

# VOCAL EVIDENCE OF NAVARINO TAPACULO (SCYTALOPUS ANTARCTICUM OF THE GENUS SCYTALOPUS) IN NAVARINO ISLAND. CHILE

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**ABSTRACT:** Here we discuss the acoustic signals of enigmatic specie of genus *Scytalopus*: *Scytalopus antarcticum* (Navarino Tapaculo) (Aves: Passeriformes: Rhinocryptidae) from the *Nothofagus* relict subantarctic rainforest of Isla Navarino, Cape Horn, Chile. The vocalization of this species were compared with *Scytalopus magellanicus*. Navarino Tapaculo has a unique call that differs dramatically in voice from Andean Tapaculo in Chile, making it clear that is a separate species. The voice of Navarino Tapaculo, consisting of a series of high-intensity, rapidly repeating notes. Phenotypically, the new *Scytalopus* species is uniformly blackish, somewhat more clearly in color and small to medium in size, very similar to members of the Andean Tapaculo in which they are sympatric species in Navarino Island. However, the phenotypic differences in plumage between

juvenile Andean Tapaculo and Navarino Tapaculo are notable. This is the first report of spectrogram analysis based on voices of territorial call of this specie recorded in 2002, concluding that these are different species.

**KEYWORDS:** *Scytalopus*, Navarino Tapaculo, Andean Tapaculo, Spectrogram, vocalization, Bioacoustics, Endangered species, Sympatric speciation, Subantarctic relict forests, Navarino Islands, Cape Horn, Chile.

### EVIDENCIA DE LA VOCALIZACIÓN DEL CHURRÍN DE NAVARINO (*SCYTALOPUS ANTARCTICUM* DEL GENERO *SCYTALOPUS*) EN ISLA NAVARINO, CHILE.

**RESUMEN:** Describimos las señales acústicas de la enigmática especie del genero *Scytalopus*: *Scytalopus antarcticum* (Churrín de Navarino) (Aves: Passeriformes: Rhinocryptidae) de los bosques relictos de *Nothofagus* de Isla Navarino, Cabo de hornos, Región Subantártica, Chile. La vocalización de *S. antarcticum*, fue comparada con el llamado de *S. magellanicus*. El Churrín de Navarino tiene una llamada única que difiere dramáticamente de la vocalización del

Churrín Andino en Chile, lo que deja claro que es una especie aparte. La vocalización consiste en una serie de notas de alta intensidad que se repiten sucesivamente. Fenotípicamente, la nueva especie de *Scytalopus* es de color uniformemente negruzco algo más claro y de tamaño pequeño a mediano, muy similar a los miembros de la población de Churrín Andino del sur de Chile y en que probablemente estas dos especies de *Scytalopus* sean simpátricas. No obstante, las diferencias fenotípicas del plumaje entre los juveniles de Churrín Andino del sur de Chile y Churrín de Navarino son notables. En este trabajo realizamos un análisis de espectrogramas basado en el llamado territorial de esta especie, registrado el año 2002, concluyendo que se tratan de especies diferentes.

**PALABRAS CLAVE:** *Scytalopus*, Churrín de Navarino, Churrín Andino, Espectrograma, vocalización, Bioacústica, Rinocriptidos, Especie en peligro, Especiación simpátrica, Bosques relictos subantárticos, Islas Navarino, Cabo de Hornos, Chile.

The genus *Scytalopus* is represented in Chile by two species *S. magellanicus* (Andean Tapaculo) and *S. fuscus* (Dusky Tapaculo), located within the Southern Andes clade, which includes species from Tierra del Fuego to southern Colombia (Krabbe *et al.*, 2020). However, there is a third species not classified by these authors, *S. antarcticum* (Navarino Tapaculo) (Fig. 1 and Fig. 2) described by Correa in 2022 and not yet recorded in the SACC (Krabbe & Schulenberg, 1997), since at that time it was an unknown species.

