



First record of vocalizations of wild *Atelocynus microtis* (Carnivora: Canidae) from southeastern Peru

Holly O'Donnell^{1*} , Patrick S. Champagne^{2*} 

¹ Wildlife Conservation Research Unit (WildCRU), Department of Biology, University of Oxford, Recanati-Kaplan Centre, Tubney, Oxfordshire, UK

² Adaptive Biotoxicology Lab, School of the Environment, University of Queensland, St. Lucia, QLD 4072, Australia

* Correspondence: hollyodonnell146@gmail.com, patrickchampagne@gmail.com

Resumen

El perro de orejas cortas (*Atelocynus microtis*) es uno de los carnívoros más raros de Sudamérica, cuyas vocalizaciones silvestres nunca habían sido documentadas. Reportamos la primera vocalización silvestre de esta especie endémica del Amazonas, capturada mediante cámaras trampa en el sureste de Perú el 8 de mayo de 2025. Un macho adulto produjo una secuencia distintiva de aullidos similares a cantos de aves, consistente en llamadas repetitivas y agudas que aumentaron tanto en tono como en volumen, seguida de un comportamiento de marcaje olfativo. Hipotetizamos que esto representa una llamada de comunicación a larga distancia adaptada para ambientes de bosque denso, donde ráfagas breves y agudas pueden penetrar la vegetación de forma más efectiva que aullidos sostenidos. Esto mientras evitan la detección por depredadores como jaguares. Todas las grabaciones de audio han sido depositadas en un repositorio de acceso abierto para facilitar estudios comparativos y apoyar en el desarrollo de protocolos de monitoreo bioacústico para esta especie poco estudiada.

Palabras clave: Perro de orejas cortas, Bosque tropical, Vocalización de mamífero, Cámara trampa, Perú.

Abstract

The short-eared dog (*Atelocynus microtis*) is one of South America's rarest carnivores, with wild vocalizations never documented. We report the first wild vocalization of this Amazonian endemic, captured via camera trap in southeastern Peru on 8 May 2025. An adult male produced a distinctive bird-like howling sequence consisting of repetitive, high-pitched calls that escalated in both pitch and volume, followed by scent-marking behavior. We hypothesize this represents a long-distance communication call adapted for dense forest environments, where brief, high-pitched bursts may penetrate vegetation more effectively than sustained howls while avoiding detection by predators such as jaguars. All audio recordings have been deposited in an open-access repository to facilitate

comparative studies to support development of bioacoustic monitoring protocols for this understudied species.

Key words: Short-eared Dog, Tropical Forest, Mammal Vocalization, Camera Trap, Peru.

The short-eared dog (*Atelocynus microtis*) is a monotypic, omnivorous-scavenger canid species endemic to the Amazon basin, representing one of South America's rarest and most poorly understood carnivores, with most ecological and behavioral information limited to short notes and sparse records (Berta 1986; O'Donnell 2020, Champagne et al. 2024). With an estimated global population of only 15,000 individuals, the species is classified as Near Threatened by the IUCN and faces ongoing threats from habitat loss and fragmentation (Leite-Pitman & Williams, 2011; Rocha et al. 2020). The species inhabits undisturbed lowland rainforests throughout the Amazon region, with confirmed records from Brazil, Bolivia, Peru, Colombia, and Ecuador (Leite-Pitman & Williams 2004; Rocha et al. 2020). The elusive nature of *A. microtis* has earned it the colloquial designation "ghost dog," reflecting the extreme rarity of field observations and the challenges associated with studying wild populations; many ecological and behavioral information descriptions come from short notes and sparse records (e.g. Leite-Pitman et al. 2023; Payne et al. 2024).

Bioacoustic monitoring has become increasingly important for studying elusive and cryptic species, particularly where traditional survey methods prove inadequate (Gibb et al. 2019; Ross et al. 2023). For example, passive acoustic monitoring enables the collection of large volumes of data autonomously and remotely, with minimal human disturbance, making it especially valuable for rare species occupying vast and inaccessible habitats (Browning et al. 2017; Kershenbaum et al. 2025). For cryptic carnivores, vocalizations can provide critical information about species presence, behavioral states, reproductive activity, and population dynamics that would otherwise be difficult or impossible to obtain through direct observation. While camera traps remain the standard method for studying cryptic carnivores (Bahaa-el-din et al. 2015; Bischof et al. 2014; Hearn et al. 2016; Hearn et al. 2019; Kelly & Holub, 2008; Michalski 2010;), acoustic monitoring offers complementary advantages including broader spatial detection ranges that can cover hundreds of meters to several kilometers, and the ability to capture behavioral information encoded in vocalizations, such as breeding calls or territorial displays, that camera traps cannot record (Harrington & Mech, 1982; Larsen et al. 2022; Sadhukhan et al. 2021; Laiolo 2010; Wood et al. 2021).

