First description of the nest of Sulphur-rumped Tanager Heterospingus rubrifrons

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First description of the nest of Sulphur-rumped Tanager *Heterospingus rubrifrons*

by Diego Salas-Solano & Luis Sandoval

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Summary.—We provide the first description of the nest of Sulphur-rumped Tanager *Heterospingus rubrifrons*, which was found at Veragua Rainforest Reserve, Limón province, Costa Rica, in June 2023. The nest was sited atop the base of a palm frond, 5 m above ground, and consisted of two layers of different material and a 'tail', similar to the nests of closely related species in the Hemithraupinae subfamily.

Tanagers and allies (Thraupidae) are restricted to the New World, distributed from southern North America to Argentina, including the Caribbean islands as well as the Galápagos and Cocos archipelagos in the eastern Pacific Ocean (Isler & Isler 1987, Burns *et al*. 2016). Currently, 384 species in 15 subfamilies are recognised (Barker *et al*. 2013, Burns *et al*. 2014, Winkler *et al*. 2020). Available information on the breeding biology of Thraupidae is incomplete, as is true also for many other Neotropical bird families (Xiao *et al*. 2017, Fierro-Calderón *et al*. 2021). The subfamily Hemithraupinae is the among the least known in terms of its ecology. This subfamily includes nine species in five genera (Isler & Isler 1987, Burns *et al*. 2016). Nests of four species have been described in the wild: Green Honeycreeper *Chlorophanes spiza* (Skutch 1962, ffrench 1991), Guira Tanager *Hemithraupis guira* (Bertoni 1918), Black-and-yellow Tanager *Chrysothlypis chrysomelas* (Marin & Schmitt 1991) and Scarlet-and-white Tanager *C. salmoni* (Gregg & Londoño 2021). In addition, a Golden-collared Honeycreeper *Iridophanes pulcherrimus* nest was described in captivity (McEwen 1979). Eggs have been described for three species, two in the wild, Green Honeycreeper (Skutch 1962) and Guira Tanager (Bertoni 1918), plus Golden-collared Honeycreeper in captivity (McEwen 1979). Other aspects of breeding such as parental care, breeding season and feeding are known solely from anecdotal observations (Stiles & Skutch 1989, Haverschmidt & Mees 1994). Here we describe the first nest of Sulphur-rumped Tanager *Heterospingus rubrifrons*. This species has a distribution of just *c*.31,000 km^2 ranging from the eastern Caribbean slope of Costa Rica to north-east Panama, always below 900 m. It is uncommon and inhabits mostly forest edge, secondary forest, semi-open areas and clearings, foraging in the upper and midstorey of trees (Stiles & Skutch 1989).

Materials and Methods

We observed nesting by Sulphur-rumped Tanager at Veragua Rainforest Reserve, Limón province, Costa Rica (09°55'35"N, 83°11'26"W; 425 m) in June–July 2023. Our observations using binoculars were made opportunistically 5–10 m from the palm with the nest, mostly in the morning. The site was in the main entrance of the reserve lodge, an open area comprising a small parking lot for vehicles, a garden with several introduced plant species, and small buildings (Fig. 1a), surrounded by 30 year-old secondary forest and a young *Vochysia* sp. plantation. After the nest was abandoned, it was collected and measured using a metal ruler and analogue callipers (± 0.01 mm).

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Figure 1. Habitat of Sulphur-rumped Tanager *Heterospingus rubrifrons* and nest site at Veragua Rainforest Reserve, Costa Rica: (A) the white arrow indicates the height of the nest in the *Adonidia merrillii* palm; (B) close-up of the nest in the palm frond, the white line represents the location of nest cup, the excess of material left of this and above the palm frond is the nest 'tail' (Diego Salas-Solano)

