

Vocalisations and juvenile plumage of Azure-rumped Tanager *Tangara cabanisi*

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La *Tangara* de Cabanis *Tangara cabanisi* es endémica de la vertiente Pacífica de Guatemala y de Chiapas, México. La especie está en Peligro de Extinción y su biología es poco conocida. Para facilitar futuros esfuerzos de monitoreo de las poblaciones, se describen por primera vez el plumaje y las vocalizaciones de polluelos y de juveniles. En general los juveniles parecían grisáceos, pero su apariencia fue similar a la de los adultos por varias marcas conspicuas oscuras (antifaz, auriculares inferiores, puntos en el pecho) y bordes azules en las plumas remeras. Los juveniles obtienen el plumaje de adulto rápidamente. Se documentan con grabaciones y espectrogramas los llamados de polluelos en los últimos días antes de salir del nido, y dos diferentes vocalizaciones de juveniles perchados en el dosel del bosque. Además se documentan por primera vez con espectrogramas tres diferentes vocalizaciones sibilantes de adultos, así como llamados de gorjeo. Se describe por primera vez una vocalización de agresión entre adultos y también hacia invasores al territorio del nido.

Azure-rumped Tanager *Tangara cabanisi* is a globally Endangered species¹ that is restricted to <2,500 km² on the Pacific slope of Chiapas, Mexico, and western Guatemala^{3,8}. Because of the small number of field observers in the tanager's distribution, its natural history is little known, although habitat use and nesting ecology have been described from Chiapas^{5,6,9} and Guatemala^{2,4}. However, the species' juvenile plumage is unknown⁸. During research into habitat use⁴ and nesting ecology in Guatemala (to be published elsewhere), we noticed calls different from described vocalisations^{2,7–9}. Without familiarity with their calls, Azure-rumped Tanagers are easily overlooked in the canopy of tall humid broadleaf forest. To improve the efficiency of future population monitoring, we describe these vocalisations—including the calls of fledged juveniles—as well as the plumage of juvenile Azure-rumped Tanagers.

Study sites and Methods

Azure-rumped Tanager has been recorded in Guatemala at altitudes of 850–1,900 m on the southern slopes of the volcanic chain, in dptos. San Marcos, Quetzaltenango, Suchitepéquez, Sololá and Chimaltenango⁴. Observations of juveniles and sound-recordings were made at the following sites: Los Tarrales Reserve (14°33'N 91°10'W) and Los Andes Reserve (14°33'N 91°11'W), both in dpto. Suchitepéquez on the south-east slope of Atitlán volcano, Finca Los Pirineos, dpto. Quetzaltenango (14°41'N 91°33'W) south-east of Santa María volcano, and Loma Linda, dpto. Quetzaltenango (14°44'N 91°38'W) south-east of Chicabal volcano. Juveniles were observed using a spotting scope at distances of 10–30 m. Vocalisations were recorded using a Fostex FR-2LE (enhanced by Oade Brothers Audio) digital recorder and Sennheiser M67

directional microphone. Sonograms were produced with Raven Lite 1.0 software. Nestlings at two nests were documented on video using camcorders.

Description of juveniles and vocalisations

We observed nestlings and fledglings at four nests. Nest 1 was sited in a *Heliconia* sp. (Tiliaceae), at Finca Los Pirineos, in June 2001. Nest 2 was placed in a *Neocupressus lusitanica* var. *lindenii* (Cupressaceae), at Los Tarrales Reserve, in August 2008. Nest 3 was in a *Sideroxylon portoricense minutiflorum* (Sapotaceae), at Los Tarrales Reserve, in September 2008, and nest 4 was in a *Ficus crassiuscula* (Moraceae), again at Los Tarrales Reserve, in June 2009. Sound-recordings and video have been archived at the Macaulay Library (Cornell Lab of Ornithology, <http://macaulaylibrary.org>). We refer to video 1 (nestlings in nest 1 a few days before fledging, on 5 June 2001: ML56047, J. Berry), video 2 (adults feeding a nestling in nest 4 two days prior to fledging, on 11 June 2009: ML56048, A. Burge) and video 3 (a nestling in nest 4 two days before fledging, on 11 June 2009: ML56049, A. Burge).

