



Leucism in *Rena unguirostris* and *Amerotyphlops brongersmianus* (Serpentes: Scolecophidia) from northeastern Argentina

Leucismo en *Rena unguirostris* y *Amerotyphlops brongersmianus* (Serpentes: Scolecophidia) del nordeste de Argentina

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Abstract.- Chromatic anomalies have been recorded in different species of snakes, however in scolecophidian snake the records are very scarce due to their fossorial habits. In this work, we report the first cases of leucism in *Rena unguirostris* and *Amerotyphlops brongersmianus* from northeast of Argentina. We describe the coloration of the body in both taxa and confirm the prevalence of adult leucist individuals of *A. brongersmianus* potentially reproductive in the wild, show that this chromatic anomaly would not be a disadvantage for this specie.

Keywords: *Leptotyphlopidae*, *Typhlopidae*, *leucism*, *snake*.

Resumen.- Las anomalías cromáticas han sido registradas en diferentes especies de serpientes, sin embargo en escolocofidios las observaciones son muy escasas debido a sus hábitos fosoriales. En este trabajo, reportamos los primeros casos de leucismo para *Rena unguirostris* y *Amerotyphlops brongersmianus* del nordeste de Argentina. Se describe la coloración corporal en ambos taxa y se confirma la prevalencia de individuos adultos leucistas de *A. brongersmianus* potencialmente reproductivos en la naturaleza, demostrando que esta anomalía cromática no sería una desventaja para esta especie.

Palabras clave: *Leptotyphlopidae*, *Typhlopidae*, *leucismo*, *serpiente*.

Albinism is a rare congenital condition that occurs due to a disorder of the normal pigmentation (Prüst, 1984). Albinos are homozygous recessive, having red pupils and white (or whitish) dermal structures, such as hair, feathers, skin and scales because of the lack of melanin in the dermatocytes (Alberts *et al.*, 2014). For many authors leucism is a form of partial albinism controlled by a single gene of recessive condition (Sage, 1962; Owen and Shimmings, 1992). Leucistic individuals are characterized by the lacking of all integumentary pigment but retention of color in the eyes (Dyrkacz, 1981).

Albinism and leucism has been widely documented in reptiles worldwide (e.g. Dyrkacz, 1981; Sazima & Di-Bernardo, 1991; Rocha & Rebelo, 2010), and specifically in snakes it was registered in the families Boidae (Hodge & Belluomini, 1957; Villa & Rivas, 1971), Elapidae (Hodge & Belluomini, 1957), Viperi-

dae (Krecsák, 2008; Bruni, 2017), Colubridae (Esqueda *et al.*, 2005; Gilhen *et al.*, 2013; Noronha *et al.*, 2013), and Dipsadidae (Abegg *et al.*, 2014, 2015). Among the scolecophidian snakes, chromatic anomalies has been recorded in the families Leptotyphlopidae (*Epictia mu-noai* - Orejas-Miranda, 1972) and Typhlopidae (*Amerotyphlops reticulatus* - Nicéforo-Maria, 1958; *A. brongersmianus* -Mira-Mendes *et al.*, 2017, *Xerotyphlops vermicularis* - Kornilios, 2014; and *Grypotyphlops acutus* - Nivalkar *et al.*, 2012). Here, we report the first records of leucism in *Rena unguirostris* (Boulenger, 1902) and *Amerotyphlops brongersmianus* (Vanzolini, 1976), from northeast of Argentina.

Rena unguirostris is a small sized leptotyphlopidae that can reach 300 mm in length. Its normal color pattern consists of a brownish or light brown dorsal surface with whitish to light yellow or pink ventral surface (Scrocchi



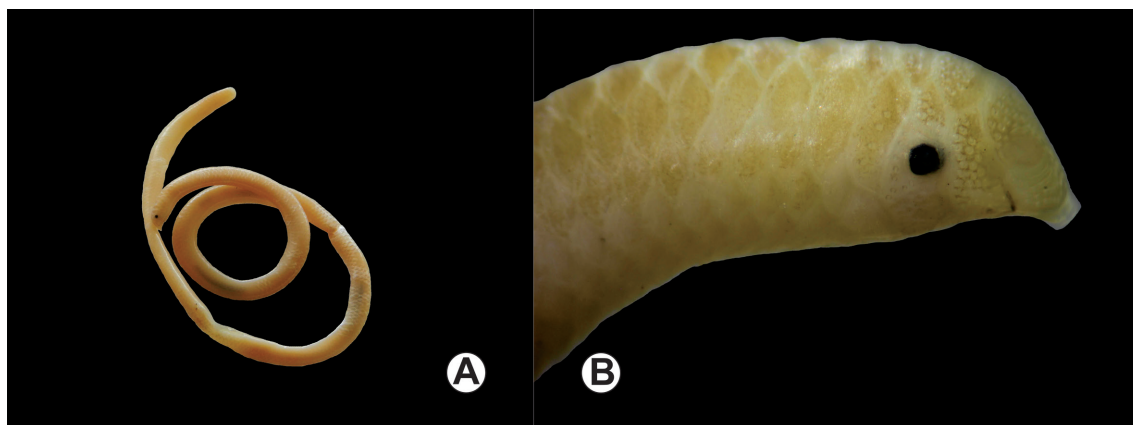


Figure 1. Leucistic specimen of *Rena unguirostris* from Paraje Santa Cruz, Chaco province. **A)** Dorsal view. **B)** Right side of the head showing enlarged rostral scale and black eye.

