

FIRST DESCRIPTION OF THE NEST AND EGGS OF THE PERUVIAN PIPIT (*ANTHUS PERUVIANUS*, AVES: MOTACILLIDAE)**Andy Rodrigo Arcco Mamani¹ · Paul van Els^{2,3,*} · Yaquelyn Doris Ferrandiz Catacora¹ · Heraldo V. Norambuena^{4,5}**¹ Universidad Nacional de San Agustín, Museo de Historia Natural (MUSA), Av. Alcides Carrión s/n, Arequipa, Perú.² Sovon, Dutch Centre for Field Ornithology, Toernooiveld 1, 6525 ED, Nijmegen, Netherlands.³ Museum of Natural Science, Department of Biological Sciences, Louisiana State University, 119 Foster Hall, Baton Rouge, LA 70803, U.S.A.⁴ Departamento de Zoología, Facultad de Ciencias Naturales y Oceanográficas, Universidad de Concepción, Concepción, Chile.⁵ Centro de Estudios Agrarios y Ambientales, Valdivia, Chile.

E-mail: Paul van Els · paulvanel@gmail.com

Abstract · We described the nest of the recently recognized Peruvian Pipit (*Anthus peruvianus*) in Islay Province, department of Arequipa, southern Peru, and compared it to the known nests of other Neotropical pipits. We found the nest, which was concealed below dense salt grass (*Distichlis spicata*), on 20 May 2017 in an estuarine grassland adjacent to the Tambo river, approximately 200 m from the Pacific coast. The nest consisted of a shallow, loosely domed cup of dried salt grass stems, and contained three greenish-white eggs with rusty brown and bluish-gray speckles, with a denser speckling on the larger side of the egg. Nests of sister species of the Peruvian Pipit are generally cup-shaped and similar in size, and the clutch size of the Peruvian Pipit's nest falls within the range found in other Neotropical pipits.

Resumen · Primera descripción del nido y de los huevos de la cachirla peruana (*Anthus peruvianus*, Aves: Motacillidae)

Describimos el nido de la recién reconocida cachirla peruana (*Anthus peruvianus*) en la provincia de Islay, departamento de Arequipa, sur de Perú, y lo comparamos con los nidos de otras especies neotropicales de cachirla. Encontramos el nido, que se encontraba escondido debajo de una cobertura densa de la gramínea *Distichlis spicata*, el 20 de mayo de 2017 en un pastizal del estuario del Río Tambo, aproximadamente a 200 m de la costa del Océano Pacífico. El nido consistía en una copa flojamente abovedada de tallos secos de *Distichlis* y contenía tres huevos verdosos con manchas café rojizas y gris azuladas, con un manchado más intenso en el polo grande del huevo. Los nidos de las especies emparentadas con la cachirla peruana generalmente tienen forma de copa y un tamaño similar; además, el tamaño del nido descrito en este artículo se encuentra dentro del rango encontrado en otras especies neotropicales de cachirla.

Key words: Coastal endemic · Grasslands · Pacific Coast · Peru · Reproduction

Recently, the *peruvianus* subspecies of the Yellowish Pipit (*Anthus lutescens*), which occurs only on the Peruvian and extreme northern Chilean coasts, was shown to be evolutionarily and vocally distinct from the Yellowish Pipit (Van Els & Norambuena 2018). For these reasons, it was subsequently recognized as a species (SACC 2018): the Peruvian Pipit (*A. peruvianus*). The Peruvian coastal strip (the area between the Peruvian department of Piura and the Chilean border) is increasingly being recognized as an avian region of endemism, following the upgrade to species level of several taxa restricted to the region (SACC 2018); such is the case of the Peruvian Pygmy-owl (*Glaucidium peruanum*, König 1991), the West Peruvian Dove (*Zenaida meloda*, Gibbs et al. 2001), Tschudi's Nightjar (*Systellura decussata*, Han et al. 2010, Sigurdsson & Cracraft 2014), and the Peruvian Pipit (Van Els & Norambuena 2018). The Peruvian Pacific coast is underrepresented in the conservation framework (Rodríguez & Young 2000) and ecologically; many of the endemic birds of the region are poorly known (Ortiz-Zevallos 2017). The Peruvian Pipit is not the exception to this rule, since there are only descriptions of its habitat (Philippi 1936, Estraver et al. 2015), comprising a variety of open, coastal habitats, such as beaches, wetland fringes, salt flats, grassy dunes, fog-induced *loma* vegetation, and croplands. Breeding habits, as well as other life history aspects of the species, remain unknown.

We found a nest (Figure 1) of the Peruvian Pipit while conducting surveys in the Tambo River estuary in Islay Province, Department of Arequipa, southern Peru, at 08:30 h (PET) on 20 May 2017. The nest was detected by carefully searching the surroundings of the alarming parent birds. The nest was located below the cover of dense salt grass (*Distichlis spicata*) at sea level, in an estuarine habitat in the direct vicinity of the river Tambo (17°10'11.3"S, 71°50'11.0"W; Figure 2). The area directly surrounding the nest consisted of a sandy floodplain covered by salt grass, with woody *Baccharis* spp. scrub < 50 m to the north, the river Tambo ~ 20 m to the west, agricultural fields < 50 m to the east, and coastal dunes < 50 m to the south. The nest site is located on the eastern perimeter of the Santuario Nacional Lagunas de Mejía, just outside its boundaries.