Results

On 10 June 2023, we observed two Sulphur-rumped Tanagers, presumably a pair, carrying dry twigs to the top of a palm *Adonidia merrillii* frond, 5 m above ground (Fig. 1A). The nest was located at the base of the frond, which created a 45° angle to the main trunk (Fig. 1B). The palm, 5.5 m tall, had no contact to other plants; closest were two small banana plants (*Musa* sp.) *c*.1.5 m away. Nearby was the border of the secondary forest with a mix of tall trees (>9 m), many vines (Arecaceae), bushes, and other palms. The palm was also 4 m from a small house. A group of six other adults was seen in the vicinity of the nest site (3–4 m away), but they were not seen carrying material or visiting the nest. We did not observe any interaction (physical or vocal) between the group of six and the pair building the nest. On 11 June, the pair was observed for *c*.1 hour (starting at 08.00 h) bringing fern rhizomes to the nest four times. On 14 June (15.00–16.00 h) and 15 June (10.30–11.30 h), although the birds were observed near the nest, no building behaviour or nest visits were recorded. On 16 June, between 10.00 and 10.20 h the pair visited the nest on two occasions without material. Thereafter, the nest was checked almost daily between 08.00 and 10.00 h but the pair was not seen again. After 35 days of inactivity, we collected the nest on 21 July, by cutting the palm frond at its base, and deposited the nest and supporting substrate in the collection of nests and eggs at the Museo de Zoología, CIBET, Universidad de Costa Rica, San José (MZUCR-AN-630). The nest showed no signs of weather damage or destruction by a predator or other animal (Fig. 2).

The nest was of the low cup/base type (Fig. 2) *sensu* Simon & Pacheco (2005), and was built atop dry fern rhizomes accumulated by both adults on the palm frond rachis and supported by leaf petioles and leaflets (Figs. 1–2). The nest had two layers and a small 'tail' (Fig. 2). The external layer was composed of dry fern rhizomes and the internal layer of pieces of dry leaves and filaments of horsehair fungus (*Marasmius* sp.) (Fig. 2). The 'tail' comprised dry fern rhizomes and a live fern that had probably grown from the rhizomes used for the external layer (Fig. 2). The inner cup had a diameter of 53.1 × 63.0 mm (Sandoval & Gallo 2009, Sánchez *et al*. 2014), with the depth in the centre of the cup 27.7 mm. External diameter was 76.5 × 113.4 mm and external height 48.7 mm (max.) and 45.6 mm (min.). The 'tail' was 190 mm long.

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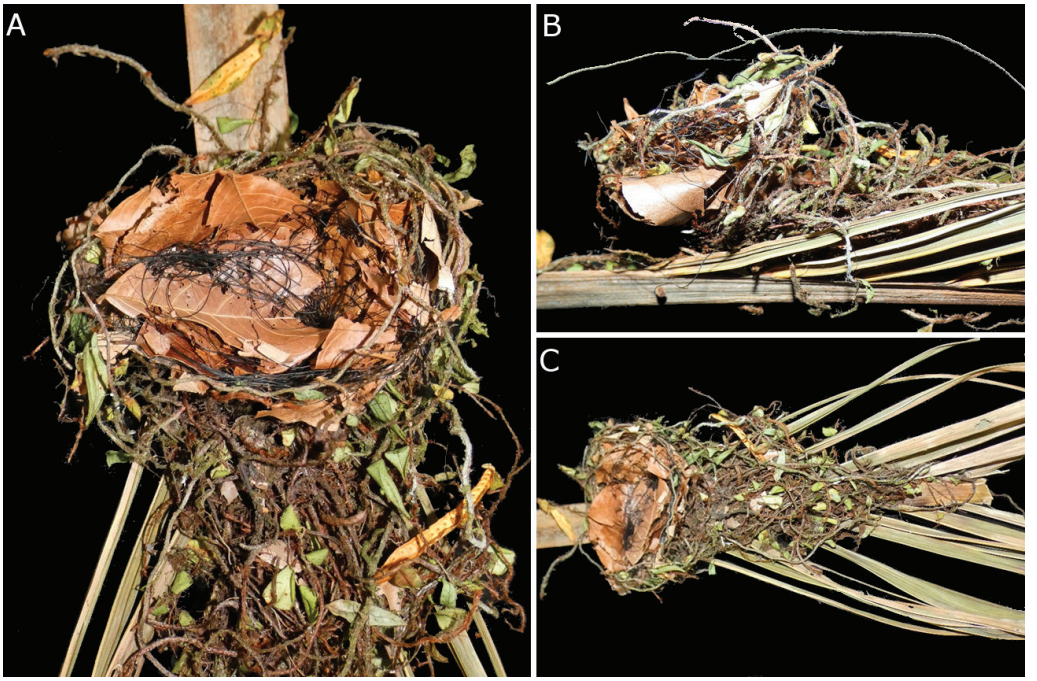