Species of the genus *Scytalopus*, as well as other taxa of the family Rhinocryptidae, have vocalizations of a wide variety of frequencies and intensities that are quite conspicuous (Krabbe *et al.*, 1997; Coopmans *et al.*, 2001). The morphological differences of the adult specimens of the Navarino Tapaculo are very similar to those of the members of Andean Tapaculo of southern Chile and Argentina. Both are uniformly blackish in color, although the Navarino Tapaculo is somewhat lighter in color and small in size, 10 to 11 cm in length. However, the phenotypic differences in plumage between juvenile Tapaculo Navarino (Fig. 2) and Andean Tapaculo are notable (Correa 2012; Correa, 2022).

*S. magellanicus* shows sympatry with *S. fuscus* at other localities in Chile (Correa *et al.*, 2020; Norambuena *et al.*, 2011). However sympatry of these two species *S. magellanicus* and *S. antarcticum* has been observed at Isla Navarino (Unpublished field notes). Such behaviour is to be expected in *S. magellanicus* as, is a habitat generalist (Correa & Rozzi, 2003).

Species of birds of the Rhinocryptidae family are terrestrial and have little capacity for flight (Rozzi *et al.*, 1996). Nevertheless, the existence of Rhinocryptidae taxa in the remote islands of Chiloé supports the proposition of terrestrial connections during the glacial period (Villagrán *et al.*, 1997). This biogeographic event allowed the emigration of a great diversity of biota from the south of the South American continent to the north during the Miocene (Cione *et al.*, 2015). The relict forests, a refuge for South American *Nothofagus*, have been associated with mixed floras since the Miocene (Troncoso, 1991) and other important forest species from southern Chile of extraordinary biogeographic interest (Villagrán, 1991;

Villagrán *et al.*, 1997; Schmithüßen, 1956). Similarities in floristic patterns are repeated in the neotropical forests of southern Brazil and the eastern Andes of Bolivia and Argentina (Villagrán *et al.*, 2004), as well as in bird taxa of the family Rhinocryptidae, such as those of the genus *Scytalopus* and *Rhinocrypta* (Vielliard, 1990). In addition, other authors show that evolutionary diversification in *Scytalopus* was remarkably rapid, with speciation rates during the Late Miocene and Pliocene (Krabbe *et al.*, 2020). Probably the origin of the dispersal of the birds of the genus *Scytalopus*, i.e., the tropical Andes clade, the Brazilian clade and the Southern Andes clades, as well as those found from Tierra del Fuego to southern Colombia (Krabbe *et al.*, 2020), originated in the relict *Nothofagus* forests of southern South America, from where they dispersed to the neotropical forests of Brazil (Unpublished manuscript). Similarly, a great diversity of endemic bird taxa has dispersed from this great refuge of relict forests in southern Chile to the rest of South America. An example of these is the migratory passerine bird species that travels long distances to breeding *Elaenia albiceps*, from Brazil to Chile to breeds (Jiménez *et al.*, 2016).

This brief scientific note aims to describe for the first time the territorial vocalization of the Navarino Tapaculo, by means of spectrograms and to make a comparison of the vocalizations with the Andean Tapaculo. In addition is intended to verify whether it is a distinct species of *Scytalopus*.

