at a montane forest site in the Dominican Republic during 2002–2004. The Western Chat-tanager (*Calyptophilus tertius*) and Hispaniolan Highland-tanager (*Xenoligea montana*) are among the most endangered species on Hispaniola; understanding their breeding biology is fundamental to conserving their populations.

The Western Chat-tanager, recently classified as a species distinct from the Eastern Chat-tanager (*Calyptophilus frugivorus*) (AOU 1998), occupies a disjunct and fragmented range at elevations from 750 to 2,300 m in Haiti's Massif de la Hotte and Massif de la Selle, and in the western Sierra de Bahoruco of the Dominican Republic (Latta et al. 2006). The species inhabits dense understory of moist broadleaf forests where it is secretive and difficult to observe. The International Union for the Conservation of Nature (IUCN) has not recognized the recent split of *C. tertius* from *C. frugivorus*, but still considers the species complex as globally Vulnerable to extinction because of its small range and overall population size (IUCN 2006). Data on abundance and population trends are lacking, but there is little doubt that declines have occurred because of habitat loss throughout Hispaniola (Keith et al. 2003, Latta et al. 2006). Two formerly recognized subspecies are believed to have been extirpated (IUCN 2006).

The Hispaniolan Highland-tanager, also known as the White-winged Warbler (AOU 1998), is restricted in Haiti to mesic montane forest above 1,150 m elevation in the Massif de la Hotte of Haiti. This species was renamed

[1] Vermont Institute of Natural Science, 6565 Woodstock Road, Quechee, VT 05059, USA.
[2] Wildlife Preservation Canada, 5420 Highway 6 North, Guelph, ON N1H 6J2, Canada.
[3] Sociedad Ornitológica de la Hispaniola, Avenue, Máximo Gómez, esq. San Martín, Edificio Fundación Progressio, Tercero Piso, Santo Domingo, República Dominicana.
[4] National Aviary, Allegheny Commons West, Pittsburgh, PA 15212, USA.
[5] Grupo Jaragua, Inc., Calle El Vergel 33, El Vergel, Santo Domingo, República Dominicana.
[6] Current address: Vermont Center for Ecostudies, P. O. Box 420, Norwich, VT 05055, USA.
[7] Corresponding author; e-mail: crimmer@vinsweb.org

by Latta et al. (2006) based on mtDNA analyses showing this species' clear association with the tanagers of Hispaniola (Lovette and Bermingham 2002). It has apparently been extirpated from the Massif de la Selle and other areas of former occurrence. The species' Dominican Republic distribution is limited to elevations above 1,300 m in Sierra de Bahoruco, parts of the Cordillera Central, and on upper slopes of the southern Sierra de Neiba (Latta et al. 2006). The Hispaniolan Highland-tanager is classified as globally Vulnerable by the IUCN (2006) and is considered by some to be one of Hispaniola's most endangered endemic birds (Woods et al. 1992, Latta et al. 2006). No data exist on population size or trends, but local extirpations and ongoing severe deforestation suggest the species is in decline.

The objectives of this paper are to describe: (1) the nest and eggs of Western Chat-tanager and Hispaniolan Highland-tanager, (2) the natal plumage of Western Chat-Tanager, and (3) the juvenal plumage of Hispaniolan Highland-tanager.

METHODS

We conducted studies of the breeding bird community at a montane broadleaf forest site at Pueblo Viejo (18° 12′ N, 71° 32′ W) at 1,775 m elevation in the Sierra de Bahoruco from May through July 2002–2004. General floristic features of this forest type have been described by Fisher-Meerow and Judd (1989) and Latta et al. (2003). Nest searching was conducted on a daily basis each year, primarily through systematic searching of suitable habitat. We fitted five Western Chat-tanagers with 1.0-g radio transmitters (BD-2 model, Holohil Systems Ltd., Carp, ON, Canada) in 2002 and 2003 and tracked each individual daily to attempt to locate nests. Once located, nests of all species were monitored at 2–3-day intervals through termination (failure or fledging); some nest visits occurred at 1-day intervals. We measured a standardized series of habitat and nest site characteristics following each nesting attempt.

NEST DESCRIPTION

Western Chat-tanager.—CCR found a nest on 17 May 2002 by systematically searching an area in which a radio-marked female and male had been present during the previous several days. The nest was 1.3 m above ground in an extremely dense vine-shrub thicket in a tree-fall gap and could be accessed only by crawling on the ground. It was on top of the horizontal ''roof'' of the vine tangle, under the small overhanging branch of a 2.5-m tall broadleaf shrub that projected above the undergrowth. Estimated percent nest concealment from 1 m was 20% above, 90% below, 70% north, 80% east, 10% south, and 0% west. Fresh eggshell fragments, as well as the continued nearby presence of both female and male Chat-tanagers suggested the nest had been recently depredated and it was collected at this time.