Figure 2. Nest of Sulphur-rumped Tanager *Heterospingus rubrifrons* (A) from above, showing the lining of dry leaves and filaments of horsehair fungus (*Marasmius* sp.) and the external layer; (B) lateral view; and (C) view of the nest 'tail' atop the palm frond (Luis Sandoval)

Discussion

Cup-shaped nests are common in thraupids (Isler & Isler 1987, Hilty 2011, Winkler *et al*. 2020). Different materials for the nest's outer layer and lining have been reported for other species of Hemithraupinae too (Bertoni 1918, Skutch 1962, Isler & Isler 1987, Marin & Schmitt 1991, Gregg & Londoño 2021). Use of two layers matches descriptions for Green Honeycreeper, Scarlet-and-white Tanager and Guira Tanager nests, and similar materials were used (Bertoni 1918, Skutch 1962, Gregg & Londoño 2021). These species' nests had an external layer composed of palm fibres, lichens, moss, dead and green leaves, tendrils and fungal filaments; and a lining of finer fibres, rootlets, and live and dead leaves (Bertoni 1918, Skutch 1962, Gregg & Londoño 2021). A nest of Black-and-yellow Tanager, however, comprised three layers: an external one of green moss, a middle layer of dead leaves, and an egg cup of fine rootlets and fungal filaments (Marin & Schmitt 1991). The materials used by the Sulphur-rumped Tanagers were similar to those reported for other species in the subfamily. Based on our knowledge of the habitat around the nest, the materials used appeared to be very common in the area. A 'tail' similar to that in the nest of Sulphur-rumped Tanager has not been reported in other members of the subfamily. Apparently, the extra material forming the 'tail' was accumulated to provide a level base for the nest cup on the steep-angled rachis of the palm frond. However, we cannot eliminate the possibility that the 'tail' helps make the nest less noticeable to visual predators, as suggested in the literature for other species' nests (Hansell 2000). In our observations, the 'tail' made the nest resemble an accumulation of leaves and detritus on top of the palm frond.

The nest of Sulphur-rumped Tanager is slightly larger than nests of other species in the subfamily Hemithraupinae, which measured 70–84 mm in outer diameter, 49–60 mm deep, 46–50 mm in cup diameter, and 20–27 mm in cup depth (Bertoni 1918, Skutch 1962, Gregg

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& Londoño 2021). This is expected, because Sulphur-rumped Tanager is the second largest species in the subfamily (Isler & Isler 1987, Stiles & Skutch 1989, Hilty 2020).

Information on nest construction in the subfamily is limited to Green Honeycreeper (Skutch 1962). Unlike the latter, where the female alone built the nest, we observed two adult Sulphur-rumped Tanagers contributing to nestbuilding. However, we cannot confirm whether they were of different sexes or the same sex, given the species' lack of sexual dichromatism (Isler & Isler 1987, Stiles & Skutch 1989, Hilty 2011). Our observation indicates that nestbuilding may involve more than one adult or helpers, similar to other tanager species (e.g., Isler & Isler 1987, Hilty 2011, Eisermann *et al*. 2011).

Our observations provide new natural history information for this poorly studied species, although many aspects of its biology, including the eggs, incubation, parental care and diet, remain unknown. Such information may aid in the species' conservation by identifying its requirements for breeding, the length of the breeding season, and its spatial requirements across the year.

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References:

Bertoni, A. W. 1918. Apuntes sobre aves del Paraguay. *Hornero* 1: 188–191.

Barker, F. K., Burns, K. J., Klicka, J., Lanyon, S. M. & Lovette, I. J. 2013. Going to extremes: contrasting rates of diversification in a recent radiation of new world passerine birds. *Syst. Biol*. 62: 298–320.

Burns, K. J., Shultz, A. J., Title, P. O., Mason, N. A., Barker, F. K., Klicka, J., Lanyon, S. M. & Lovette, I. J. 2014. Phylogenetics and diversification of tanagers (Passeriformes: Thraupidae), the largest radiation of Neotropical songbirds. *Mol. Phylo. & Evol*. 75: 41–77.

