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- Lara C, Martínez-García V, Ortiz-Pulido R, Bravo-Cadena S, Loranca S, Córdoba-Aguilar A. 2011. Temporal-spatial segregation among hummingbirds foraging on honeydew in a temperate forest in Mexico. *Current Zoology*. 57:56–62.
- Lyon DL. 1976. A montane hummingbird territorial system in Oaxaca, Mexico. *Wilson Bulletin*. 88:280–299.
- MacKenzie DI. 2006. Modeling the probability of resource use: the effect of, and dealing with, detecting a species imperfectly. *Journal of Wildlife Management*. 70:367–374.
- Medellín RA, Abreu-Grobois A, Arizmendi MC, Mellink E, Ruelas E, et al. 2009. Conservación de especies migratorias y poblaciones transfronterizas [Conservation of migratory species and transfrontier populations]. In: CONABIO. Capital natural de México, Vol. II: estado de conservación y tendencias de cambio. Mexico City (México): CONABIO; p. 459–515.
- Ornelas JF, Jiménez L, González C, Hernández A. 2004. Reproductive ecology of distylous *Palicourea padifolia* (Rubiaceae) in a tropical montane cloud forest I: hummingbird's effectiveness as pollen vectors. *American Journal of Botany*. 91:1052–1060.
- Ortiz-Pulido R, Díaz A, Valle-Díaz O, Fisher AD. 2012. Hummingbirds and the plants they visit in the Tehuacán-Cuicatlan Biosphere Reserve, Mexico. *Revista Mexicana de Biodiversidad*. 83:152–163.
- Palací CA, Brown GK, Tuthill DE. 2004. The seeds of *Catopsis* (Bromeliaceae: Tillandsioideae). *Systematic Botany*. 29:518–527.
- Peterson AT, Soberón J, Sánchez-Cordero V. 1999. Conservatism of ecological niches in evolutionary time. *Science*. 285:1265–1267.
- Ralph CJ, Geupel GR, Pyle P, Martin TE, DeSante DF. 1993. Handbook of field methods for monitoring landbirds. Albany (CA): US Department of Agriculture, Forest Service, Pacific Southwest Research Station, General Technical Report PSW-GTR-144-www.
- Rodríguez-Flores CI, Arizmendi MC. 2016. The dynamics of hummingbird dominance and foraging strategies during winter season in a highland community in western Mexico. *Journal of Zoology*. 299:262–274.
- Rohwer S, Hobson KA, Rohwer VG. 2009. Migratory double breeding in Neotropical migrant birds. *Proceedings of the National Academy of Sciences*. 106:19050–19055.
- Ruiz-Gutiérrez V, Zipkin EF. 2011. Detection biases yield misleading patterns of species persistence and colonization in fragmented landscapes. *Ecosphere*. 2:1–14.
- [SEMARNAT] Secretaría de Medio Ambiente y Recursos Naturales. 2010. Norma Oficial Mexicana NOM-059-SEMARNAT-2010 [Mexican Official Norm], Protección ambiental-Especies nativas de México de flora y fauna silvestres-Categorías de riesgo y especificaciones para su inclusión, exclusión o cambio-Lista de especies en riesgo [Environmental protection - Flora and fauna native species of Mexico - Endangerment categories and specifications for their inclusion, exclusion or modification-List of species under risk]. Diario Oficial de la Federación, Segunda Sección. México: SEMARNAT.
- Stevens DL, Olsen AR. 2004. Spatially balanced sampling of natural resources. *Journal of the American Statistical Association*. 99:262–278.
- Wagner HO. 1946. Food and feeding habits of Mexican hummingbirds. *Wilson Bulletin*. 58:69–93.
- Williamson SL. 2001. A field guide to the hummingbirds of North America. New York (NY): Houghton Mifflin Company.
- Zykowski K, Townsend Peterson A, Kluza DA. 1998. Courtship behavior, vocalizations, and species limits in *Atthis* hummingbirds. *Bulletin of the British Ornithologists' Club*. 118:82–90.

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Extension of the northward migratory route of the Upland Sandpiper (*Bartramia longicauda*) to the western slope of the Andes

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ABSTRACT—The Upland Sandpiper (*Bartramia longicauda*) is a migratory shorebird with main wintering areas in Argentina and Uruguay. The migration route from the wintering to the breeding areas has been described as passing through the Amazon basin, but some records

suggested that the western slope of the Andes is part of the regular route. To assess if this area is regularly used by the species, we encouraged volunteers to be part of a Citizen Science project in Chile to conduct listening points at night, allowing us to gather records from extensive areas. In 2 years, we collected 80 records of Upland Sandpiper from Arica to La Serena, confirming that northern Chile is part of the regular route. This migration strategy might be a result of the current winds, which blow from east to west in March and April on the South American continent and from south to north following the Pacific coast. These results change

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our understanding of the Upland Sandpiper migration through South America, adding a new, important area where the species must be considered for energetic project assessments. Received 15 May 2017. Accepted 26 December 2017.

