NEOTROPICAL BIOLOGY AND CONSERVATION

Neotropical Biology and Conservation
15(3): 351–357 (2020)
doi: 10.3897/neotropical.15.e51815

SHORT COMMUNICATION

# Filling gaps in the southern range of the endangered snake *Philodryas agassizii*: new localities in Tandilia highland grassland, Argentina

David Gustavo Vera[1], Igor Berkunsky[2], Germán Tettamanti[1], Manuel Eirin[3], Federico Pablo Kacoliris[1], Diego Omar Di Pietro[1]

1 *Sección Herpetología, División Zoología Vertebrados, Facultad de Ciencias Naturales y Museo, Universidad Nacional de La Plata, Av. 122 y 60 s/n, La Plata 1900 CP, Buenos Aires, Argentina*
2 *Instituto Multidisciplinario sobre Ecosistemas y Desarrollo Sustentable, Universidad Nacional del Centro de la Provincia de Buenos Aires, Arroyo Seco s/n, Tandil 7000 CP, Buenos Aires, Argentina*
3 *Facultad de Ciencias Naturales y Museo, Universidad Nacional de La Plata, Av 122 y 60 s/n, La Plata 1900 CP, Buenos Aires, Argentina*

Corresponding author: David Gustavo Vera (davidgvera@fcnym.unlp.edu.ar)

Academic editor: A. M. Leal-Zanchet | Received 6 March 2020 | Accepted 31 July 2020 | Published 18 August 2020

Citation: Vera DG, Berkunsky I, Tettamanti G, Eirin M, Kacoliris FB, Di Pietro DO (2020) Filling gaps in the southern range of the endangered snake *Philodryas agassizii*: new localities in Tandilia highland grassland, Argentina. Neotropical Biology and Conservation 15(3): 351–357. https://doi.org/10.3897/neotropical.15.e51815

## Abstract

*Philodryas agassizii* is an endangered snake of shrubland and grasslands well preserved in Argentina, Paraguay, Brazil, and Uruguay. In the southeastern area of its range, this snake was only found associated with highland grassland of the Tandilia and Ventania mountain systems, Argentina. In this work, we described six new records of *Philodryas agassizii* from the Tandilia Mountain System, which represent four new localities for the species. These records extend the known range of *Philodryas agassizii* in the Tandilia mountain system, 100 km from the closest previously known site.

## Keywords

geographic distribution, grasslands, snakes

*Philodryas agassizii* (Jan, 1863) is a habitat specialist snake occurring in Atlantic forest, Cerrado, Pampa and Pantanal biomes from the center of Argentina, through Uruguay, Paraguay and Brazil (Peters and Orejas-Miranda 1970; Viñas 1985; Cei 1993; Carreira et al. 2005; Marques et al. 2006; Etchepare and Ingaramo 2008; Ghizoni et al. 2009; Hamdan and Lira-da-Silva 2012; Di Pietro et al. 2013; Smith and Clay 2015; Cacciali et al. 2016; Costa and Bérnils 2018; Ríos et al. 2020). *Philodryas agassizii* is prevalent in well preserved natural grasslands with dense coverage of native grass (Marques et al. 2006; Etchepare et al. 2012). Even when this snake had a large range, which includes many Argentine provinces, the current number of reported specimens remains low (Di Pietro et al. 2013). The southernmost record of this snake is in Río Negro province, Argentina (Perez et al. 2012). Natural grasslands of southern South America are among the most fragmented and disturbed ecosystems, and this could be one of the main reasons for the rarity of this snake (Giraudo et al. 2011). While at the international level, the conservation status of *Philodryas agassizii* was not evaluated, this snake was listed as Endangered in the Argentinean and the Paraguayan Red Lists (Motte et al. 2009, Giraudo et al. 2012). In Brazil, some authors proposed the use of *Philodryas agassizii* as a potential bioindicator for the Pampa biome, as well as the inclusion of *Philodryas agassizii* in the Brazilian list of threatened vertebrates (Winck et al. 2007).