The sampling area, where acoustic signals (Aleixo & Vielliard, 1995) of the Navarino Tapaculo and Andean Tapaculo were recorded, was conducted after the breeding season, in Omora Park, Puerto Williams, Navarino Island (54° 56' S; 67° 36' W), Sub-Antarctic region of Chile (Correa, 2021 and 2022) (Fig. 3). The flora of the site is composed of Sub-Antarctic Andean-Patagonian humid relict *Nothofagus* forests of Ñirre (*N. antarctica*), Lenga (*N. pumilo*) and other tree species, in interaction with a rich mixed flora. These ecosystems associated with watercourses are closely related to relict forests in other latitudes of South America (Villagrán *et al.*, 2004). To obtain the vocalization records of the Navarino Tapaculo and the Andean Tapaculo, was used a SONY MD Walkman MZ-R recorder (900/sec) and with a high fidelity multidirectional microphone with a sensitivity of: -53.5 dBV/Pa or 2.10 mV/Pa (1 Pa = 94 dB SPL), with parabolic display to obtain a better reception surface of the songs. Vocalization recorded *in situ* of *Scytalopus antarcticum* in Navarino Island the year 2002 (voice can be found and heard in *in* Sound Cloud, Via streaming, Correa, 2024). The territorial voice of the Andean Tapaculo were used from the Xeno Canto database (Code XC50070), in order to subsequently make the respective sonograms of these enigmatic species of the genus *Scytalopus*. To obtain the spectrograms corresponding to the vocalizations of the Navarino Tapaculo and Andean Tapaculo, (we used Raven program the Cornell Lab 2019; Audacity software 3.6, 2024; The Spek Acoustic Spectrum Analyzer, Kojevnikov, 2024). The spectrograms were then analysed and interpreted. The nominated species *S. antarcticum* (n=12, Navarino Island) has a 2-note voice call. The fundamental “A” note of 4.1 KHz and the overtones are clearly audible (Fig 4). Note “B”, the second

overtone is higher pitched at 4.7 KHz and has a high intensity (Fig. 5). The frequency of the “A” and “B” notes of the territorial call varies between 4.0 KHz to 3.57 KHz, each note is shortened and the rhythm increases throughout the phrase, which lasts 7.2 seconds in duration and repeats with a 3-second interval. According to the graph (Fig. 5) the frequency analysis of the phrase is 11.67 KHz with an intensity of -40.8 dB. However, the species *S. magellanicus* (n=20, Isla Navarino, Correa 2021) and records reviewed from Xeno Canto (Cod. XC50070), consists of a territorial vocalization composed of 2 notes (Fig 6), “A” and “B”, the fundamental “A” note being higher pitched between 1 to 2.1 KHz (Fig. 7). These two types of notes are emitted at intervals that vary between 0.19-0.32 seconds (Riveros *et al.*, 1994). The phrase has a duration of 9.0 seconds and is repeated with an interval of 5 seconds. According to the graph (Fig. 7) the frequency analysis of the phrase is 15.5 KHz with an intensity of - 70 dB. According to the spectrograms, the sound structure of both species differs notably. The Tapaculo Navarino presents a rapid rise in pitch of greater intensity on the note “B” permanently and constantly until the end and lacks the drop in pitch at the end of the note, unlike the Andean Tapaculo. The call of the Andean Tapaculo has a longer duration and frequency than the call of the Navarino Tapaculo. In addition, the call of the Navarino Tapaculo has a greater intensity in its highest note. This indicates that the call characteristics of these taxa are not similar.

Unfortunately, the Navarino Tapaculo and the Andean Tapaculo have not been observed again on Navarino Island (Correa, 2021). This is due to local extinction caused by the American mink (Rozzi *et al.*, 2014) and the destruction of large areas of relict Sub-Antarctic forest of *Nothofagus* by the American beaver (Oltremari *et al.*, 2008). According to field data from other authors, a vocalization of the Andean Tapaculo was recorded voice on Cape Horn Island in 2024 (XC895195), but this is only anecdotal.

In conclusion, the territorial call of the Navarino Tapaculo has a unique sound structure, with higher-pitched calls that differ significantly from those of the Andean Tapaculo, as observed in the spectrograms and graphs. This suggests that the Navarino Tapaculo may be a new species of *Scytalopus* that should be nominated. However, there is a possibility that sympatric populations of *S. magellanicus* and *S. antarcticum* still coexist and share the same habitat on relict forest of *Nothofagus* in Isla Navarino and in the remote archipelago of Cape Horn, Chile.