Key words: *Bartramia longicauda*, Batitu, citizen science, eBird, shorebird migration.

Extensión de la ruta migratoria hacia el norte del Batitú (*Bartramia longicauda*) hacia la vertiente occidental de los Andes

RESUMEN (Spanish)—El Batitú (*Bartramia longicauda*) es un ave playera migratoria, cuyos sitios de invernada se concentran principalmente en Argentina y Uruguay. La ruta migratoria desde allí hasta su área de nidificación ha sido descrita a través de la cuenca amazónica, pero algunos registros de la vertiente occidental de Los Andes sugieren que esta área es parte de su ruta regular. Para evaluar si esta área es utilizada regularmente por la especie, se desarrolló un proyecto de Ciencia Ciudadana. En él, fomentamos que voluntarios dentro de Chile realizaran puntos de escucha nocturna, lo que nos permitió obtener datos de un área extensa. Se colectó un total de 80 registros de la especie en dos años desde Arica a La Serena, confirmando que el norte de Chile es parte de la ruta regular. Esto podría deberse a las corrientes de viento, que van desde el Este al Oeste en marzo y abril en el continente, y desde el Sur hacia el norte siguiendo la costa Pacífica. Estos resultados cambian nuestro entendimiento sobre la migración del Batitú a través de Sudamérica, añadiendo una nueva e importante área, donde la especie debe ser considerada en la evaluación de proyectos energéticos.

Palabras clave: *Bartramia longicauda*, Batitu, ciencia ciudadana, eBird, migración de aves playeras.

The Upland Sandpiper (*Bartramia longicauda*) is a shorebird that breeds in Alaska, Canada, and the continental United States and migrates during the nonbreeding season to the pastures and grasslands of Argentina and Uruguay (Blanco and López-Lanús 2008, Houston et al. 2011). The species also spends the austral summer in lower densities in Paraguay, southern Brazil, and eastern Bolivia (Blanco and López-Lanús 2008, Houston et al. 2011). The migration route from the breeding grounds to its wintering areas in South America, and vice versa, is described as passing through the eastern slope of the Andes Mountains along the Amazon basin (Van Gils et al. 2016). Capllonch (2011) suggested this route be extended to include the foothills of the eastern Andes down through Argentina for the northbound migration during March and April.

The Upland Sandpiper has been mentioned as rare and vagrant west of the Andes (Chile and the

coast of Peru; Jaramillo 2003, Marín 2004, Schulenberg et al. 2007), including only a few records in the mountains above Santiago (Philippi 1902) in the departments of Arequipa (Hughes 1988) and Lima (Castro et al. 1990). However, Jaramillo (2003) suggested this species could migrate regularly through Antofagasta, Chile. Barros (2014) provided support for this idea after compiling 24 records from northern Chile during March and April from 2003 to 2014.

During field campaigns of our nongovernmental organization, Red de Observadores de Aves y Vida Silvestre de Chile (ROC), to coastal areas of the Antofagasta Region in March and April 2015, we recorded the passage of Upland Sandpipers many consecutive nights. These observations were based on the species' nocturnal flight calls and reinforced the possibility of an austral autumn migration through this area.

To confirm the expansion of the northward migratory route of the Upland Sandpiper, we collated historical and recent sightings from the western slope of the Andes Mountains and the Argentinean provinces adjacent to Chile and initiated a Citizen Science project to listen for northbound migrating Upland Sandpipers.

We conducted a bibliographic search of all records from Chile, the coast of Peru, and the Argentinean provinces bordering the Andes Mountains using the key words “Batitu,” “Upland Sandpiper,” and “*Bartramia longicauda*” in Google Scholar, Scopus, SORA, and Web of Knowledge. We next searched for records of the species on eBird in each of these countries. Additionally, in austral autumn 2016, we organized a Citizen Science project (“Proyecto Batitú”). Birdwatchers in Chile were invited to conduct listening points, where they listened for nocturnal flight calls for at least 10 min to discover new migration areas with no previous records and corroborate the passage of this species in areas where it had been recorded in previous years. In total, 31 Citizen Scientists conducted listening counts from Arica (18°28'45"S) to the Rio Cipreses National Reserve (34°28'00"S) in 48 different areas. Participants were given the vocalization made by the Upland Sandpiper during their nocturnal flights (López-Lanús 2008) to increase the probability of their detection during the sampling, which occurred between March and April when the Upland Sandpipers migrate back to