The nest was a bulky, coarsely-constructed, partially-domed structure with a west-facing side entrance that covered two-thirds of the nest cup. The exterior consisted of small woody stems 2–4.5 mm in diameter, robust herbaceous stems, peeled coarse exterior sheathing of herbaceous stems, vine tendrils, moss, and foliose lichens. About 40% of the outer layer was covered with the entire leaves of at least three broadleaf tree or shrub species. The inner cup was lined primarily with fine herbaceous stems and leaf fragments. The exterior diameter from back to the bottom rim of the entrance was 21.5 cm, from back to the entrance's top rim 14.5 cm, and from side to side 23.5 cm. The nest cup measured 13.1 cm from front to back, 11.1 cm from side to side, and 5.1 cm from back to the top edge of the entrance. The overall nest height was 13.1 cm.

A second nest of this species was discovered on 9 June 2004 by RKN and LGW when an adult flushed from close range. The nest was in a small clearing (~5 m diameter) within dense, mature broadleaf forest, 3 m from an actively-used foot trail. The nest was 1.1 m above ground on the eastern side of the lower trunk of a hardwood ''ozua'' (*Pimenta ozua*) tree. The nest tree was 13 m tall with its lower canopy 7.5 m above ground and a diameter at breast height of 19.7 cm. The nest was against the trunk and supported beneath by a collection of vines with two main stems (4.0 and 3.0 mm diameter) interwoven with the top of the nest, two main stems on the bottom of the nest (10.0 and 5.0 mm diameter), and several smaller stems 0.3–1.0 mm in diameter touching the side of the nest. Estimated vegetation concealment

FIG. 1. Western Chat-tanager nest with eggs, June 2004. Photograph by L. G. Woolaver.

for the nest from a distance of 1 m was 0% overhead, 90% below, 95% north, 10% east, 20% south, and 85% west. This cover was provided by the tree trunk and surrounding tangle of vine stems.

This nest also was a large, bulky structure, roughly oval in shape (Fig. 1). The nest cup was partially covered by a roof, creating a south-facing entrance 8.7 cm high and 8.2 cm wide. The exterior was composed of moss and lichens interwoven with twigs and whole herbaceous stalks from 1 to 5.5 mm diameter, stripped sheathing of herbaceous stems, dried leaf fragments of broadleaf species, and fragments of dried bromeliad leaves. The inner cup was lined with fine twigs and herbaceous stems, dried leaf fragments, lichen, moss, and a few adult body feathers. The exterior nest dimensions were 28.5 cm from front to back, 27.0 cm from side to side, and 26.0 cm from top to bottom. The nest cup measured 9.1 cm from front to back, 7.7 cm from side to side, and 5.5 cm in depth. The nest cup height from the roof to the bottom was 14.3 cm.

The nest contained two eggs when discovered on 9 June. The eggs had pale blue background coloration and irregular light brown to dark brown speckling and mottling (Fig. 1). The eggs measured 27.8 × 18.7 and 28.9 × 18.8 mm and hatched on 19 and 20 June, respectively. No eggshells were found in the nest, suggesting the adults had removed them. The nestlings were dark pink with whitish bills and gapes, and covered with long, fine, black down. The nestlings were last confirmed alive at 1515 hrs EST on 25 June and both were missing from the nest at 0558 hrs on 26 June. The nest was damaged, suggesting depredation and it was collected on this date.

Observations on adult behavior at this nest were recorded by EMF from a photographic blind during 5 hrs on 20 June, shortly after the eggs hatched. The smaller of the two adults was banded and presumed to be the female, based

FIG. 2. Hispaniolan Highland-tanager nest with egg, June 2004. Photograph by E. M. Fernández.

on brooding behavior. The nestlings were brooded for 10–16 min periods each hour during which the female faced the nest entrance. The male fed the female a small white grub during one brooding session and provided her with small arthropods on several occasions while she was foraging near the nest. Both adults fed the chicks, but the male's feeding visits were infrequent and sporadic. The female fed the nestlings at 15–20-min intervals when not brooding. Each feeding bout consisted of 4–5 consecutive flights to the nest during which the female approached using a consistent pattern of perches. Her vocalizations changed from a short, two note "*chip-chip*" while foraging to an even "*tick, tick, tick, tick . . .*" as she approached the nest. The female was twice observed removing fecal pellets from the nest, although it was unclear whether she ate these or carried them away. The male sang for 10–15 min bouts each hour from different perches, but within 10 m of the nest.