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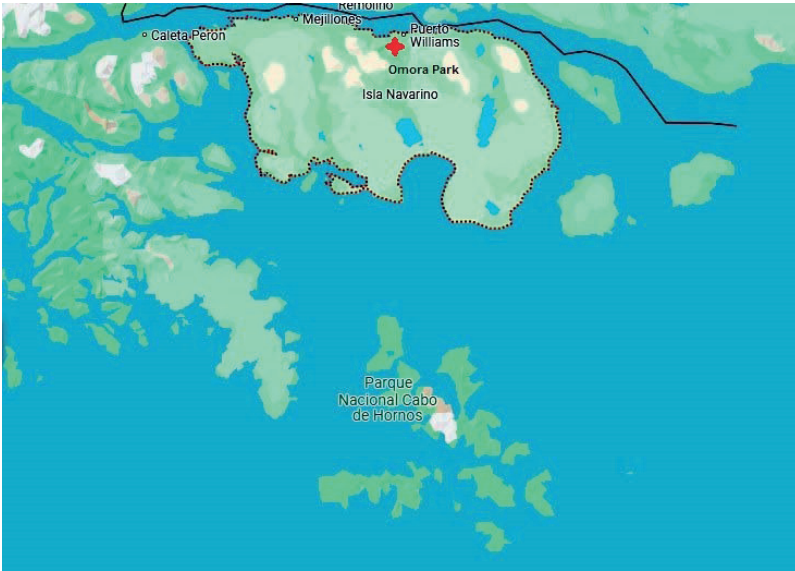
Hernández, Eds.). Ediciones Universidad de la Serena, La Serena, Chile. Cap. 1: 3- 43.



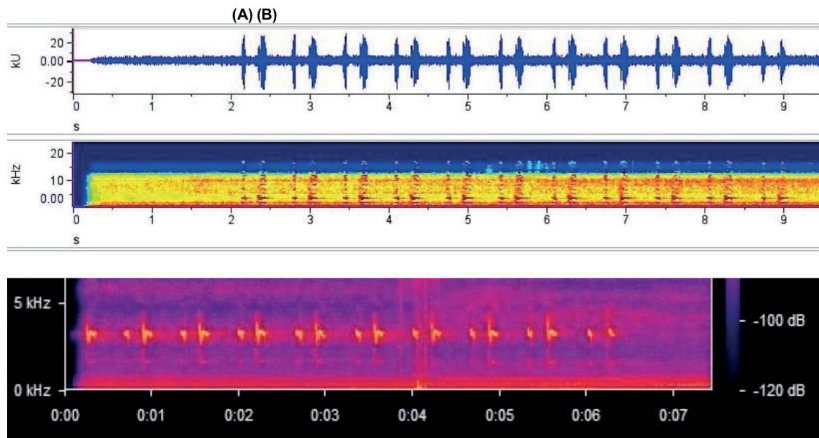
**Figure 1.** Navarino Tapaculo (*Scytalopus antarcticum*), adult male. Source: drawing by Francisco Correa.



