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New southern record of *Erythrolamprus reginae* (Linnaeus, 1758) (Serpentes: Dipsadidae), a vulnerable species in Argentina

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Abstract: I present the first record of the tropical snake *Erythrolamprus reginae* from Entre Ríos province as the southernmost record from Argentina and South America. This record extends the range of this species by 510 km airline south of known localities in Corrientes province. Geographical distribution in Argentina and Paraguay is provided. This record confirms the presence of *E. reginae* in seasonally flooded gallery forest bordering the Uruguay River, a biogeographical corridor for tropical biota invading temperate latitudes.

Key words: aquatic snake; Entre Ríos province; range extension

Erythrolamprus reginae (Linnaeus, 1758), formerly included in *Liophis* (for more details see Zaher et al. 2009), occurs cis-Andean South America from Venezuela and Trinidad to southern Brazil and northern Argentina (Dixon 1983; Giraudo 2001). In Argentina, this species occurs only in the north, in Misiones, Salta and Jujuy provinces and extreme northeast Corrientes (Álvarez et al. 1995; Giraudo 2001; Giraudo and Scrocchi 2002; Scrocchi et al. 2006). Williams and Francini (1991) included Formosa province, probably based on Dixon's (1983, 1989) maps that show distributions that apparently include Formosa, but the material examined was from bordering localities in Paraguay. Álvarez et al. (1996) do not mention Formosa, and Giraudo and Scrocchi (2002) believe that this record is unconfirmed.

The aim of this note is to report new records of *Erythrolamprus reginae*, including the most southerly locality in South America.

The records from Argentina were obtained by field sampling and collected specimens (permit number 047) that were deposited in Instituto Nacional de Limnología (INALI), Santa Fe. The data were supplemented with specimens deposited in the following museum collections: Fundación Miguel Lillo (FML), Tucumán; Museo Argentino de Ciencias Naturales (MACN), Buenos Aires; Laboratorio de Genética Evolutiva (LGE) Posadas, Misiones. Locality data from Paraguay were obtained from: Museo Nacional de Historia Natural del Paraguay (MNHNP) Asunción; Museo Ambiental de Itaipú (MAI) Ciudad del Este; and the Natural History Museum (BMNH), London, UK. The distribution of *Erythrolamprus reginae* in Argentina and Paraguay is presented in Figure 1. Localities and geographic coordinates, based on the WGS84 datum, are provided in Table 1.

Examination of specimens found an *Erythrolamprus reginae*, MACN 36285, from El Palmar National Park (31°52′18″S, 058°12′4″W), Entre Ríos province, Argentina. This specimen had been catalogued as *Erythrolamprus reginae*. This record extends the species' distribution 510 km southwest of the nearest localities in Corrientes, and represents the southernmost record for *E. reginae*.

The specimen was identified using characters provided by Dixon (1983) and Giraudo (2001). It is a female with four eggs, scale characters: dorsal scale rows 17–17–15; anal divided; subcaudals divided; supralabials 8, 4th and 5th enter orbit; infralabials 10, 6th contact shield, temporals 2+3, ventrals 151, subcaudals 30+. Snout-vent length 675 mm, tail length 112 mm, head length 30.20 mm, head width 17.00 mm.

The individual was collected in 1974, and is discoloured due to preservation (Figure 2). The colour pattern of live individuals of *E. reginae* (Figures 3 and 4) consists of an olive to greyish green dorsum, with faint to well-marked black streaks on the upper 1st to 6th supralabials between the 7th and 8th half cross-scale. A thin black lateral line begins on the border of scale rows three and four on the posterior one-fourth of the body and continues to the tip of the tail (Figures 2–4). According to Dixon (1983), for specimens from central Brazil and northwestern