Overall, juvenile Azure-rumped Tanagers appeared greyish but resembled adults due to some distinct dark markings (on the lower ear-coverts, lores, and spots on the breast) and blue fringes to the remiges. The nestlings at nests 1 and 4, and the fledgling from nest 3 had a grey bill, while a juvenile from nest 2 had a beige lower mandible. Legs were pale grey, similar to adults. In adults, the upper mandible is dark grey and lower mandible pale grey with a dark tip. Irides were dark and the lores black, similar to adults. The crown was greyish with a pale blue-green hue (videos 1–3). The black mark on the lower ear-coverts (Fig. 1) differed in extent individually, as is true also



for adults. The throat was whitish with two fine dark lines (Fig. 2). The back was concolorous with the crown, with some dark spots on the upper part (videos 1, 2). Breast and belly were whitish.

Left, top to bottom:

Figure 1. Adult Azure-rumped Tanager *Tangara cabinisi* feeding fledgling from nest 2, Los Tarrales Reserve, Guatemala, 17 August 2008 (K. Eisermann)

Figure 2. Fledgling Azure-rumped Tanager *Tangara cabinisi* from nest 2, Los Tarrales Reserve, Guatemala, 17 August 2008 (K. Eisermann)

Figure 3. Fully-grown juvenile Azure-rumped Tanager *Tangara cabinisi*, Loma Linda, Guatemala, 29 October 2009 (K. Eisermann)

The extent of dark spots on the breast differed individually; both young from nest 2 had reduced spots (Figs. 1–2), while the spots in the young from nest 3 were more extensive and similar to adults. Lesser wing-coverts, which are turquoise-blue in adults, were greyish in the nestling at nest 4, two days prior to fledging (video 2). Remiges were dark but fringed blue, less extensively than in adults. The tail feathers were c.10% grown on fledging. The young quickly attained adult-like plumage. Plumage of several fully-grown young in September 2009—identified as young based on their begging calls—was indistinguishable from adult plumage at a distance (KE pers. obs.). Only the yellowish skin near the base of the maxilla and mandible distinguished them visually as young (Fig. 3).

We heard different calls from young Azure-rumped Tanagers. Older nestlings gave a series of *zee* notes at 9–13 kHz, used as a begging call prior to being fed. The interval between calls became shorter with increased excitement (Fig. 4a,b; video 3). We recorded two different vocalisations from fledged juveniles, perched in the canopy. All juvenile vocalisations were series' of short sibilant notes at 7–11 kHz. The first type of vocalisation was a downslurred sibilant *siu* note given at irregular intervals, which appears at 0.7, 3.5 and 4.9 seconds in the sonogram in Fig. 4c (8 September 2008, Los Tarrales Reserve: ML137367, K. Eisermann). This call was sometimes followed by three shorter notes (at 1.3–1.9 seconds in the sonogram in Fig. 4c), which were given during short flights between branches and can be rendered *siu—zee-zee-zee*. A second type of vocalisation was a double-noted *zziu-zee*, as displayed in the sonogram in Fig. 4d (8 September 2008, Los Tarrales Reserve: ML137368, K. Eisermann).

We recorded three types of sibilant drawn-out calls by adult Azure-rumped Tanagers at frequencies of 5–15 kHz. The most complex was a combination of three notes, the first note downslurred, the second upslurred and the third note downslurred again, as in the sonogram in Fig. 4e (7 September 2008, Los Tarrales Reserve: ML137369, K. Eisermann). The interval between calls was irregular, e.g. the interval varies from 2.5–3.5 seconds in Fig. 4e, but at times the call