In its southern range, in Buenos Aires province, *Philodryas agassizii* was only reported in highland grasslands of the two mountain systems of the Pampa ecoregion: Tandilia and Ventania (Viñas et al. 1989; Vega and Bellagamba 1990; Di Pietro 2016). These mountain systems conserve remnants of native grassland, and maintain a high number of endemic plants and animal taxa, so they are considered orographic islands (Crisci et al. 2001). In this work, we described six new records of *Philodryas agassizii* in the Tandilia mountain system.

For each record, we provided geographic location, elevation, photographs, a description of the habitat, and, whenever possible, sex and morphometric traits. We examined specimens with a binocular microscope to count the number of scales to gauge its taxonomic determination. We used a GPS (Garmin Etrex 20) to record elevation and geographic location (Datum WGS84) of each specimen. We used a digital caliper to measure morphometric lengths (i.e., head, snout-vent, tail and total lengths) and we used a digital scale (nearest to 0.1 g) to obtain the body mass. We determined the sex of each specimen based on measurements and following the sexual dimorphism established by Di Pietro et al (2013). Collected specimens and photo-vouchers were sent to the Colección Herpetológica del Museo de La Plata (MLP) that provided us collection numbers for collected specimens, and photo collection numbers for the photographed specimens. This study required collecting authorization, which was provided by Dirección de Flora y Fauna de la provincia de Buenos Aires (NO-2019-16058740-GDEBA-DFYFMAGP).

We identified the specimens by their color pattern and scale counting. All specimens have 13 dorsal scale rows, a diagnostic feature of *Philodryas agassizii* (Jan, 1863). All specimens showed greenish color with yellowish tones. Some specimens (Fig. 1A, C, D) had a clear brownish-reddish longitudinal band on the back.


**Figure 1.** Photographic records of *Philodryas agassizii* in the Tandilia Mountain System, Argentina. Specimens from Estancia Ninonil (**A**), Estancia Rucahué (**B**), Estancia Las Mercedes (**C–E**), and Estancia El Bonete (**F**).

**Table 1.** Morphometric traits of four specimens of *Philodryas agassizii* found in the Tandilia Mountain System, Argentina.

| Specimen (photo) | Locality | Length (mm) | | | | Mass (g) |
|---|---|---|---|---|---|---|
| | | Snout-vent | Head | Tail | Total | |
| MLP, R. 6761 (1C) | Ea. Las Mercedes | 161.7 | 7.89 | 52.2 | 213.9 | 3.8 |
| MLP, cf. 0051 (1D) | Ea. Las Mercedes | 190.0 | 8.85 | 45.8 | 235.8 | 5.5 |
| MLP, cf. 0052 (1E) | Ea. Las Mercedes | 289.0 | 10.48 | 108.8 | 397.8 | 7.8 |
| MLP, R. 6762 (1F) | Ea. El Bonete | 405.0 | 13.65 | 117.5 | 522.5 | 31.6 |

October 19th 2017 (13:27 h), we found one specimen of *Philodryas agassizii* (MLP, cf. 0053) in a highland grassland with bare soil patches at Estancia Ninonil, Partido de Tandil (37°37.6144'S, 59°13.9012'W; 342 masl; Fig. 1A). The habitat was dominated by native grass and a few patches of native shrubs (mainly *Colletia paradoxa* and *Baccharis tandiliensis*). This specimen was released and no morphological measures were taken.

December 7th 2017 (09:08 h), we found one specimen of *Philodryas agassizii* (MLP, cf. 0054) on a road immersed in a highland grassland at Estancia Rucahué, Partido de Tandil (37°28.6316'S, 59°3.3116'W; 205 masl; Fig. 1B). The habitat was a highland grassland dominated by native grasses (*Nessiana*, and *Piptochaetium*). This specimen was released and no morphological measures were taken.