Previous behavioural observations of *A. microtis*, derived from captive individuals, have revealed a vocal repertoire including growling and snarls (HersHKovitz 1961). A video on Youtube, taken during a reintroduction project in Madre de Dios, Peru, shows an *A. microtis* emitting roar-like howls while walking on a leash through the forest (Leite-Pitman 2014). However, documentation of wild vocalizations has been entirely absent from the literature and media, representing a significant knowledge gap in our understanding of the species' natural behavior and limiting the development of acoustic monitoring protocols for wild populations.

Here we report the first wild observation with an audio recording of *A. microtis* vocalization in natural habitat. We provide detailed descriptions of the observation context and technical specifications of the recording methodology. All audio recordings and associated metadata are deposited in an open-access repository to facilitate future comparative

studies and the development of automated detection algorithms for this critically understudied species.

The observation was recorded during a camera trap survey conducted using a systematic grid methodology in southeastern Peru. The camera trap, located in *terra firme* forest near the Las Piedras Biodiversity Station (Champagne 2024) (-12.08, -69.54; 342 m.a.s.l.), recorded a single adult male *A. microtis* individual at 08h19 on 8 May 2025, with an ambient temperature of 18°C. For study area descriptions and maps, see Payne et al. (2024) and Crnobra et al. (2025). In the recorded sequence, the *A. microtis* appeared in center view and produced a bird-like hooting vocalization lasting 7 seconds (Figure 1A). Identification of the individual was conducted following published morphological and diagnostic descriptions in Berta (1986), Emmons & Feer (1997), and Payne et al. (2024). In several frames of the video, male genitalia are visible, allowing direct confirmation of sex. In addition, the observed leg-raising behaviour associated with scent marking is consistent with male canid behaviour, further supporting the identification of the individual as a male. The vocalization began with a soft whine, then transitioned into a series of repetitive howling sounds that are significantly higher in pitch than typical canid howls. Each successive howl increased in both pitch and volume, creating an escalating sequence of brief, high-pitched howls that build in intensity. The individual subsequently scent-marked a small tree before exiting the camera's field of view (Figure 1B). We describe this distinctive vocalization as a cross between hooting and howling- “hoo hoo hoo hoo hoo”-beginning with short, low-amplitude whines that do not exceed 25 dB and progressively increasing in intensity to as much as 95 dB (Figure 2). We extracted the audio using Logic Pro 11.2.2 (Apple, 2025) and produced three audio files: 1. Without any manipulation, extracted from the original video file. 2. A clip of the call from start to finish. And 3. a processed and isolated clip of the call with background noise removed manually using equalization tools in Logic Pro. In addition to the audio, we provide the full unedited video. All files can be found openly available on figshare (<https://doi.org/10.6084/m9.figshare.30049936>).

