

NESTING RECORDS OF THE TINY HAWK (*ACCIPITER SUPERCILIOSUS*) IN EASTERN PERUTomás Rivas-Fuenzalida^{1*} · Fernando Angulo²

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Abstract · The breeding biology of the Tiny Hawk (*Accipiter superciliosus*) is poorly known. Here, we describe two nests found in the rainforest of eastern Peru. The first nest was detected during the incubation period (September 2018) at a height of 14 m, in the fork of a 20 m tall unidentified tree (525 m a.s.l.). The second nest was found during the fledging period (October 2020) and was located 16 m above the ground in the fork of a 20 m tall, 0.89 m DBH flame tree (*Erythrina velutina*; 1070 m a.s.l.). The latter nest had been built and occupied by a pair of Plumbeous Kites (*Ictinia plumbea*) during the previous season. Both nests were located within remnants of secondary forest surrounded by cultivated land. Observations on feeding behavior and nest defense are presented.

Resumen · Registros de nidificación del gavilán enano (*Accipiter superciliosus*) en el este de Perú

La biología reproductiva del gavilán enano (*Accipiter superciliosus*) es poco conocida. Aquí describimos el hallazgo de dos nidos en el bosque lluvioso del este de Perú. El primer nido fue detectado durante el período de incubación (septiembre 2018) a una altura de 14 m sobre el suelo, en una bifurcación de ramas de un árbol no identificado de 20 m de altura (525 m s.n.m.). El segundo nido fue detectado durante el período de volantones (octubre 2020) y estaba ubicado a 16 m del suelo en la bifurcación de ramas de un oropel (*Erythrina velutina*) de 20 m de alto y 0.89 m de DAP (1.070 m s.n.m.). El nido había sido construido y ocupado durante la temporada reproductiva anterior por una pareja de elanios plumizos (*Ictinia plumbea*). Ambos nidos se ubicaron en remanentes de bosque secundario rodeados por tierras actual o previamente cultivadas. Se añaden observaciones sobre la conducta de alimentación y defensa del nido.

Key words: Cicada · Flame tree · Nests · Plumbeous Kite · Rainforest

The Tiny Hawk (*Accipiter superciliosus*, Linnaeus 1766) is the smallest (24–27 cm length, 61.5–134 g mass) and one of the least-known species of Neotropical Accipitriformes (Ferguson-Lees & Christie 2001, Bierregaard & Kirwan 2020). Despite its wide distribution range in Central and South America, there is very little information about its natural history, especially about its breeding biology (Monsalvo et al. 2018). Herein we report the findings of two Tiny Hawk's nests in eastern Peru, with observations on breeding behavior.

We found the nests in two geographically separate localities. The first nest was in secondary forest at the Villa Carmen biological station (12°53'S, 71°24'W, 525 m a.s.l.), in the district of Kosñipata (Paucartambo Province, Department of Cuzco), administered by the Association for the Conservation of the Amazon Basin (ACCA). The second nest was in a secondary forest near San Ramón (11°07'S, 75°21'W, 1070–1220 m a.s.l.), Department of Junín. Below we describe in detail the nest and nest-site characteristics, and report some breeding behavior observations of Tiny Hawks. To characterize the habitat around the breeding sites, we took measurements of satellite images using the Google Earth metric tools. We made all observations using 10 x 42 binoculars, and vocalizations were recorded using a smartphone. The sonogram was made using Ocean Audio software.

First nest. On 10 September 2018 at 17:33 h, Fernando Angulo (FA) found a Tiny Hawk nest, which was approximately 30 cm in diameter (estimated by comparing to the size of the incubating female). An adult female was reclined in the nest, apparently incubating (Figure 1). The observation lasted approximately 5 min. The nest was in a tree 20 m in height, approximately 14 m above ground, at a fork where the main trunk split into four branches veering from the trunk at approximately 60°. The distance from the nest tree to the biological station buildings was approximately 150 m. The nest was within an old guava (*Psidium guajava*, Myrtaceae) plantation surrounded by similar habitats and gardens around the biological station, as well as areas of anthropic grasslands where an airstrip previously existed. Primary forest was at least 300 m away.



Figure 1. Adult female Tiny Hawk (*Accipiter superciliosus*) incubating. Villa Carmen Biological station, Kosñipata site, Cuzco, Peru. Photo: Fernando Angulo.



Figure 2. Adult female Tiny Hawk (*Accipiter superciliosus*) feeding a fledgling at the nest. San Ramón, Junín, Peru. Photo: Tomás Rivas-Fuenzalida.