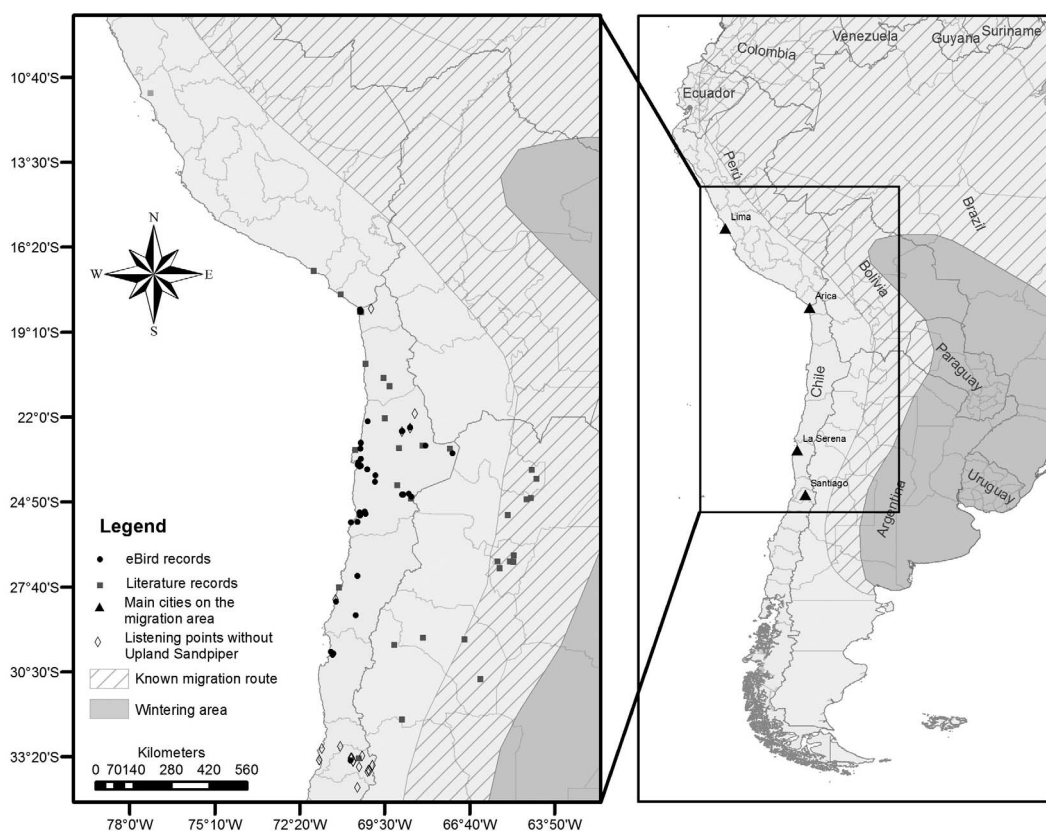


Figure 1. The winter distribution of the Upland Sandpiper is shown as a gray polygon (right panel), and squares and circles reflect sightings obtained from a literature review and our Citizen Science project, respectively. Known migration route and wintering area are from Birdlife International and Handbook of Birds of the World (2016).

their breeding grounds (Blanco and López-Lanús 2008, Houston et al. 2011).

Collectively, 110 Upland Sandpiper records were collated west of the Andes Mountains: 30 (27.3%) from the literature and 80 (72.7%) by ROC and Citizen Scientists (Fig. 1). In these records, at least 263 individuals were detected, with the number of birds heard during any observation ranging from 1 to at least 3 individuals; however, the numbers are uncertain because we were only able to listen for birds, not count individuals. Collectively, the observations in Chile occurred between 8 March and 18 April (Barros 2014, eBird 2016) and in Peru during 8–10 April (Hughes 1988, Castro et al. 1990, Vizcarra et al. 2009).

Our results confirm that between March and April, at least part of the population of this species migrates regularly along the western slope of the

Andes Mountains between Arica ($18^{\circ}28'45''S$) and La Serena ($29^{\circ}54'09''S$). Based on historical records, it is highly probable that the species migrates at least to Lima ($12^{\circ}02'46''S$) along the coast of Peru. However, active searches similar to the Citizen Science campaign carried out in Chile would be needed to know with any certainty if this species follows the entire Peruvian coast or if it flies directly north across the Pacific Ocean, as do the Whimbrel (*Numenius phaeopus hudsonicus*; Wilke and Johnston-González 2010) and Hudsonian Godwit (*Limosa haemastica*; Senner et al. 2014).