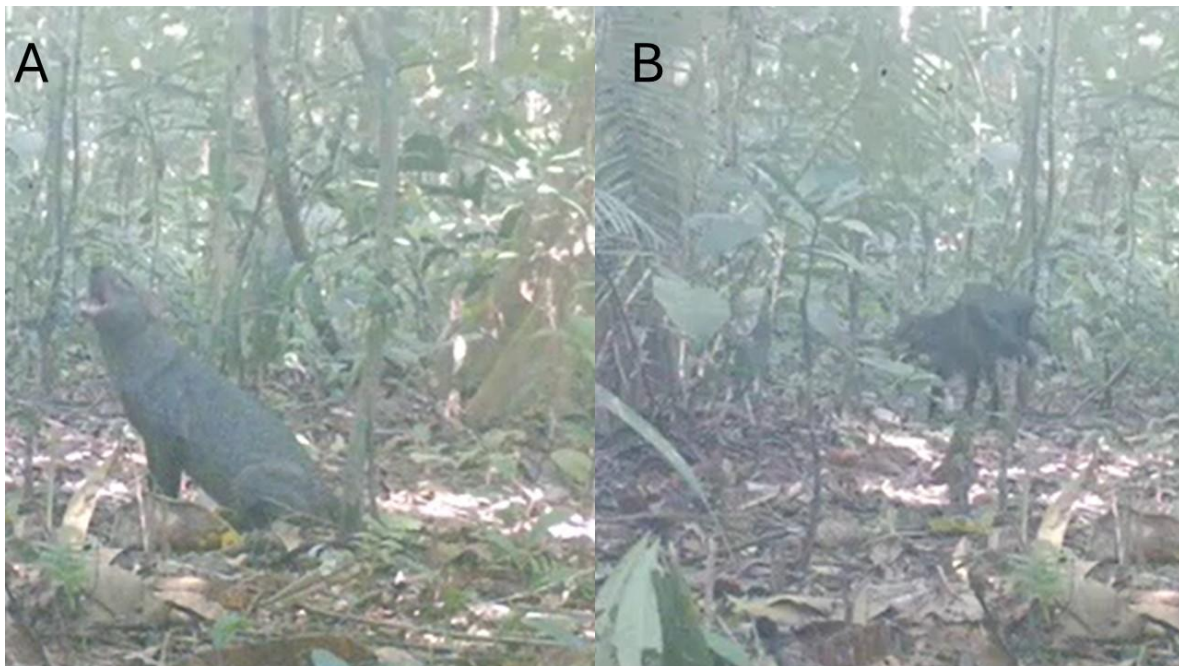


Figure 1. A) An adult male *Atelocynus microtis* emitting a bird-like howl. B) The individual marked a small tree shortly after the call. Both images were extracted from the same camera trap video acquired on the Las Piedras River, southeastern Peru. Camera trap images recorded by Holly O'Donnell on a camera trap belonging to San Diego Zoo Wildlife Alliance (SDZWA).



Figure 2. Vocalization of an *Atelocynus microtis* extracted from a camera trap video and visualized using Logic Pro 11.2.2. The vocalization duration was seven seconds in length, and the y axis is the decibel range.

From audio files that we have reviewed for mammals in the region (Emmons et al. 1997) the call is quite unique. The call is dissimilar from the calls of sympatric canid *Speothos veneticus* and other carnivore species occupying the Western Amazon. Little is known of the reproductive behaviour of *A. microtis* (Leite-Pitman & Williams 2004; Carvalho 2022), however, we cautiously hypothesize that this may represent a mating call, as other vocalizations described from the species, including roars and growls, were associated with distress and competition in captivity, or in the instances of reintroduction (Herskovitz, 1961; Leite-Pitman 2014). We have provided the calls open source in the hope that other researchers can leverage audio data for improved surveying techniques, utilizing bioacoustics for monitoring and perhaps enhanced population estimates and detections across the species range.

Acknowledgements

We thank Junglekeepers Peru S.A.C for allowing access to their concessions to conduct this survey and for providing extensive logistical support, including staff, boats and accommodation. We are grateful to Mathias W Tobler and San Diego Zoo Wildlife Alliance (SDZWA) for the generous loan of camera trap equipment. We thank the owners and staff of Alta Sanctuary (formerly known as the Las Piedras Biodiversity Station). A special thank you goes to Paul Rosolie and Stephane Thomas for supporting this study and assisting with fieldwork.

We would like to thank the following rangers for their assistance with this study: Jennifer Celeste Iturraran Puertas, Sandra Andrea Burneo Guimaraes, Alexander Sebastián Vargas, Karla Aymar Sebastián Vargas, Segundo Ignacio Piño Díaz, Llasmani Benjazan Quio Trigozo, and Eliz Lennia.

We would also like to thank field assistants Lesly Ponce Sulca, Riley Edwards, Kelvin Paxton, Ianlouis Johann García and Daniel Ethan Johann García. Thank you to the boat driver, Moisés Sandoval Ruiz.

Thank you to the Sir Peter Elworthy Research Fund for providing funding for camera traps; Brown-ing Trail Cameras for providing cameras, SDs and batteries; the Starr Scholarship; and the Lady Margaret Hall (LMH) Academic Development Fund.