Second nest. On 8 October 2020 at 11:15 h, while walking along a secondary road surrounded by banana and coffee plantations, and patches of secondary forest at 1220 m a.s.l., Tomás Rivas Fuenzalida observed an adult male Tiny Hawk catch a small bird in a tree about 7 m above the ground, before flying across the valley downwards. On 23 October 2020 at 10:30 h, 1.8 km downhill on the same road (1070 m a.s.l.), TRF found an adult female observing her surroundings and preening for one hour while perched in a flame tree (*Erythrina velutina*, Fabaceae). At 11:45 h, she vocalized and

a male Tiny Hawk (having a higher pitch call) responded from the forest interior, approximately 50 m away. Seconds later, the female flew towards the male. Two minutes later, TRF heard high-pitched vocalizations from another flame tree 15 m from where the female was originally perched. When searching for the origin of vocalizations, TRF spotted a small nest (approximately 25 cm in diameter) that had been occupied by a pair of Plumbeous Kites (*Ictinia plumbea*) during the previous breeding season (November 2019), which raised a single chick (TRF pers. obs.). The nesting tree was about 20

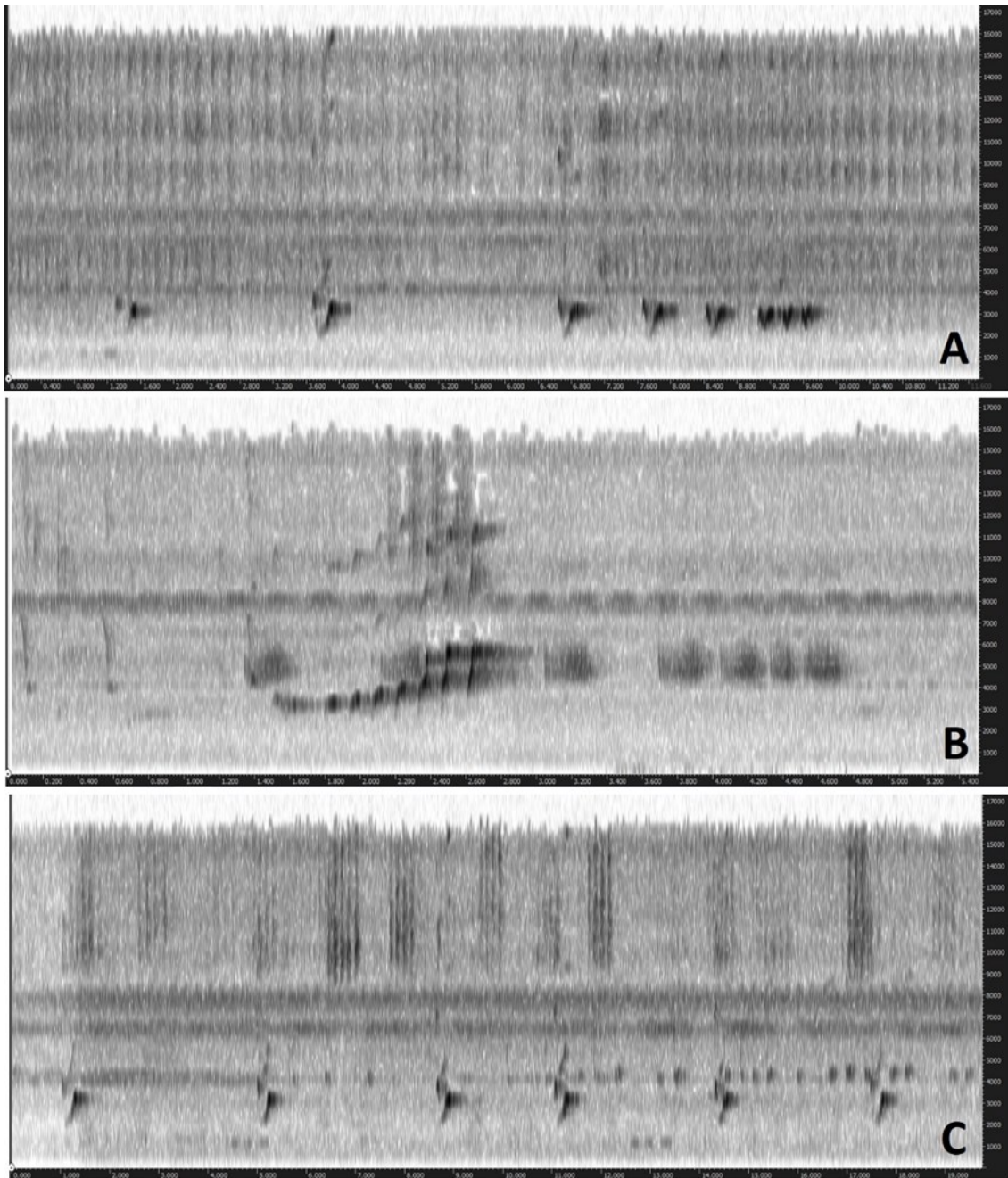


Figure 3. Adult female Tiny Hawk (*Accipiter superciliosus*) vocalizations emitted near the nest. A and C are songs, B is an alarm call. Recordings available in xeno-canto: A (XC633302), B (XC633313), C (XC633316). San Ramón, Junín, Peru. Recordings: Tomás Rivas-Fuenzalida. Sonograms: Fernando Angulo.

m high and had a DBH of 0.89 m. The nest was 16 m above the ground, and apparently the pair had not modified it, as the structure looked identical to the prior year. Two fledglings were visible inside the nest as the mother fed them pieces of meat from a small plucked bird (Figure 2). During the rest of the day, the female remained near the nest tree hunting cicadas (Cicadidae), but did not feed them to the fledglings. On another two occasions, the female fed the fledglings birds caught by the male.

The next day (24 October 2020), from 11:30 h–16:30 h, TRF surveyed the nest. Initially, both fledglings remained perched on the nest tree near the nest while the adult female was guarding from a nearby tree, before delivering a melodious vocalization (Figure 3A). At 11:40 h, a fledgling jumped from branch to branch twice. At 12:17 h, the other fledgling made small flights from branch to branch until it perched next to its sibling. Their body sizes suggested both

were males. At 15:35 h, the adult male arrived at the nest with prey and then flew out of sight. The female arrived 10 min later to feed the fledglings, whereupon they returned to the nest. The feeding lasted 10 min, followed by the female flying to the nearby forest. At 16:07 h, the female emitted rapid high-pitched alarm calls (Figure 3B) before attacking three times an adult Chestnut-eared Aracari (*Pteroglossus castanotis*), presumably defending her nest. At 16:10 h–16:29 h, the female made further unsuccessful predation attempts upon unidentified prey in the trees.