Hispaniolan Highland-tanager.—Pablo Díaz found a nest of this species on 27 June 2004 containing one egg and one nestling that appeared close to fledging. The nest was in a dense vine tangle 2.5 m above ground. The vine thicket reached a height of 4.5 m and was in the understory of a closed-canopy broadleaf forest. Estimated percent nest cover from 1 m was 70% overhead, 70% north, 20% east, 60% south, and 70% west.

The nest was an open, cup-shaped structure (Fig. 2). The nest's exterior was composed of moss, small herbaceous stems, broadleaf leaf fragments, lichens, and other plant fibers. Its exterior cup was lined with fine, hairlike plant fibers and small numbers of herbaceous stems <1 mm in diameter. The exterior nest diameter was 10.5×7.9 cm, the nest cup diameter

was 5.6 × 5.2 cm, and the interior depth was 3.1 cm. The nest height was 5.5 cm. The single egg was oval in shape, pale greenish-white in background coloration, and faintly marked with reddish brown blotches and scrawls (Fig. 2). No measurements were obtained and the egg subsequently disappeared. The nestling fledged on 28 June.

The juvenal plumage, previously undescribed, was documented through photographs taken by EMF. The head and nape were brownish-gray, whereas the remaining upperparts were grayish tinged with olive-brown. The emerging flight feathers appeared dark grayish, the secondaries were edged greenish orange-brown proximally, and the greater coverts were predominantly greenish orange-brown. The underparts were a smudgy off-white with some brownish tones. The bill was grayish-flesh, the legs pale grayish, and the eye dark brownish.

DISCUSSION

Confirmed descriptions of the nests of the Western Chat-tanager or Hispaniolan Highland-tanager have not been published prior to this paper. Bond (1943:122) reported a possible Chat-tanager nest from the Massif de la Selle range in Haiti: ''A single nest, containing one addled egg (23.6 × 18.3 mm) . . . , probably pertained to this species. This nest (found on June 14) was situated in a fern about two feet above the ground, bordering a blackberry patch. There was a protesting pair of Chat Tanagers a few yards from the nest . . . ''. The timing of this discovery and the egg dimensions are similar to our data, but more substantive information is lacking.

Two descriptions of apparent Hispaniolan Highland-tanager nests from the early 1900s are less convincing. One was shown to Bond (1928) on 11 June 1928 from Morne La Selle in Haiti. Wetmore and Swales (1931:396) described the nest as ''globular in shape, composed of moss and grasses, lined with grass stems and feathers, and placed in a bush five feet from the ground.'' It contained ''two fresh eggs, which are plain, creamy white in color without markings''. Bond (1928) reported the respective egg measurements as 21.6 × 15.5 and 21.7 × 15.5 mm. The second reputed nest was reported to Wetmore and Swales (1931: 397) by local residents at an unspecified location, and described as ''oval with the entrance from beneath''. It is unlikely that either of these two nests was that of a Hispaniolan Highland-tanager, based on our documentation of the Pueblo Viejo nest.

Our limited observations suggest the peak incubation period for Western Chat-tanagers occurs from mid-May to mid-June. Further evidence of this species' nesting phenology is provided by two mist-netted females with fully-developed incubation or brood patches. One was captured on 16 May 2002 and the second on 18 May 2003 (CCR, unpubl. data). Both encounters indicate that incubation was underway by mid-May. The Hispaniolan Highland-tanager fledging date of 27 June is later than the mean (± SD) fledging date of 1 June ± 25.5 days for the ecologically similar Green-tailed Ground-tanager (*Microligea palustris*) at Pueblo Viejo (n = 14 nests; CCR and SCL, unpubl. data), but well within the range of expected variation.

The depredation of both Western Chat-tanager nests highlights the generally high rates (~50%) of nest predation in montane broadleaf forests of the Sierra de Bahoruco. Introduced predators, particularly feral cats (*Felis domesticus*), black (*Rattus rattus*) and Norway rats (*R. norvegicus*), appear to limit nest success of several endemic montane species, especially those which forage and nest near the ground. The remains of the 2004 Western Chat-tanager nest do not allow us to identify the predator(s), as the nest had been pulled from below and the bottom ripped apart, leading us to believe a mammal was responsible.

High elevation broadleaf forests are considered one of Hispaniola's most endangered habitats (Latta and Lorenzo 2000). Ten of the 15 endemic bird species considered endangered or threatened on the island are concentrated in montane forests (Latta et al. 2006). Understanding factors that limit populations of these species is crucial to implementing successful management and conservation practices. Our documentation of the first nests of Western Chat-tanager and Hispaniolan Highland-tanager contributes to an emerging base of information on the ecology of these two species, both of which are regarded at high risk of extinction.