Between November 2019 and January 2020, we found three specimens of *Philodryas agassizii* at highland grassland in Estancia Las Mercedes, Partido de Tandil. The habitat was dominated by native grass (genus *Nessiana*, *Piptochaetium*, and *Paspalum*) and large patches of native shrubs (*Baccharis tandiliensis* and *Eupatorium bunifolium*). Rocky outcrops and loose rocks were frequent in the area. Livestock was of low density and woody invasive species were scarce at the site. We found all specimens under rocks (Table 1). November 9th, 2019 (11:50 h), we collected one juvenile specimen (MLP, R. 6761, Fig. 1C; 37°22.645'S, 59°05.355'W; 252 masl). We found another two specimens, and both were measured in the field and then released. December 5th, 2019 (14:43 h) we found a second juvenile specimen (MLP, cf. 0051, Fig. 1D; 37°22.656'S, 59°05.378'W; 251 masl), and January 24th, 2020 (09:57 h) we found a male specimen (MLP, cf. 0052, Fig. 1E; 37°22.708'S, 59°05.289'W; 245 masl).

December 21th 2019 (12:50 h), we found one adult female of *Philodryas agassizii* (MLP, R. 6762, Fig. 1F, Table 1) in highland grasslands with bare soil patches at Estancia El Bonete, Partido de Lobería (37°52.264'S, 58°38.802'W; 218 masl). The habitat was a highland grassland dominated by native grasses (genus *Nessiana*, *Piptochaetium*, and *Paspalum*) and patches of native shrubs (mainly *Colletia paradoxa* and *Baccharis tandiliensis*). Rocky outcrops were frequent, and some remnants were affected by the colonization of woody invasive vegetation. Livestock density was low in this grassland remnant. This specimen was collected.

These six new records resulted in four new localities in the geographic range of *Philodryas agassizii* (Fig. 2, modification of Griffith et al. 1998). These new localities extend the range of this snake along the Tandilia mountain system, 100 km to the

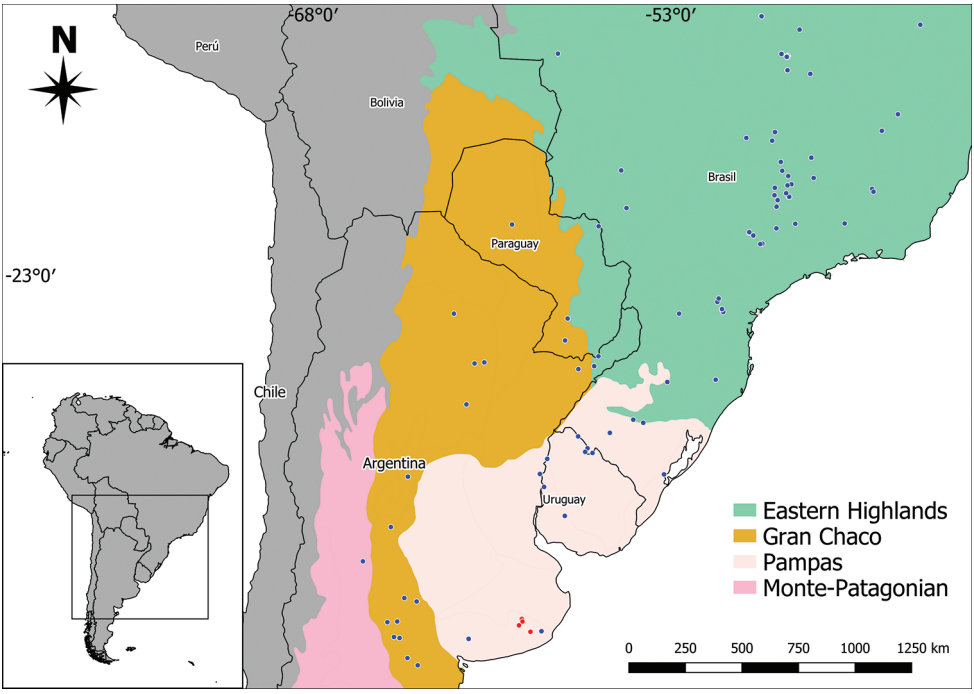


**Figure 2.** Geographic distribution of *Philodryas agassizii*. The map includes ecoregions of South America by Griffith et al. (1998). The blue circles indicate the previous records, and the red circles indicate new records.

northwest from the closest previously known site (i.e., Sierra del Volcán, Balcarce; Vega and Bellagamba 1990), and help to fill one of the gaps of the geographic distribution of the species in the Pampean region of Argentina. Our records will contribute to better understand the distribution of *Philodryas agassizii* in the region, reinforcing the idea that the species is occurring in relatively well conserved grasslands.