On 28 October 2020 at 15:00 h–18:00 h, TRF surveyed again the nesting site. At 15:00 h, the adult female was perched on top of the nesting tree and the fledglings were not visible. At 15:16 h, the female flew towards a neighboring flame tree and caught a cicada in flight at 15:30 h before returning to the flame tree to eat it. At 16:15 h, the female flew to the nesting tree and the fledglings began to beg from



Figure 4. Adult female Tiny Hawk (*Accipiter superciliosus*) feeding their two fledglings with an unidentified avian prey near the nest. San Ramón, Junín, Peru. Photo: Tomás Rivas-Fuenzalida

a dense evergreen tree near the nest before flying towards the nest tree and perching near the female. At 16:30 h, the adult male arrived with prey in its claws, and then flew vocalizing over the nest tree before flying downwards into the forest. Seconds later, TRF observed him plucking a small bird on a branch about 50 m from the nest. A minute later, the female seized the prey and carried it to the flame tree next to the nest to feed the fledglings (Figure 4) for nearly 7 min. At 16:38 h, the female flew towards a *Cecropia* tree (*Cecropia* sp., Urticaceae) by the road (approximately 30 m from the nesting tree), where she hunted a cicada and took it to a tree adjacent to the nest to feed one of the fledglings. The female then flew up the hill out of sight before returning to the nest tree. At 16:55 h, the fledglings began to vocalize and one of them visited the nest. At 16:57 h, the female delivered a melodious vocalization (Figure 3C). At 17:37 h, after intermittently vocalizing for almost 30 min, the female dedicated herself to hunting and was close to capturing a cicada in the air—less than 1 m from the observer's face—but it flew away. At 17:40 h, the fledgling in the nest flew to perch on a nearby branch where its sibling was, mutually touching mandibles. At 17:50 h, the female vocalized at approximately 70 m downslope. By 18:00 h (near dusk), the two fledglings perched together near the nest, while the adults were not visible.

Breeding territories habitat. Both nesting sites were within second-growth forest remnants, interspersed with agricultural and open areas. Within a 1.5 km circular buffer area (710 ha or 7.1 km²), centered on the nesting tree, the elevation range was 510–1450 m a.s.l. The main habitat of the buffer area was native forest (mean = 75.9% of the area),

followed by agricultural areas (9%), pastures (8.3%), and other land types, including water courses and buildings (6.6%). The mean distance from the nests to the nearest water course was 405 m and 475 m to the buildings (Table 1).