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Figure 1. Nest of the Peruvian Pipit (*Anthus peruvianus*) on the ground, surrounded by dense salt grass, and found in the Tambo River estuary in Islay Province, Department of Arequipa, southern Peru, on 20 May 2017. Photo by ARAM.



Figure 2. One of the authors observing the nest (arrow) of the Peruvian Pipit (*A. peruvianus*) in a salt grass habitat in the Tambo River estuary, Islay Province, Department of Arequipa, southern Peru, on 20 May 2017. In the back, both coastal dunes and *Baccharis spp.* scrubs are visible. Photo by YFC.

The nest was built on sandy soil, directly on the ground, and consisted of a shallow, loosely domed cup with an outside diameter of 100 mm, made up mainly of dried grass stems and roots (presumably from the surrounding salt

grass). The nest was covered on all sides by live salt grass stems, and one of the parent birds was seen entering from the side 10 min after the observers left the direct vicinity of the nest. We were not able to observe the nest and parent

Table 1. Available recordings of Peruvian Pipit (*A. peruvianus*) song, indicative of a prolonged breeding season. XC=Xeno-canto, ML=Macaulay Library.

Recording ID	Recordist	Department	Locality	Date
ML168678	Daniel Cáceres	Arequipa	Catas	02-06-1987
ML10449	Ted Parker	Lima	Pantanos de Villa	10-05-1975
XC149204	Dan Lane	Lima	Puerto Viejo	26-05-2002
ML104922561	Dan Lane	Lima	Humedal el Paraíso	15-06-2018
ML62263161	Glenn Seeholzer	Lima	Lomas de Lachay	29-06-2017
ML207200	Oscar Johnson	Lima	Playa Ventanilla	28-06-2015
XC218640/1/2	Peter Boesman	Lima	Lomas de Lachay	23-07-2008
XC149208	Dan Lane	Lima	Lomas de Granado	08-08-2004
ML178901341	Giselle Mangini	Lima	Lomas de Lachay	17-08-2019
ML168678	Daniel Cáceres	Lima	Humedal el Paraíso	26-08-1987
XC23433	Pepe Rojas	Lima	Lomas de Lachay	12-09-2007
ML177576651	Oscar Johnson	Lima	Lomas de Lachay	11-09-2019
XC245870	Roger Ahlman	Lambayeque	Puerto Eten	27-01-2015
XC180929	Mike Nelson	Lambayeque	Puerto Eten	14-05-2014

birds at length, nor take detailed measurements, due to survey constraints.

The nest contained three greenish-white eggs, with rusty brown and bluish-gray speckles (Figure 1). Patterns seemed variable between the three eggs, but the speckling was denser on the larger pole of the egg. We did not measure them.

Neotropical Pipits (*Anthus*) form a monophyletic group (Van Els & Norambuena 2018) and the construction of nests on the ground, in grassy habitats, is a general pattern among species in this group (Andors & Vuilleumier 1995, de la Peña 2019, Freitas & Francisco 2012, Lombardi et al. 2010, Murphy 1923, Norambuena et al. 2017, Ramo & Busto 1984). The Peruvian Pipit was the last Neotropical *Anthus* species with an unknown nest. Although not a general pattern in Neotropical pipits (de la Peña 2019), the Yellowish Pipit (Freitas & Francisco 2012, Ramo & Busto 1984) may build loosely domed nests with side entrances, which are believed to help avoid nest detection by predators, since the parent birds do not arrive directly to the nest, but walk from a certain distance, below a dense cover, in order to access it. The nest of the Peruvian Pipit was also loosely domed with salt grass, despite the species being more closely related to a group including the Correndera and Hellmayr's Pipits (Van Els & Norambuena 2018) which, as far as we know, all build cup nests.

The pattern of egg markings concentrated on the large end is widespread among Pipit species. However, egg background color can vary from white or whitish in the Yellowish Pipit (Freitas & Francisco 2012, Ramo & Busto 1984) and the Correndera Pipit (Andors & Vuilleumier 1995), to uniformly brown in Hellmayr's Pipit (Lombardi et al. 2010). There are intraspecific variations described for Sprague's Pipit's eggs, with background color varying from white to brown, with or without markings. Because only one nest was found, we cannot conclude that such variation is not present in eggs of the Peruvian Pipit.

Clutch size in Neotropical pipits varies between two to five eggs: two to three for Hellmayr's Pipit (de la Peña 2019, Lombardi et al. 2010), four for a single Short-billed Pipit nest (de la Peña 2019), four for a single Pampas Pipit nest (de la Peña 2019), two to four for the Ochre-breasted Pipit (Lombardi 2017), one to three for the Yellowish Pipit (de la Peña 2019, Freitas & Francisco 2012), and two to five for the Correndera Pipit (Andors & Vuilleumier 1995, de la Peña 2019). Our observation of three eggs fits is consistent with the formerly described ranges.

We have no data on the species' breeding phenology, but there are the following recordings of territorial Peruvian pipits (as noted by song from xeno-canto.org and Macaulay Library, Table 1): between May and September, from the department of Lima; in June, from the Department of Arequipa, and in January, from the Department of Lambayeque. Our May observation adds information about breeding in the southern range of the species. Given these dates, the species may have one protracted breeding season throughout the year in both cold and warm seasons, as climatic variation across the Peruvian coast is minimal (climate data online: <https://www.ncdc.noaa.gov/cdo-web/>). Here we provide the first data for understanding the reproductive biology of the Peruvian Pipit, which will be useful for future evaluations of the conservation status of this species.

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