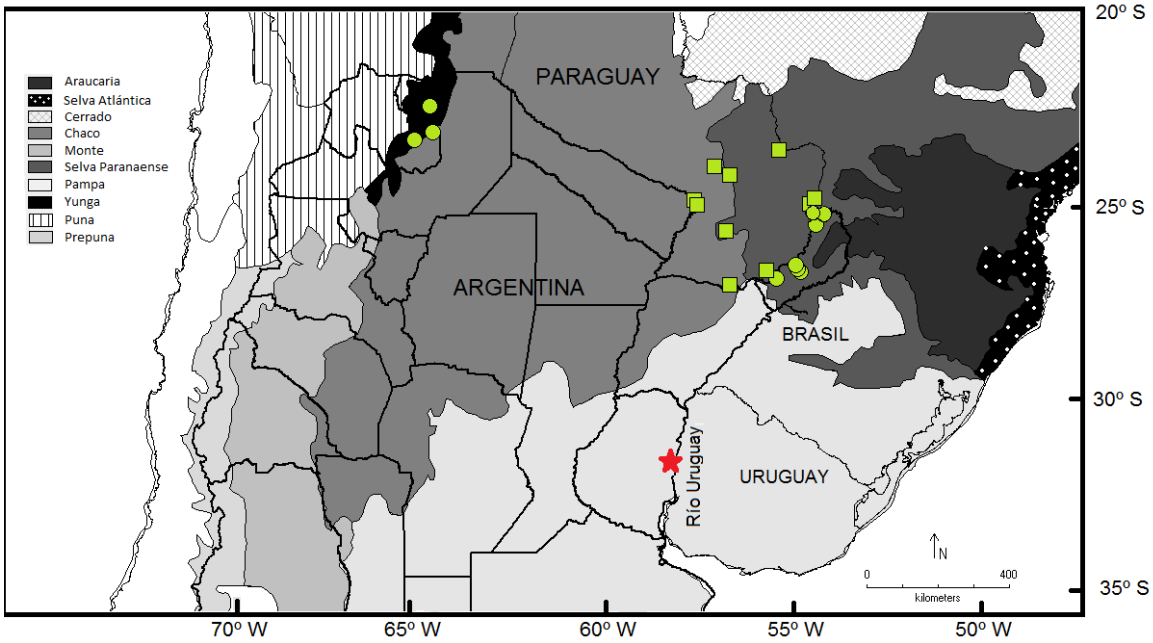

Figure 1. Distribution of *Erythrolamprus reginae* in Argentina (green circles) and Paraguay (green squares). The new southernmost locality for this species is shown by a red star. The map is constructed based on the biogeographic regionalization of Morrone (2014) obtained from Löwenberg-Neto (2014).

Table 1. Museum records of *Erythrolamprus reginae* with specific localities for Argentina and Paraguay.

No.	Localities	Latitude	Longitude	Date	Province	Country	Voucher	
1	Parque Nacional El Palmar	31°52′26.97″S	058°12′36.31″W	Nov 1974	Entre Ríos	Argentina	MACN	36285
2	Parque Nacional Calilegua, yacimiento Caimancito	23°44′11.94″S	064°51′19.79″W	18 Feb 2009	Jujuy	Argentina	FML	23548
3	Aristóbulo del Valle	27°08′04.81″S	054°54′01.60″W	29 Jan 1996	Misiones	Argentina	INALI	00124
4	Puerto Iguazú	25°35′33.33″S	054°35′26.62″W	26 Dec 2003	Misiones	Argentina	INALI	1826
5	Aristóbulo del Valle	27°04′19.88″S	054°59′23.57″W	Apr 2005	Misiones	Argentina	INALI	2422
6	Parque Nacional Iguazú, Arroyo Yacuí	25°40′50.33″S	054°10′05.31″W	29 Oct 1990	Misiones	Argentina	INALI	5092
7	Parque Nacional Iguazú, CIES	25°40′42.80″S	054°26′57.25″W	11 Nov 1990	Misiones	Argentina	INALI	5086
8	Parque Nacional Iguazú	25°40′53.66″S	054°26′58.93″W		Misiones	Argentina	INALI	5087
9	Parque Nacional Iguazú, Barrio de Guardaparques	25°40′53.22″S	054°27′12.19″W	27 Jun 1992	Misiones	Argentina	INALI	5088
10	Parque Nacional Iguazú, Arroyo Santo Domingo	25°35′12.71″S	054°19′45.36″W	Mar 1992	Misiones	Argentina	INALI	5111
11	Parque Nacional Iguazú, Escuela 609	25°41′00.83″S	054°26′55.81″W	10 Mar 1993	Misiones	Argentina	INALI	5112
12	Parque Nacional Iguazú Control	25°41′13.49″S	054°27′19.69″W	Feb 1994	Misiones	Argentina	INALI	5089
13	Parque Nacional Iguazú	25°40′53.66″S	054°26′58.93″W		Misiones	Argentina	INALI	5093
14	Parque Nacional Iguazú	25°40′53.66″S	054°26′58.93″W		Misiones	Argentina	INALI	5090
15	Parque Nacional Iguazú, Barrio de Guardaparques	25°40′53.22″S	054°27′12.19″W	10 Oct 2001	Misiones	Argentina	INALI	5095
16	Parque Nacional Iguazú, Hidrómetro	25°40′55.20″S	054°26′49.20″W	5 Jun 2001	Misiones	Argentina	INALI	5096
17	Puerto Aguirre	25°35′33.33″S	054°34′39.40″W		Misiones	Argentina	FML	194
18	Puerto Iguazú	25°35′33.33″S	054°35′26.62″W		Misiones	Argentina	MACN	1826
19	Puerto Bemberg	25°54′58.72″S	054°37′12.05″W		Misiones	Argentina	MACN	3121
20	Puerto Bemberg	25°54′58.72″S	054°37′12.05″W	1949	Misiones	Argentina	MACN	12635
21	Estación Experimental Loreto	27°18′59.75″S	055°31′59.83″W	16 Apr 1958	Misiones	Argentina	MACN	36673
22	Balneario del Arroyo Cuña Pirú Chico	27°05′19.13″S	054°57′07.54″W	4 Dec 2009	Misiones	Argentina	LGE	173
23	Urundel, Colonia Santa María	23°33′00.15″S	064°23′33.93″W		Salta	Argentina	MACN	2194
24	Río Pescado, Orán	22°54′40.11″S	064°26′44.75″W		Salta	Argentina	FML	115
25	Río Pescado, Orán	22°54′40.11″S	064°26′44.75″W	Feb 1967	Salta	Argentina	FML	600
26	Reserva Itaipú	25°26′20.07″S	054°36′55.39″W		Alto Paraná	Paraguay	MAI	83
27	Tatí Yupi	25°32′07.67″S	054°35′22.19″W		Alto Paraná	Paraguay	MAI	114
28	Ygatimi, 10 km to the NE	24°00′21.60″S	055°27′28.80″W		Canindeyu	Paraguay	MNHMP	5191
29	Trinidad	27°07′10.50″S	055°44′09.99″W		Central	Paraguay	MACN	8768
30	San Antonio, 2.7 km to the N	25°24′53.79″S	057°34′30.26″W		Central	Paraguay	UMMZ	14321
31	Isla Yacyretá	27°25′36.93″S	056°48′36.73″W	5 Sep 1994	Itapua	Paraguay	UNNEC	480
32	Isla Yacyretá	27°25′36.93″S	056°48′36.73″W		Itapua	Paraguay	MNHNP	4967
33	Parque Nacional Ybycui	26°05′09.60″S	056°48′50.40″W		Paraguarí	Paraguay	MNHMP	5192
34	Reserva Natural bosque Mbaracayú	24°07′21.50″S	055°26′49.66″W		Canindeyú	Paraguay	MNHNP	9440
35	Primavera (Colonia Friesland)	24°40′00.65″S	056°01′00.34″W		San Pedro	Paraguay	BMNH	1962.80
36	Rosario	24°25′15.91″S	057°07′43.53″W		San Pedro	Paraguay	BMNH	1962.82