Ferguson-Lees & Christie (2001) speculated that Tiny Hawks breed during February–June and October–January in the north and south of their range, respectively. In Colombia, there is one record of a Tiny Hawk carrying sticks in April, and records of individuals in breeding condition in October and February (del Hoyo et al. 1994). Bierregaard & Kirwan (2020) reported a nest in February in Panama and well-grown chicks during the dry season (August) in Brazil, but without providing further details. Altogether, the evidence suggests that the Tiny Hawk breeds mainly during the dry season. The number of fledglings we observed coincides with the clutch size of one to three eggs reported in Venezuela and Brazil (Hewitt 1937, Wolfe 1936).

Nest characteristics of the Tiny Hawk in our study sites concur with Bierregaard & Kirwan (2020), who described the nest as a stick platform built in a tree. Hewitt (1937) reported a Tiny Hawk pair usurping an abandoned nest of a Black-collared Hawk (*Busarellus nigricollis*) in Venezuela. Thus, Tiny Hawks could either build their nest or occupy abandoned nests of other raptor species. Compared to other Neotropical *Accipiter* species, Tiny Hawks seem to nest in more exposed sites, choosing emerging trees with a wide view of the surroundings, in contrast to other congeners such as the Bicolored Hawk (*Accipiter bicolor*), the Chilean Hawk (*A. chilensis*) or the Rufous-thighed Hawk (*A. erythronemius*), which place their nests under the canopy (Thorstrom & Quixchán 2000, Seipke & Cabanne 2008, Rivas-Fuenzalida et al. 2015), which is a widespread feature of *Accipiter* species globally (Newton

Table 1. Nesting site characteristics of the Tiny Hawk (*Accipiter superciliosus*) in the rainforest of eastern Peru. *Within a 1.5 km circular buffer area (710 ha) centered in the nesting tree. ARA = Altitudinal range; POA = Percentage of open areas (ha); PAA = Percentage of agricultural areas (ha); POL = Percentage of other land type (human habitations, water bodies, roads, etc.); PFC = Percentage of forest cover (ha); DWC = Distance (m) to nearest water courses; DHH = Distance (m) to nearest human habitations.

Site	ARA*	POA*	PAA*	POL*	PFC*	DWC	DHH
San Ramón	860-1450	10.7 (76)	15.2 (108)	1.7 (12)	72.4 (514)	430	800
Kosñipata	510-820	6 (43)	2.9 (21)	11.5 (82)	79.4 (564)	380	150

1986). The elevation of the nesting sites in our study coincides with the species range in Peru (Walker et al. 2006, Schulenberg et al. 2010). Tiny Hawks appear to be tolerant of human-modified forest habitats, although it is not clear how this benefits them in the face of increasing deforestation throughout their range (Cardil et al. 2020).

The hunting techniques of Tiny Hawks in Peru were similar to those previously described by other authors, who observed individuals ambushing prey from perches (Stiles 1978, Robinson 1994, Ferguson-Lees & Christie 2001). All prey delivered by the male were unidentified small birds, while the female hunted only cicadas around the nest. The capture of cicadas by Tiny Hawks was reported only recently (Berryman & Kirwan 2021), and our observations suggests that cicadas are an important prey item. The Chestnut-eared Aracari seems to be large prey (220–310 g, Short 2020) for the Tiny Hawk, as the largest prey previously reported did not exceed 90 g (Militeo 2005, Costa & Vargas 2011). More likely, the observed attacks corresponded to nest defense, as the Chestnut-eared Aracari usually preys on the eggs and nestlings of a variety of birds (Short 2020).

The small body size and secretive habits of Tiny Hawks make them difficult to detect, and therefore it is challenging to collect information on its natural history. The species has probably gone unnoticed in countries where recently documented records are now available (e.g., Honduras; McKewy 2016). Careful inspection of abandoned nests may be a good practice to learn more about this little-studied hawk, which uses abandoned nest of other common diurnal raptors.

ACKNOWLEDGEMENTS

TRF thanks SERFOR for the research permission (373-2018). FA thanks ACCA and Manu Expeditions. We thank Guy Kirwan, Ricardo Figueroa Rojas, Francisco Rivas Fuenzalida, Carlos Bosque, and an anonymous reviewer for their valuable comments and suggestions. We appreciate the improvements in English usage made by Daniel Brooks through the Association of Field Ornithologists' program of editorial assistance.