## Acknowledgments

We would like to thank field assistants and collaborators (Clara Fiorino Falasco, Gonzalo Adrián Reuter, Florencia Débora Dosil Hiriart, María Florencia Aranguren, Pilar Plantamura and Scarlett Mendez Herrera) for their kind assistance and support during the fieldwork activities. We also appreciate the collaboration of Tomas Pérez Marino (Estancia El Bonete), Paulo Mosca (Estancia Ninonil), and Federico Juana (Estancia Las Mercedes) for allowing entry into their properties. Jorge Williams made valuable suggestions for improving this manuscript. The Dirección de Fauna Silvestre of the Buenos Aires Province gave us authorization to perform this work.

We greatly aknowledge two anonymous reviewers whose comments improve our works.

This study was supported by the Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET PIP. 11220150100598CO), the Agencia Nacional de Promoción Científica y Tecnológica (ANPCYT, PICT 2015-2281), and the Neotropical Grassland Conservancy (STUDENT GRANT PROGRAM 2019).

## References

Cacciali P, Scott NJ, Aquino Ortíz AL, Fitzgerald LA, Smith P (2016) The Reptiles of Paraguay: Literature, distribution, and an annotated taxonomic checklist. Special Publication of the Museum of Southwestern Biology 11: 1–373.

Carreira S, Meneghel M, Achaval F (2005) Reptiles de Uruguay. Universidad de la República Facultad de Ciencias, Montevideo, 638 pp.

Cei JM (1993) Reptiles del noroeste, nordeste y este de la Argentina: Herpetofauna de las selvas subtropicales, Puna y Pampas. Museo Regionale di Scienze Naturali, Torino, 949 pp.

Costa HC, Bérnils RS (2018) Répteis do Brasil e suas Unidades Federativas: Lista de espécies. Herpetologia Brasileira 7(1): 11–57.

Crisci JV, Freire SE, Sancho G, Katinas L (2001) Historical biogeography of the Asteraceae from Tandilia and Ventania mountain ranges (Buenos Aires, Argentina). Caldasia 23(1): 21–41.

Di Pietro DO (2016) Historia natural y ecología de los ofidios (Reptilia: Serpentes) de las sierras australes de la provincia de Buenos Aires, Argentina. PhD thesis, Buenos Aires, Argentina: Facultad de Ciencias Naturales y Museo, Universidad Nacional de La Plata.

Di Pietro DO, Christie ML, Williams JD (2013) Nuevos registros de *Philodryas agassizii* (Serpentes: Dipsadidae: Xenodontinae) en la Argentina. Cuadernos de Herpetología 27: 59–62.

Etchepare EG, Ingaramo MR (2008) Pseudablabes agassizii (Jan, 1863)(Serpentes: Colubridae). Primer registro para la provincia de Corrientes (República Argentina). Cuadernos de Herpetología 22(1): 51.

Etchepare E, Giraudo AR, Arzamendia V (2012) Philodryas agassizii Jan, 1863. Culebra listada. In: Giraudo AR, Arzamendia V, Bellini GP, Bessa CA, Calamante CC, Cardozo G, Chiaraviglio M, Costanzo MB, Etchepare EG, Di Cola V, Di Pietro DO, Kretzschmar S, Palomas S, Nenda SJ, Rivera PC, Rodriguez ME, Scrocchi GJ, Williams JD (Eds) Categorización del Estado de Conservación de la Herpetofauna de la República Argentina. Ficha de los Taxones. Serpientes. Cuadernos de Herpetología, San Salvador de Jujuy, 26: 360.