Figures 2–4. Specimens of *Erythrolamprus reginae*. **2:** MACN 36285 (El Palmar National Park, Entre Ríos, Argentina). **3:** INALI 2422 Dorsal view (Puerto Iguazú, Misiones, Argentina). **4:** INALI 2422 ventral view. Photos by V. Arzamendia and A. Giraudo.

Argentina, the venter is checkered yellow and black and the subcaudal area is yellow with a few small black spots on the outer edges of the subcaudals (Figure 4).

This southernmost record confirms the presence of *Erythrolamprus reginae* in seasonally flooded gallery forest, bordering the Uruguay River. Following Morrone´s (2014) biogeographical characterisation, the species occurs in Parana Forest and Yungas province, in wetlands of Chacoan province. Arzamendia and Giraudo (2009) and Arzamendia et al. (2015) consider the Plata Basin Rivers as biogeographical corridors of tropical biota towards temperate latitudes. This pattern has been described for diverse plant and animal groups, aquatic and terrestrial, analysed by various biogeographical methodologies (see Menalled and Adámoli 1995; Nores et al. 2005; Arzamendia and Giraudo 2009). The Uruguay River valley contains the southernmost remnants of Atlantic forest, forming gallery forest along the banks and islands of the river, representing the southern limit of distribution for several tropical species (mainly Atlantic-Paraná species) of plants, invertebrates and vertebrates (Menalled and Adámoli 1995; Giraudo and Arzamendia 2004; Nores et al. 2005; Arzamendia and Giraudo 2009, 2012; Dos Santos et al. 2015).

In Argentina, *Erythrolamprus reginae* is categorized as Vulnerable (Arzamendia et al. 2012) because it is a habitat specialist, living in streams and rivers surrounded by forests. Their populations are impacted deeply by the Yacyretá dam, habitat fragmentation, deforestation, collisions on roads and intentional killing (Giraudo et al. 2009). In addition, riparian habitats are among the most threatened in the world due to deforestation, tourism, dams, exotic forestation, and unfortunately, few standard protocols have been developed for setting priorities to protect areas in river systems (Arzamendia and Giraudo 2012).

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