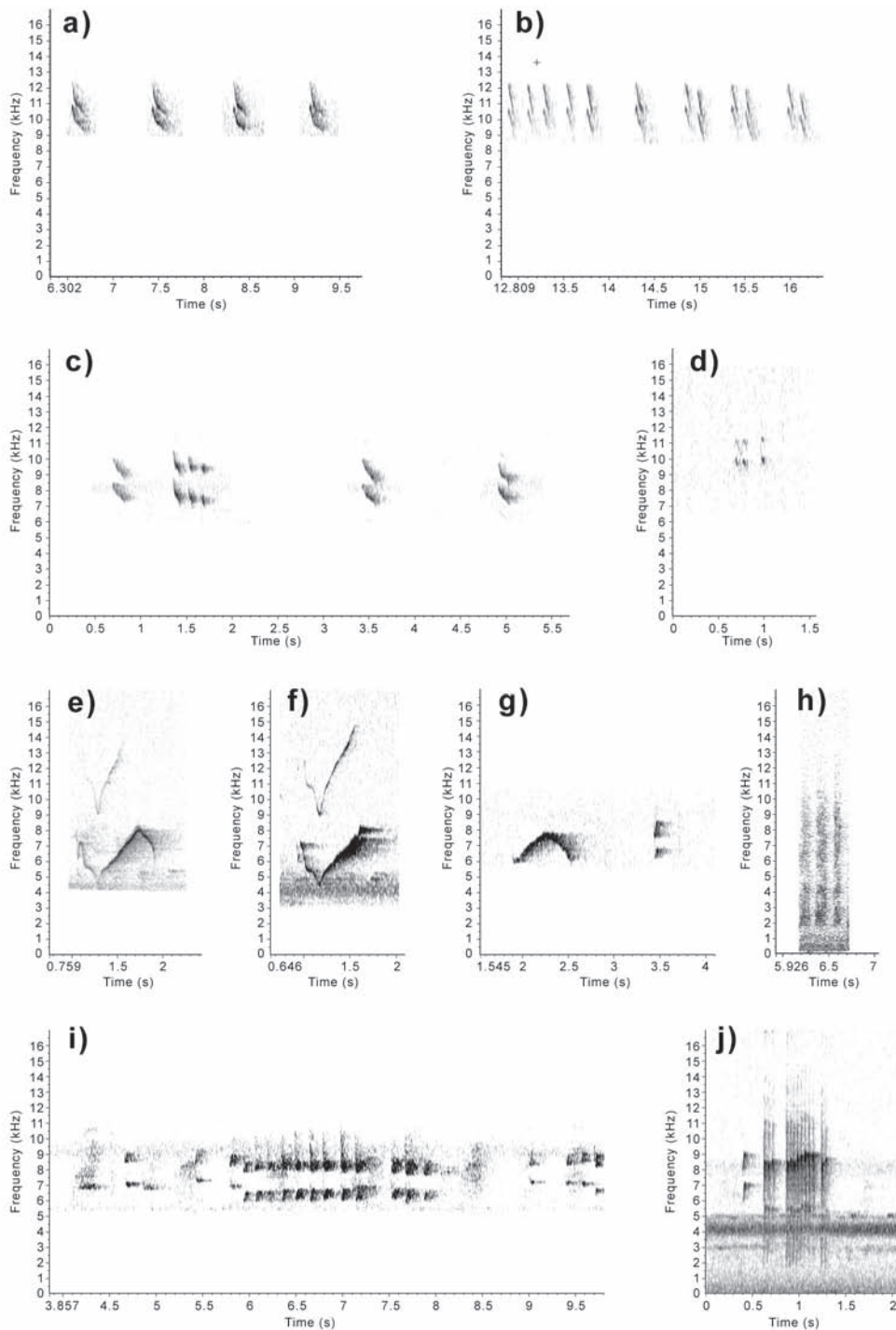


Figure 4. Sonograms of Azure-rumped Tanager *Tangara cabinisi* calls. (a) Begging calls of nestling two days prior to fledging, adult not in sight (Macaulay Library ML56049). (b) Begging call shortly before adult arrived at nest to feed young (ML 56049). (c–d) Fledged juvenile (c, MLI37367; d, MLI37368). (e–g) Sibillant drawn-out calls of adults (e, MLI37369; f, MLI37370; g, MLI37371). (h) Aggression call of adult (MLI37374); (i–j) Twitters and trills (i, MLI37372; j, MLI37373). The noise at 3–5 kHz in (j) is caused by insects.

is given only once. A variation of this call is shorter and lacks the final downslurred note; see Fig. 4f (7 September 2008, Los Tarrales Reserve: ML137370, K. Eisermann). The third vocalisation type was an up- and downslurred call followed by a sharp note, *siuuu-t*, see the sonogram in Fig. 4g (8 September 2008, Los Tarrales Reserve: ML137371, K. Eisermann).

The sharp notes sometimes run into a twitter given during short flights (Fig. 4i; 8 September 2008, Los Tarrales Reserve: ML137372, K. Eisermann), or into a sharp trill (Fig. 4j; 8 September 2008, Los Tarrales Reserve: ML137373, K. Eisermann). These calls recall those of Common Bush Tanager *Chlorospingus ophthalmicus*. During aggressive behaviour towards intruders in the nest area, adult Azure-rumped Tanagers gave a scratchy *rrrb-rrrb-rrrb*, similar to the call with a frequency range of 1.5–11.0 kHz, recorded during aggressive behaviour between two adults in a fruit tree (Fig. 4h; 28 February 2010, Los Andes Reserve: ML137374, K. Eisermann).

In conclusion, the juvenile plumages and juvenile vocalisations, and adult calls during aggressive behaviour described here have not been described previously. Several adult calls described from Chiapas^{7–9} and Guatemala² are similar to those documented here for the first time with sonograms.

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