Ghizoni IR, Kunz TS, Cherem JJ, Bérnils RS (2009) Registros notáveis de répteis de áreas abertas naturais do planalto e litoral do Estado de Santa Catarina, sul do Brasil. Biotemas 22(3): 129–141.

Giraudo AR, Arzamendia V, Bellini G (2011) Las especies amenazadas como hipótesis: Problemas y sesgos en su categorización ejemplificados con las serpientes de la Argentina. Cuadernos de Herpetología 25: 43–54.

Giraudo AR, Arzamendia V, Bellini GP, Bessa CA, Calamante CC, Cardozo G, Chiaraviglio M, Costanzo MB, Etchepare EG, Di Cola V, Di Pietro DO, Kretzschmar S, Palomas S, Nenda SJ, Rivera PC, Rodriguez ME, Scrocchi GJ, Williams JD (2012) Categorización del estado de conservación de las Serpientes de la República Argentina. Cuadernos de Herpetología 26(3).

Griffith GE, Omernik JM, Azevedo SH (1998) Ecological classification of the Western Hemisphere. Unpublished report. U.S. Environmental Protection Agency, Western Ecology Division, Corvallis, 49 pp.

Hamdan B, Lira-da-Silva RM (2012) The snakes of Bahia State, northeastern Brazil: Species richness, composition and biogeographical notes. Salamandra (Frankfurt) 48(1): 31–50.

Jan G (1863) Enumerazione sistematica degli ofidi appartenenti al gruppo Coronellidae. In: Canestrini G, Doria G, Ferrari PM, Lessona M (Eds) Archivio per la Zoologia L' Anatomia e la Fisiologia. Genova 2(2): 213–330

Marques OA, Sawaya RJ, Stender-Oliveira F, Franca FG (2006) Ecology of the colubrid snake *Pseudablabes agassizii* in south-eastern South America. The Herpetological Journal 16(1): 37–45.

Motte M, Nuñez K, Cacciali P, Brusquetti F, Scott N, Aquino AL (2009) Categorización del estado de conservación de los anfibios y reptiles de Paraguay. Cuadernos de Herpetología 23(1): 5–18.

Perez CHF, Morando M, Avila LJ (2012) *Philodryas agassizii* (Jan, 1863) (Squamata: Dipsadidae): distribution extension. Check List 8(1): 143–144. https://doi.org/10.15560/8.1.143

Peters JR, Orejas-Miranda B (1970) Catalogue of the neotropical Squamata: Part I. Snakes. United States National Museum Bulletin 297: 252. https://doi.org/10.5962/bhl.title.46653

Rios S, Bascoulès S, Vera A, Smith P (2020) Primeros ejemplares con localidades de *Philodryas agassizii* (Jan, 1863) [Serpentes: Dipsadidae] en la región oriental del Paraguay. Nótulas faunísticas 298(2): 1–4.

Smith P, Clay R (2015) Six new or important departmental herpetological records for Paraguay. Paraquaria Natural 3(1): 20–22.

Vega LE, Bellagamba PJ (1990) Lista comentada de la herpetofauna de las sierras de Balcarce y Mar del Plata, Buenos Aires, Argentina. Cuadernos de Herpetología 5: 10–14.

Viñas M (1985) Notas sobre la biología de *Pseudablabes agassizii* Jan 1985. Boletín de la Asociación Herpetológica Argentina 1: 16.

Viñas M, Daneri G, Gnida G (1989) Presencia de *Pseudablabes agassizii* (Jan, 1863) en Sierra de la Ventana (provincia de Buenos Aires), y confirmación para la provincia de la Pampa. Boletín de la Asociación Herpetológica Argentina 5: 13–14.

Winck GR, dos Santos TG, Cechin SZ (2007) Snake assemblage in a disturbed grassland environment in Rio Grande do Sul State, southern Brazil: Population fluctuations of *Liophis poecilogyrus* and *Pseudablabes agassizii*. Annales Zoologici Fennici 44: 321–332.