References

- Bahaa-el-din L, Henschel P, Butynski TM, Macdonald DW, Mills D, Slotow R, Hunter L. The African golden cat *Caracal aurata*: Africa's least-known felid. *Mammal Review*. 2015;45(1):63–77. [10.1111/mam.12033](https://doi.org/10.1111/mam.12033)
- Berta A. *Atelocynus microtis*. *Mammalian Species*. 1986;(256):1–3.
- Bischof R, Ali H, Kabir M, Hameed S, Nawaz MA. Being the underdog: an elusive small carnivore uses space with prey and time without enemies. *Journal of Zoology*. 2014;293(1):40–48. [10.1111/jzo.12100](https://doi.org/10.1111/jzo.12100)
- Browning E, Gibb R, Glover-Kapfer P, Jones KE. Passive acoustic monitoring in ecology and conservation. WWF-UK; 2017. <https://repository.oceanbestpractices.org/handle/11329/1370.10.25607/OBP-876>
- Carvalho JCD, Souza FF, Kastelic JP, Ferreira JCP. Reproduction in South American wild canids—A review. *Frontiers in Veterinary Science*. 2022;9:986030. [10.3389/fvets.2022.986030](https://doi.org/10.3389/fvets.2022.986030)
- Champagne PS, Oliveira HFM, Payne CJ, Pitman RL. Endemic and elusive trophic interactions: The first comprehensive description of the diet of short-eared dogs (*Atelocynus microtis*) in Amazon rainforests. *Food Webs*. 2024;41:e00366. [10.1016/j.fooweb.2024.e00366](https://doi.org/10.1016/j.fooweb.2024.e00366)
- Champagne P. LAS PIEDRAS BIODIVERSITY STATION. *Ecotropica*, 2024;26(1/2). [10.30427/ecotrop202403](https://doi.org/10.30427/ecotrop202403)
- Crnobra B, Champagne PS, Williams HF, Turner H, Pisco GP. Occurrence dataset of reptiles and amphibians from two old-growth forest localities along the Las Piedras River, Tambopata Province, Peru. *Biodiversity Data Journal*. 2025;13:e154136. [10.3897/BDJ.13.e154136](https://doi.org/10.3897/BDJ.13.e154136)
- Emmons L, Whitney BM, Ross DL, Barker MA, Budney GF. *Sounds of neotropical rainforest mammals*. Ithaca, NY: Cornell Laboratory of Ornithology, Library of Natural Sounds; 1997.
- Gibb R, Browning E, Glover-Kapfer P, Jones KE. Emerging opportunities and challenges for passive acoustics in ecological assessment and monitoring Börger L, editor. *Methods in Ecology and Evolution*. 2019;10(2):169–185. [10.1111/2041-210X.13101](https://doi.org/10.1111/2041-210X.13101)
- Hearn AJ, Ross J, Bernard H, Bakar SA, Hunter LTB, Macdonald DW. The First Estimates of Marbled Cat *Pardofelis marmorata* Population Density from Bornean Primary and Selectively Logged Forest Murphy WJ, editor. *PLOS ONE*. 2016;11(3):e0151046. [10.1371/journal.pone.0151046](https://doi.org/10.1371/journal.pone.0151046)
- Hearn AJ, Ross J, Bernard H, Bakar SA, Goossens B, Hunter LTB, Macdonald DW. Responses of Sunda clouded leopard *Neofelis diardi* population density to anthropogenic disturbance: refining estimates of its conservation status in Sabah. *Oryx*. 2019;53(4):643–653. [10.1017/S0030605317001065](https://doi.org/10.1017/S0030605317001065)
- Herschkovitz Philip. On the South American small-eared zorro *Atelocynus microtis* Sclater (Canidae). [Chicago]: Chicago Natural History Museum; 1961. <http://www.biodiversitylibrary.org/bibliography/5457.10.5962/bhl.title.5457>