**Figure 2.** Navarino Tapaculo (*Scytalopus antarcticum*), juvenile. Photo by author.

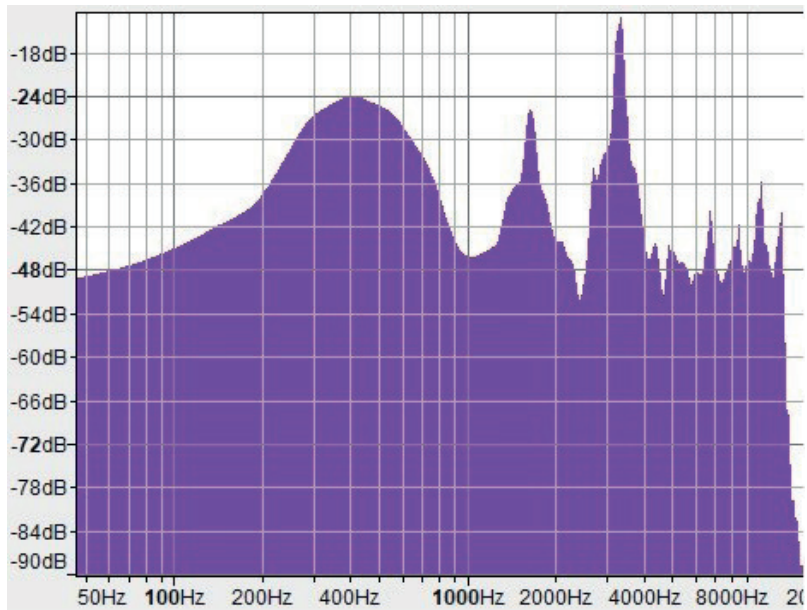


**Figura 3.** Ethnobotanical Park Omora, Isla Navarino, Puerto Williams, Cabo de Hornos, Chile. Source: Google Earth.

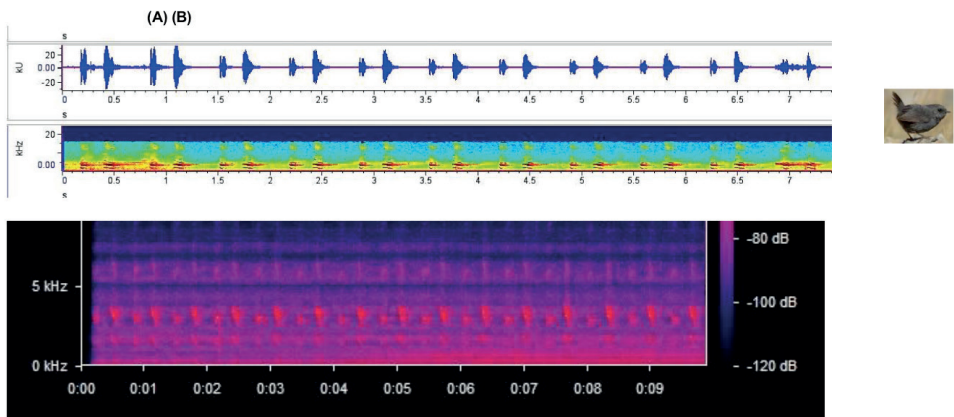


**Figure 4:** Spectrograms of the territorial vocalization of *S. antarcticum* (n=3). Raven and Acoustic Spectrum Analyzer Spek. Register by A.C

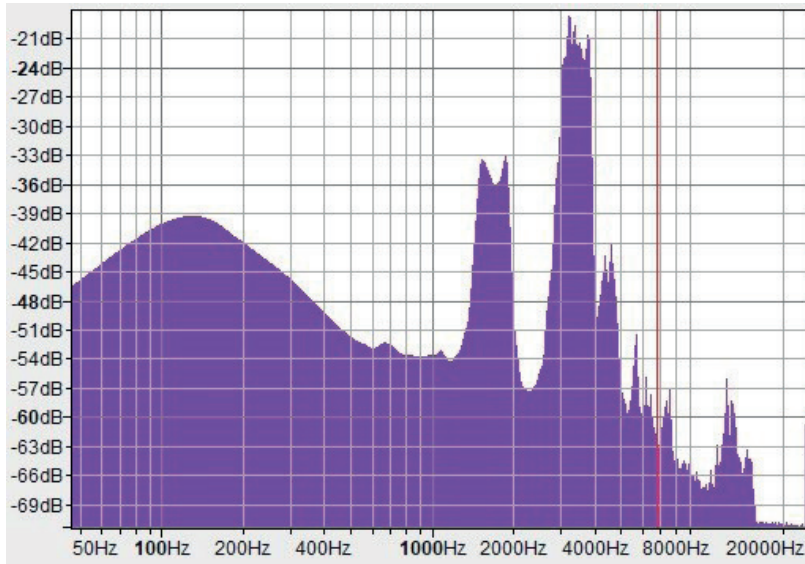




**Figure 5.** *S. antarcticum* frequency analysis graph ([fx] Hann window) (Audacity software)



**Figure 6.** Spectrograms of the territorial vocalization of *S. magellanicus* (n=4) (Raven and Acoustic Spectrum Analyzer Spek). Register by B.L



**Figure 7.** *S. magellanicus* frequency analysis graph ([fx] Hann window) (Audacity software)