REFERENCES

- Berryman, AJ & GM Kirwan (2021) Is the Tiny Hawk (*Accipiter superciliosus*) really a specialized predator on hummingbirds? Using citizen science data to elucidate dietary preferences of a little-known Neotropical raptor. *Journal of Raptor Research* 55: 276–280.
- Bierregaard RO & GM Kirwan (2020) Tiny Hawk (*Accipiter superciliosus*) (version 1.0). in del Hoyo, J, A Elliott, J Sargatal, DA Christie & E de Juana (eds). *Birds of the World*. Cornell Lab of Ornithology, Ithaca, New York, USA. Available at <https://birdsoftheworld.org> [Accessed 16 April 2021].
- Cardil, A, S de-Miguel, CA Silva, PB Reich, D Calkin, PHS Brancalion, AC Vibrans, JGP Gamarra, et al., (2020) Recent deforestation

- drove the spike in Amazon fires. *Environmental Research Letters* 15: 121003.
- Costa TV & CF Vargas (2011) Tiny Hawk *Accipiter superciliosus* attacking a Golden-green Woodpecker *Piculus chrysochloros* in central Amazonian Brazil. *Cotinga* 33: 134–136.
- del Hoyo, J, A Elliott & J Sargatal (1994) *Handbook of the Birds of the World. Volume 2. New World Vultures to Guinea-fowl*. Lynx Edicions, Barcelona, Spain.
- Ferguson-Lees, J & D Christie (2001) *Raptors of the world*. Houghton Mifflin, Boston, USA.
- Hewitt, V (1937) A description of the eggs of Grey Crane-Hawk, Guiana White-tailed Hawk, Eyebrowed Hawk, and Four-banded Sparrow Hawk. *Oologists' Record* 17:12–14.
- McKewy, M (2016) eBird: An online database of bird distribution and abundance. eBird, Ithaca, New York, USA Available at <http://www.ebird.org> [Accessed 09 March 2021].
- Militeo, ER (2005) Presencia y alimentación del Esparvero Chico (*Accipiter superciliosus*) en el Parque Nacional Iguazú, Argentina. *Nuestras Aves* 49: 23–24.
- Monsalvo, JAB, NM Heming & MA Marini (2018) Breeding biology of Neotropical Accipitriformes: current knowledge and research priorities. *Revista Brasileira de Ornitologia* 26: 151–186.
- Newton, I (1986). *The Sparrowhawk*. T & A D Poyser, Calton, UK.
- Rivas-Fuenzalida, T, N Asciones-Contreras, J Medel & R Figueroa (2015) Nidificación del Peuquito (*Accipiter chilensis*) en plantaciones comerciales de Pino insignis (*Pinus radiata*) en la cordillera de Nahuelbuta, sur de Chile. *Boletín Chileno de Ornitología* 21: 66–76.
- Robinson, SK (1994) Habitat selection and foraging ecology of raptors in Amazonian Peru. *Biotropica* 26: 443–458.
- Schulenberg, TS, DF Stotz, DF Lane, JP O'Neill & TA Parker III (2010) *Birds of Peru (Revised and Update Edition)*. Princeton University Press. New Jersey, USA.
- Seipke, SH & GS Cabanne (2008) Breeding of the Rufous-thighed Hawk (*Accipiter erythronemius*) in Argentina and Brazil. *Ornitología Neotropical* 19: 15–29.
- Short, LL (2020) Chestnut-eared Aracari (*Pteroglossus castanotis*) (version 1.0). in del Hoyo, J, A Elliott, J Sargatal, DA Christie & E de Juana (eds). *Birds of the World*. Cornell Lab of Ornithology, Ithaca, New York, USA. Available at <https://birdsoftheworld.org> [Accessed 17 April 2021].
- Stiles, FG (1978) Possible specialization for hummingbird-hunting in the Tiny Hawk. *Auk* 95: 550–553.
- Thorstrom, R & A Quixchán (2000) Breeding biology and nest site characteristics of the Bicolored Hawk in Guatemala. *Wilson Bulletin* 112: 195–202.
- Walker, B, DF Stotz, T Pequeño & JW Fitzpatrick (2006) Birds of the Manu Biosphere Reserve. Pp 23–49 in Patterson, BD, DF Stotz & S Solari (eds). *Mammals and Birds of the Manu Biosphere Reserve, Peru*. Fieldiana: Zoology, new series, number 110. Field Museum of Natural History, Chicago, Illinois, USA.
- Wolfe, LR (1936) The eggs of the Eyebrowed Sparrow-hawk, Red-thighed Hawk and Brazilian Laughing Hawk. *Oologists' Record* 16:83–84.