ACKNOWLEDGMENTS

We thank Jesus Almonte, Nicolas Corona, Pablo Díaz, J. D. Lambert, Danilo Mejía, Vinicio Mejía, Marisabel Paulino, Andrea Townsend, and Jason Townsend for assistance with very challenging field work. Funding was provided by the Bay Foundation, National Geographic Society, Scott Neotropical Fund of the Lincoln Park Zoo, Wildlife Preservation Canada, and friends of the Vermont Institute of Natural Science. Authorization to conduct our work was provided by the Subsecretaría de Areas Protegidas and Departamento de Vida Silvestre, Dominican Republic. Constructive reviews of the manuscript were provided by W. J. Arendt and J. W. Wiley.

LITERATURE CITED

AMERICAN ORNITHOLOGISTS' UNION (AOU). 1998. Checklist of North American birds. Seventh Edition. American Ornithologists' Union. Washington, D.C., USA.

BOND, J. 1928. The distribution and habits of the birds of the Republic of Haiti. Proceedings of the Academy of Natural Sciences of Philadelphia 80:483–521.

BOND, J. 1943. Nidification of the passerine birds of Hispaniola. Wilson Bulletin 55:115–125.

FISHER-MEEROW, L. L. AND W. S. JUDD. 1989. A floristic study of five sites along an elevational transect in the Sierra de Bahoruco, Prov. Pedernales, Dominican Republic. Moscosoa 5:159–185.

INTERNATIONAL UNION FOR THE CONSERVATION OF NATURE (IUCN). 2006. 2006 IUCN Red List of threatened species. ⟨www.iucnredlist.org⟩.

KEITH, A. R., J. W. WILEY, S. C. LATTA, AND J. A. OTTENWALDER. 2003. The birds of Hispaniola—Haiti and the Dominican Republic. BOU Checklist 21. British Ornithologists' Union, Tring, United Kingdom.

LATTA, S. C. AND R. LORENZO (EDITORS). 2000. Results of the national planning workshop for avian conservation in the Dominican Republic. Dirección Nacional de Parques, Santo Domingo, Dominican Republic.

LATTA, S. C., C. C. RIMMER, AND K. P. MCFARLAND. 2003. Winter bird communities in four habitats along an elevational gradient on Hispaniola. Condor 105:179–197.

LATTA, S., C. RIMMER, A. KEITH, J. WILEY, H. RAFFAELE, K. MCFARLAND, AND E. FERNANDEZ. 2006. Birds of the Dominican Republic and Haiti. Princeton University Press, Princeton, New Jersey, USA.

LOVETTE, I. J. AND E. BERMINGHAM. 2002. What is a wood-warbler? Molecular characterization of a monophyletic Parulidae. Auk 119:695–714.

WETMORE, A. AND B. H. SWALES. 1931. Birds of Haiti and the Dominican Republic. U.S. National Museum Bulletin 155.

WOODS, C. A., F. E. SERGILE, AND J. A. OTTENWALDER. 1992. Stewardship plan for the national parks and natural areas of Haiti. Florida Museum of Natural History, Gainesville, USA.

The Wilson Journal of Ornithology 120(1):195–199, 2008

Foraging and Nesting of the ʻAkikiki or Kauaʻi Creeper (*Oreomystis bairdi*)

Eric A. VanderWerf[1,3,4] and Pauline K. Roberts[2]

ABSTRACT.—The ʻAkikiki or Kauaʻi Creeper (*Oreomystis bairdi*) is a rare, little-known Hawaiian honeycreeper endemic to the island of Kauaʻi. Its range is contracting, the population is declining, and it is a candidate for listing under the U.S. Endangered Species Act. We report an instance of foraging by excavation observed on 22 May 2006, a behavior previously unknown in this species, and on parental behavior at two nests observed on 24 May 2006 and 27 May 2007, about which there is little previous information. Both parents brought food to the nest, the male provided food for the female, and the female also foraged independently. The nesting pair in 2007 had a juvenile from a previous nest, indicating the ʻAkikiki will attempt to raise two broods. These observations are of limited extent, but even small facts can contribute to our understanding of the biology of the ʻAkikiki and causes of its decline. *Received 1 February 2007. Accepted 16 June 2007.*

[1] U.S. Fish and Wildlife Service, 300 Ala Moana Boulevard, Room 3-122, Box 50088, Honolulu, HI 96850, USA.

[2] Kauaʻi Forest Bird Recovery Project, Hawaiʻi Division of Forestry and Wildlife, P. O. Box 458, Waimea, HI 96796, USA.

[3] Current address: Pacific Rim Conservation, 3038 Oahu Avenue, Honolulu, HI 96822, USA.

[4] Corresponding author; e-mail: ewerf@hawaii.rr.com