Because the southern boundary of the Upland Sandpiper distribution in its nonbreeding season is northern Patagonia, located south of the province of Buenos Aires ($34^{\circ}36'26''S$; Houston et al. 2011), Upland Sandpipers probably migrate in a northwesterly direction toward the Andes Moun-

tains, crossing through multiple mountain passes found throughout much of their known distribution in Chile (Fig. 1). This hypothesis is supported by literature records from the Argentinean provinces bordering the Andes Mountains (Mendoza, San Juan, La Rioja, Catamarca, Salta, Jujuy; Fig. 1).

A possible explanation for why some proportion of the population of this species crosses the Andes Mountains is the existence of favorable wind currents. In March and April, westward currents blow from Argentina toward Chile, which would facilitate the passage of birds through the mountain range (DMT 2015a, 2015b). In addition, northbound wind currents blow over the ocean adjacent to Chile and Peru between March and April, unlike the rest of South America (DMT 2015a, 2015b), which would facilitate migration to the northern hemisphere.

Unexpectedly, we failed to detect Upland Sandpipers in central Chile (between 32°59'52"S and 34°28'00"S) despite the 2 historic records in this area (Philippi 1902, Barros 2016). In 2016, no Upland Sandpipers were recorded in this area, even though 29 listening counts were conducted (Fig. 1). The lack of sightings may be because (1) birds adjusted their migration through the Central Amazon or through Andean passes farther north, resulting in lower densities in the central zone of Chile and lower detections; or (2) previous records represented wandering individuals outside their usual migratory route.

Overall, the lack of historic records is likely due to the lack of people attempting to detect birds during the fall nights as well as a lack of knowledge of how to increase the detection of this species by listening for its vocalizations during nocturnal migration (Giacomelli 1923, Evans and Mellinger 1999, Bodrati and Ferrari 2014).

These results confirm that part of the Upland Sandpiper population migrates along the western slope of the Andes Mountains (northern Chile and coast of Peru) when returning to their breeding grounds in the northern hemisphere. These results also highlight the need for new work to identify whether different populations of this species exist and, if so, whether they use different migratory routes.

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Literature cited

- Barros R. 2014. El Batitú (*Bartramia longicauda*) en Chile [The Upland Sandpiper in Chile]. La Chiricoca. 18:8–13.
- Barros R. 2016. Resumen de Avistamientos, enero–diciembre 2015 [Bird records summary, January–December 2015]. La Chiricoca. 21:21–46.
- BirdLife International and Handbook of the Birds of the World. 2016. Bird species distribution maps of the world. Version 6.0 [accessed 8 May 2017]. <http://datazone.birdlife.org/species/requestdis>
- Blanco D, López-Lanús B. 2008. Non-breeding distribution and conservation of the Upland Sandpiper (*Bartramia longicauda*) in South America. *Ornitología Neotropical*. 19:613–621.
- Bodrati A, Ferrari C. 2014. Notas sobre 36 especies de aves nuevas o poco conocidas para la provincia de La Rioja, Argentina [Notes on 36 new or little-known bird species for La Rioja province, Argentina]. *Nuestras Aves*. 59:30–42.
- Capllonch P. 2011. Ruta del Batitú (*Bartramia longicauda*) a través de la provincia de Tucumán, Argentina [The Upland Sandpiper (*Bartramia longicauda*) route through the Tucuman Province, Argentina]. *Nuestras Aves*. 56:19–20.
- Castro G, Ortiz EG, Bertochi L. 1990. Importancia biológica y conservación de la Laguna El Paraíso, Lima [Biological importance and conservation of El Paraíso Lagoon, Lima]. *Boletín de Lima*. 71:47–55.
- [DMT] Dirección Meteorológica de Chile. 2015a. Boletín climatológico mensual [Monthly climatological bulletin]. 31(3).
- [DMT] Dirección Meteorológica de Chile. 2015b. Boletín Climatológico Mensual [Monthly Climatological Bulletin]. 31(4).
- eBird. 2016. eBird basic database version. Cornell Lab of Ornithology. Ithaca (NY): July 2016.
- Evans W, Mellinger D. 1999. Monitoring grassland birds in nocturnal migration. *Studies in Avian Biology*. 19:219–229.
- Giacomelli E. 1923. Catálogo sistemático de las aves útiles y nocivas de la provincia de La Rioja [Systematic catalog of useful and harmful birds of La Rioja Province]. *El Hornero*. 3:66–84.
- Houston C, Cameron S, Bowen DE. 2011. Upland Sandpiper (*Bartramia longicauda*), version 2.0. In: Poole A, editor. *Birds of North America*. <https://birdsna.org/Species-Account/bna/species/uplsan/>
- Hughes RA. 1988. Nearctic migrants in southwest Peru. *Bulletin of the British Ornithologists' Club*. 108:29–43.