- Kelly MJ, Holub EL. Camera Trapping of Carnivores: Trap Success Among Camera Types and Across Species, and Habitat Selection by Species, on Salt Pond Mountain, Giles County, Virginia. *Northeastern Naturalist*. 2008;15(2):249–262.
- Kershenbaum A, Akçay Ç, Babu-Saheer L, Barnhill A, Best P, Cauzinille J, Clink D, Dassow A, Dufourq E, Growcott J, et al. Automatic detection for bioacoustic research: a practical guide from and for biologists and computer scientists. *Biological Reviews*. 2025;100(2):620–646. [10.1111/brv.13155](https://doi.org/10.1111/brv.13155)
- Laiolo P. The emerging significance of bioacoustics in animal species conservation. *Biological Conservation*. 2010;143(7):1635–1645. [10.1016/j.biocon.2010.03.025](https://doi.org/10.1016/j.biocon.2010.03.025)
- Larsen HL, Pertoldi C, Madsen N, Randi E, Stronen AV, Root-Gutteridge H, Pagh S. Bioacoustic Detection of Wolves: Identifying Subspecies and Individuals by Howls. *Animals*. 2022;12(5):631. [10.3390/ani12050631](https://doi.org/10.3390/ani12050631)
- Leite-Pitman MRP, Champagne P, Ferreira E. Predation of *Atelocynus microtis* and *Speothos venaticus* (Carnivora: Canidae) by *Boa constrictor* (Squamata: Boidae) in Southwestern Brazil and Southeastern Peru. *Mammalogy Notes*. 2023;9(1):326. [10.47603/mano.v9n1.326](https://doi.org/10.47603/mano.v9n1.326)
- Leite-Pitman MRP, Williams R. *Atelocynus microtis*. The IUCN Red List of Threatened Species 2011: e.T6924A12814890. 2011.
- The incredible amazon roaring dog. Los Amigos Biological Station, Madre de Dios, Peru; 2014. <https://www.youtube.com/watch?v=kmLDl8GVxS0>
- Michalski F. The bush dog *Speothos venaticus* and short-eared dog *Atelocynus microtis* in a fragmented landscape in southern Amazonia. *Oryx*. 2010;44(2):300–303. [10.1017/S0030605309990871](https://doi.org/10.1017/S0030605309990871)
- O'Donnell H. First record of a short-eared dog scavenging on an armadillo carcass. 2020;22(7):25–28.
- O'Donnell H, Champagne P. Vocalization of a wild, adult male *Atelocynus microtis* from the Las Piedras River, Madre de Dios, Peru. *figshare*. Media. 2025 <https://doi.org/10.6084/m9.figshare.30049936>
- Payne CJ, Champagne PS, O'Donnell H, Lange LR, Rushford C, Rosolie P, Rosenzweig D. High mammalian diversity on the Las Piedras River tributary of Madre de Dios, Peru: An annotated list of species including comments on biogeography and regional conservation. *Check List*. 2024;20(1):152–183. [10.15560/20.1.152](https://doi.org/10.15560/20.1.152)
- Rocha DG, De Barros Ferraz KMPM, Gonçalves L, Tan CKW, Lemos FG, Ortiz C, Peres CA, Negrões N, Antunes AP, Rohe F, et al. Wild dogs at stake: deforestation threatens the only Amazon endemic canid, the short-eared dog (*Atelocynus microtis*). *Royal Society Open Science*. 2020;7(4):190717. [10.1098/rsos.190717](https://doi.org/10.1098/rsos.190717)
- Ross S, O'Connell D, Deichmann J, Desjonquères C, Gasc A, Phillips J, Sethi S, Wood C, Burivalova Z. Passive acoustic monitoring provides a fresh perspective on fundamental ecological questions. 2023 [accessed 2025 Sep 4]. <https://www.repository.cam.ac.uk/handle/1810/346288>. doi:10.17863/CAM.93709
- Sadhukhan S, Root-Gutteridge H, Habib B. Identifying unknown Indian wolves by their distinctive howls: its potential as a non-invasive survey method. *Scientific Reports*. 2021;11(1):7309. [10.1038/s41598-021-86718-w](https://doi.org/10.1038/s41598-021-86718-w)
- Wood CM, Klinck H, Gustafson M, Keane JJ, Sawyer SC, Gutiérrez RJ, Peery MZ. Using the ecological significance of animal vocalizations to improve inference in acoustic monitoring programs. *Conservation Biology*. 2021;35(1):336–345. [10.1111/cobi.13516](https://doi.org/10.1111/cobi.13516)

Editor: Carlos H. Cáceres-Martínez

Received: 2025-11-25

Reviewed: 2025-12-30

Accepted: 2026-03-07

Published: 2026-08-11