et al., 2006). On 18 December 1995, during a herpetological field survey, a juvenile of *R. unguirostris* was collected in Paraje Santa Cruz (25°21'15"S; 62°37'45"W), Almirante Brown department, Chaco province, Argentina. The

specimen presents uniform white skin coloration with black eyes (Fig. 1A-B). The snake has 115 mm snout-vent length and 21 mm tail length. The individual is deposited in the herpetological collection of the Universidad Nacional del

Table 1. Leucistic specimens of *Amerotyphlops brongersmianus* from northeast of Argentina. Reference: SVL: snout-vent length TL; tail length; A: adult; J: juvenile.

| Province | Locality | UNNEC | SVL (mm) | TL (mm) | Sex | Date | Geographic coordinates | |
|------------|-------------------|-------|----------|---------|-------|------------|------------------------|--------------|
| | | | | | | | Latitude | Longitude |
| Formosa | Las Lomitas | 11433 | 277.45 | 6.4 | ♀ (A) | 14/12/2011 | 24°52'07" | 60°51'30" |
| Corrientes | Paso de la Patria | 12823 | 188.89 | 7.78 | ♂ (A) | 26/11/2010 | 27°19'0.96" | 58°31'18.41" |
| | Paso de la Patria | 12821 | 232.65 | 8.3 | ♂ (A) | 29/11/2010 | 27°18'56.61" | 58°31'18.33" |
| | Santa Ana | 12824 | 216.89 | 6.84 | ♂ (A) | 10/12/2010 | 27°26'50.54" | 58°38'44.43" |
| | Santa Ana | 12814 | 98.46 | 3.58 | ♂ (J) | 7/5/2011 | 27°26'50.75" | 58°38'46.51" |
| | Capital | 12788 | 195.64 | 6.59 | ♂ (A) | 15/11/2013 | 27°26'50.10" | 58°44'47.97" |
| | Capital | 12800 | 205.46 | 6.52 | ♂ (A) | 18/11/2013 | 27°26'49.30" | 58°44'44.97" |
| | Capital | 12790 | 154.63 | 4.62 | ♂ (A) | 15/12/2013 | 27°26'47.55" | 58°44'44.45" |
| | Capital | 12838 | 156.59 | 7.45 | ♂ (A) | 26/3/2014 | 27°26'48.39" | 58°44'44.77" |
| | Saladas | 12936 | 157 | 3.84 | ♂ (A) | 21/10/2014 | 28°17'11.64" | 58°35'51.04" |
| | Saladas | 12793 | 172 | 5.28 | ♂ (A) | 22/10/2014 | 28°17'12.02" | 58°35'55.96" |
| | Saladas | 12801 | 204 | 5.26 | ♀ (A) | 22/10/2014 | 28°17'28.04" | 58°36'3.61" |
| | San Miguel | 12937 | 172 | 4.87 | ♂ (A) | 28/10/2014 | 27°49'38.26" | 57°34'38.50" |
| | Capital | 12836 | 254 | 5.07 | ♀ (A) | 7/3/2015 | 27°29'6.39" | 58°49'39.57" |
| | Empedrado | 13432 | 179.96 | 2.51 | ♀ (A) | 14/5/2016 | 27°47'52" | 58°45'40" |

Nordeste in Corrientes (UNNEC), Argentina and accessioned as UNNEC 5136.

Amerotyphlops brongersmianus is a slightly large species with maximum total length 325 mm, with a uniform color pattern ranging from brown light to reddish-brown on the dorsum, and an immaculate creamish ventral surface (Dixon & Hendricks, 1979; Scrocchi *et al.*, 2006). From November 2010 to May 2016, we captured using active searches 15 leucistic individuals in different localities in northeastern Argentina (Table 1). The coloration of these individuals is grayish, varying from light gray to dark gray, and always with dark eye color (Fig. 2 A-D).

Specimens of *A. brongersmianus* were sexed, and reproductive condition of individuals was estimated by examining their gonads according

to Shine and Webb (1990) and Parpinelli and Marques (2015).

Sazima & Di-Bernardo (1991) observed a high percentage of chromatic anomalies in neotropical snakes with nocturnal and cryptic habits. *R. unguirostris* and *A. brongersmianus* have a fossorial lifestyle (Scrocchi *et al.*, 2006), thus our finding corroborates the idea pointed out by Sazima and Di-Bernardo (1991).