- Jaramillo A. 2003. *Birds of Chile*. Princeton (NJ): Princeton University Press.
- López-Lanús B. 2008. XC48618 [accessed 10 May 2017]. <http://www.xeno-canto.org/48618>
- Marín M. 2004. Lista comentada de las aves de Chile [Commented checklist of birds of Chile]. Madrid (Spain): Lynx Ediciones.
- Philippi RA. 1902. Figuras i descripciones de aves chilenas [Figures and descriptions of Chilean birds]. Santiago (Chile): Anales del Museo Nacional de Chile. Entrega 15a. Primera Sección, Zoología.
- Schulenberg TS, Stotz DF, Lane DF, O'Neill JP, Parker TA. 2007. *Birds of Peru*. Princeton (NJ): Princeton Field Guides.
- Senner NR, Hochachka WM, Fox JW, Afanasyev V. 2014. An exception to the rule: carry-over effects do not accumulate in a long-distance migratory bird. *PLOS ONE* 9(2):e86588.
- Van Gils J, Wiersma P, Kirwan GM. 2016. Upland Sandpiper (*Bartramia longicauda*). In: del Hoyo J, Elliott A, Sargatal J, Christie DA, de Juana E, editors. *Handbook of the birds of the world alive*. Barcelona (Spain): Lynx Edicions [accessed 1 Dec 2016]. <http://www.hbw.com/node/53900>
- Vizcarra J, Hidalgo N, Chino E. 2009. Adiciones a la avifauna de los humedales de Ite, costa sur de Perú [Additions to the birds of the Ite Wetlands, south of Peru]. *Revista Peruana de Biología*. 16:221–225.
- Wilke A, Johnston-González R. 2010. Conservation plan for the Whimbrel (*Numenius phaeopus*). Version 1.1. Manomet (MA): Manomet Center for Conservation Sciences.

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Leaf-slicing behavior in the Blue-headed Parrot (*Pionus menstruus*) in central Amazonia is likely linked to highly selective caterpillar predation

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ABSTRACT—Although they eat seeds, pulp, petals, pollen, and nectar, parrots are rarely recorded as eating leaves, with only one species being fully folivorous. In terra firme forest in south-central Brazilian Amazonia, we recorded apparent folivory over a several sequential days by the Blue-headed Parrot (*Pionus menstruus*) on young leaflets of *Swartzia polyphylla* (Fabaceae). Closer examination, however, showed that the majority of processed leaves also contained small caterpillars, so that we consider this to be a record of highly selective insectivory, which is also uncommonly reported in parrots. We speculate that such events may be more common than realized and act as dietary supplements for a seed-based diet. *Received 7 July 2017. Accepted 6 March 2018.*

Key words: caterpillars, Neotropics, parrot, *Swartzia*, leaves.

Comportamento de cortar folhas em fatias amostrado por *Pionus menstruus* (Psittacidae) na Amazônia Central é provavelmente ligado com predação altamente seletiva de lagartos

RESUMO (Portuguese)—Ainda se eles comem sementes, polpa, pétalas e néctar, papagaios raramente são registrados comendo folhas, com somente uma espécie sendo completamente folívoro. Na terra firme do centro-sul da Amazônia Brasileira, registramos ao longo de vários dias sequencias incidências de folivoria aparente feito pela maitaca-de-cabeça azul, *Pionus menstruus*, em folas jovens de *Swartzia polyphylla* (Fabaceae). Mas, examinações mais detalhadas revelou que a maioria das folhas processadas também tiveram dentro lagartos pequenos, e por essa causa consideramos isso ser uma incidência de insectivoria altamente seletiva, que é também raramente registrada em papagaios. Especulamos que tais eventos poderia ser mais comum que é imaginado e poderia fornecer suplementos nutricionais por uma dieta baseado em sementes.

Palavras-chaves: folhas, lagartos, neotropical, papagaio, *Swartzia*.

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Although they disperse seeds (Tella et al. 2015, Blanco et al. 2016), Neotropical psittacines are generally considered to be seed predators and pulp consumers (Sick 1997, Galetti and Pizo 2002), with opportunistic exploitation of nectar (Ragusa-Netto 2005, Ragusa-Netto and Fecchio 2006, da