Burns, K. J., Unitt, P. & Mason, N. A. 2016. A genus-level classification of the family Thraupidae (Class Aves: Order Passeriformes). *Zootaxa* 4088: 329–354.

Eisermann, K., Arbeiter, S., López, G., Avendaño, C., de León Lux, J., Burge, A., de León Lux, A. & Buchán, E. 2011. Nesting ecology of the Endangered Azure-rumped Tanager (*Tangara cabanisi*) in Guatemala. *Orn. Neotrop*. 22: 39–57.

ffrench, R. P. 1991. *A guide to the birds of Trinidad and Tobago*. Second edn. Cornell Univ. Press, Ithaca, NY.

Fierro-Calderón, K., Loaiza-Muñoz, M., Sánchez-Martínez, M. A., Ocampo, D., David, S., Greeney, H. F. & Londoño, G. A. 2021. Methods for collecting data about the breeding biology of Neotropical birds. *J. Field Orn*. 92: 315–341.

Gregg, J. J. & Londoño, G. A. 2021. First description of the nest and breeding behavior of the Scarlet-and-white Tanager (*Chrysothlypis salmoni*) from the Colombian Chocó. *Wilson J. Orn*. 133: 676–682.

Hansell, M. 2000. *Bird nests and construction behavior*. Cambridge Univ. Press, Cambridge, UK.

Haverschmidt, F. & Mees, G. F. 1994. *Birds of Suriname*. Second edn. Vaco Uitgeversmaatschappij, Paramaribo.

Hilty, S. L. 2011. Family Thraupidae (tanagers). Pp. 46–329 *in* del Hoyo, J., Elliott, A. & Christie, D. A. (eds.) *Handbook of the birds of the world*, vol. 16. Lynx Edicions, Barcelona.

Hilty, S. 2020. Sulphur-rumped Tanager (*Heterospingus rubrifrons*), version 1.0. *In* del Hoyo, J., Elliott, A., Sargatal, J., Christie, D. A. & de Juana, E. (eds.) *Birds of the world*. Cornell Lab of Ornithology, Ithaca, NY. https://doi.org/10.2173/bow.surtan1.01 (accessed 14 March 2024).

Isler, M. L. & Isler, P. R. 1987. *The tanagers: natural history, distribution, and identification*. Smithsonian Institution Press, Washington, DC.

Marin, M. & Schmitt, J. N. 1991. Nest and eggs of some Costa Rican birds. *Wilson Bull*. 103: 506–509.

McEwen, A. 1979. Breeding attempt with the Golden-collared Honeycreeper (*Tangara pulcherrima*) in 1977. *Avicult. Mag*. 85: 141–145.

Sánchez, J. E., Porras, C. & Sandoval, L. 2013. Descripción del nido y la cópula del Pájaro Campana Tricarunculado (*Procnias tricarunculatus*). *Orn. Neotrop*. 24: 235–240.

Sandoval, L. & Gallo, A. 2009. Description of the nest and eggs of the Black-cheeked Ant Tanager (*Habia atrimaxillaris*). *Wilson J. Orn*. 121: 635–637.

Simon, J. E. & Pacheco, S. 2005. On the standardization of nest descriptions of Neotropical birds. *Rev. Bras. Orn*. 13: 143–154.

Skutch, A. F. 1962. Life histories of honeycreepers. *Condor* 64: 92–116.

ISSN-2513-9894 (Online)

Stiles, F. G. & Skutch, A. F. 1989. *A guide to the birds of Costa Rica*. Cornell Univ. Press, Ithaca, NY.
Winkler, D. W., Billerman, S. M. & Lovette, I. J. 2020. Tanagers and allies (Thraupidae), version 1.0. *In* Billerman, S. M., Keeney, B. K., Rodewald, P. G. & Schulenberg, T. S. (eds.) *Birds of the world*. Cornell Lab of Ornithology, Ithaca, NY. https://doi.org/10.2173/bow.thraup2.01 (accessed 14 March 2024).
Xiao, H., Hu, Y., Lang, Z., Fang, B., Guo, W., Zhang, Q., Pan, X. & Lu, X. 2017. How much do we know about the breeding biology of bird species in the world? *J. Avian Biol*. 48: 513–518.

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