Several authors have mentioned about the disadvantages of individuals with chromatic abnormalities (Bechtel, 1978; Moore & Kowalchuk, 1988; Garipis and Hoffmann, 2003; Spadola & Di Toro, 2007). Nevertheless, Kornilios (2014) suggests that these explanations do not apply to scolecophidians snakes due to fossorial habits.

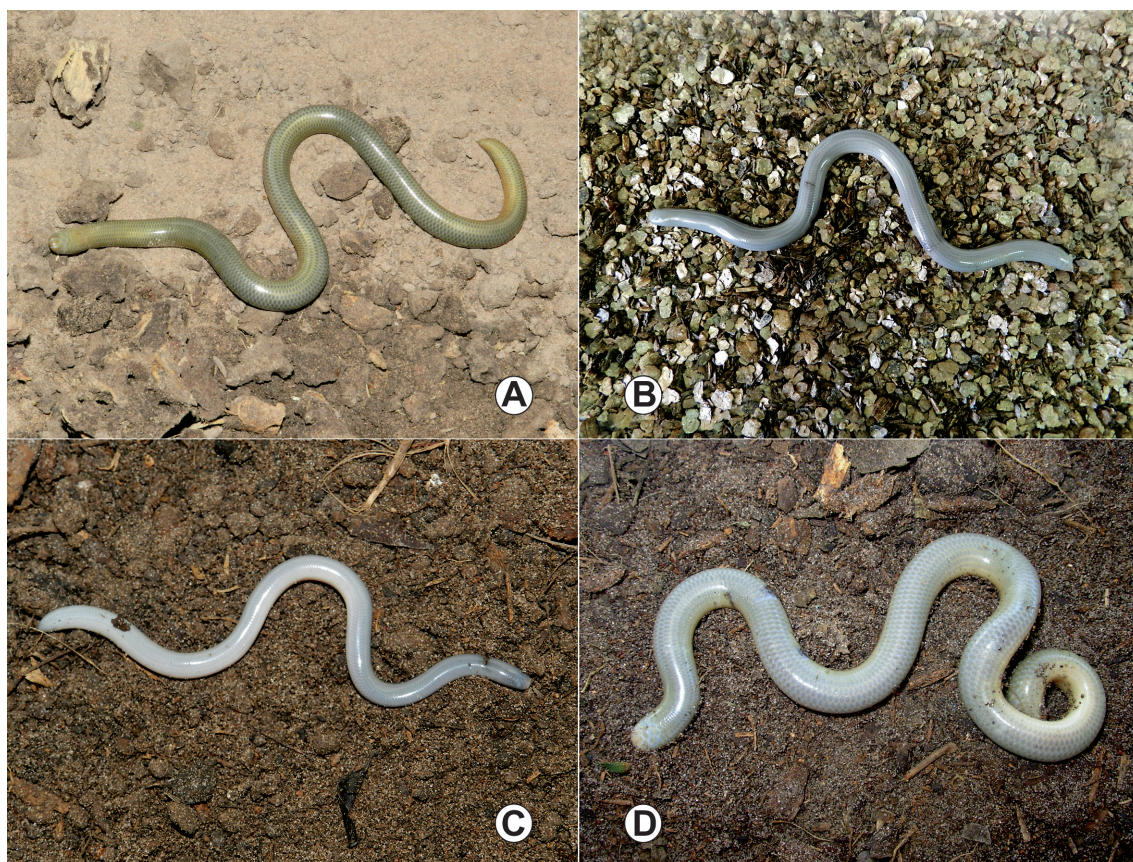


Figure 2. Adult leucistic specimens of *Amerotyphlops brongersmianus* showing the variation in the grayish color. **A)** Female from Formosa province, Argentina (UNNEC 11433), **B-D)** Males from Corrientes province, Argentina (UNNEC 12793, 12824, 12838).

Leucistic individuals are always rare in the wild due to the low survival rates (Walter, 1938; Bechtel, 1991; Krecsák, 2008). Considering the specimens of *A. brongersmianus* deposited in the UNNEC from November 1990 to May 2016 (220 individuals), we estimate that the percentage of leucistic specimens is approximately 6.8 %. This finding indicates that this small snakes can reach adulthood and surviving in their natural habitat. From total of 15 individuals of *A. brongersmianus*, the majority of specimen (73%) were captured from October to December coinciding with the warm months of the year (Table 1). We found gonadal activity in females and males of *A. brongersmianus*. On 12 January 2012, one female collected (UNNEC 11433) laid one egg, the embryonic stage post-oviposition was 36 (see Sandoval *et al.*, 2020). Our observations confirm that the phenotype of these individuals does not affect their matting success. Systematic sampling methods throughout the year are necessary to estimate the persistence the individuals with chromatic aberrations in the wild.

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