
On 3 March 2010 we collected a DOR adult Burrowing Owl (Athene cunicularia). During examination of the stomach contents, a Leptodaclylus fuscus was found along with 5 orthopterans, 5 coleopterans, and some unidentified material. One leg of the frog was well digested. The almost intact head and sacral region allowed identification. The owl was run over at km 46.7 at 0750 h on the route ES-060, a highway located in the Municipality of Guarapari, State of Espírito Santo, Brazil.


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LEPTODACTYLUS AFF. MARMORATUS. ALBINISM. Leptodactylus aff. marmoratus is a frog widely distributed in the Atlantic Forest of northeastern Brazil (Freitas and Silva 2005. A Herpetofauna da Mata Atlântica Nordestina, Pelotas: Editora USEB). Here, we report an adult albino L. aff. marmoratus (17.2 mm SVL) collected on 14 June 2011 at 1530 h in the Parque Estadual de Dois Irmãos, municipality of Recife (8.00265°S, 34.942679°W, WGS 84) Albinism in adult anurans is rare in nature (Rodrigues and Oliveira Filho 2004. Herpetol. Rev. 35:373–373). This report is the first record of an albino Leptodactylus aff. marmoratus. The specimen was deposited in herpetological collection at the Universidade Federal de Pernambuco/Unidade Acadêmica de Serra Talhada - UFPR/UFJ- (CHUFPRF 1100), Serra Talhada, Pernambuco, Brazil.

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LITHOBATES AREOLATUS CIRCULOSUS (Northern Crawfish Frog). THWARTED PREDATION. Heemeyer (2011. Thesis, Dept. Biology, Indiana State Univ.) has shown that snakes are major predators of Crawfish Frogs, but that frogs in burrows are 11.7 times less likely (deaths/day) to be preyed upon than frogs exhibiting breeding migrations or ranging behaviors. What is not clear is whether Crawfish Frogs in burrows are simply avoiding snakes, or whether burrows allow Crawfish Frogs to successfully defend themselves. When not breeding, Crawfish Frogs spend most of their time (up to 11 mo/yr) in or immediately adjacent to crayfish burrows (Heemeyer 2011, op. cit.). Crawfish Frogs will generally use the same burrow throughout the year unless forced to abandon it, for example, due to flooding (Heemeyer and Lannoo 2011. Herpetol. Rev. 42:261–262). This fidelity to specific burrows has allowed us to follow individual frogs for long periods of time using Cuddeback® (Non Typical Inc.) wildlife cameras set to photograph at 1-h intervals (the minimum interval programming allows; Hoffman et al. 2010. Bioscience 60:829–834). This monitoring effort has serendipitously allowed us to address the question of Crawfish Frog defense. On its feeding platform, a Crawfish Frog will typically position itself facing its burrow entrance, and when frightened will jump into the burrow, crawl a short ways down the burrow, then turn around to face the burrow entrance. Frogs in this position are usually within 7.5–15.0 cm of the soil surface (Thompson 1915. Sci. Pap. Univ. Michigan 10:1–7).

On 4 July 2011, Cuddeback® images showed that Frog 26 (110 mm SVL, 128 g) was out of its burrow most of the morning and early afternoon, through 1400 h (Fig. 1A). One hour later a Black Racer (Coluber constrictor) was photographed working the burrow entrance (Fig. 1B). One hour after that, the frog had not re-appeared (Fig. 1C), and in fact did not appear for another four hours, until 2000 h, when it assumed the same position it held at 1400 h (Fig. 1D). Black Racers will prey on Crawfish Frog adults and juveniles (Heemeyer 2011, op. cit.). A 110 cm total length Black Racer took a 97 mm SVL Crawfish Frog on 5 June 2010, and a 85 cm SVL Black Racer took a 105 mm SVL Crawfish Frog on 10 August 2010. From these data we suspect that the snake in Fig. 1 was large enough to have eaten Frog 26. Skin secretions from numerous dorsal granular glands of Crawfish Frogs exhibit antimicrobial properties (Ali et al. 2002. Biochem. Biophys. Acta 1601:55–63) rather than antipredatory properties, but see Heemeyer et al. (2010. Herpetol. Rev. 41:475). Altig (1972. Quart. J. Florida Acad. Sci. 35:212–216) has shown Crawfish Frogs
PELOPHYLAX LESSONAE (Pool Frog). PREDATION AND REINTRODUCTION. During surveys to monitor the reintroduction of the northern clade of *Pelophylax lessonae* at a site in Norfolk, UK (Buckley and Foster 2005. Reintroduction Strategy for the Pool Frog *Rana lessonae* in England. English Nature Research Report 642, Peterborough, UK) a male Grass Snake (*Natrix natrix*, 615 mm TL, 52 g) with a large prey bulge was captured (2 Aug 2009) and placed in a cloth bag, whereupon it regurgitated an adult male *P. lessonae* (58 mm SUL). The distal part of the left hind leg and most of the right hind leg had been digested, so body weight could not be measured directly. However, northern clade *P. lessonae* of this SUL weighed 20 g (J. Buckley and J. Foster, unpubl. data), a relative prey mass of 0.38.

*Natrix natrix* feed primarily on amphibians, taking species depending upon availability (Gregory and Isaac 2004. J. Herpetol. 38:88–95). The frogs in this reintroduction program originate from Sweden where *N. natrix* also occur and presumably prey on this species. Nevertheless, at the present site anurans were scarce prior to the reintroduction of Pool Frogs. The current observation indicates that *N. natrix* there are able to exploit this new prey species, as they have been found at a site in southeast England where they feed on the congeneric *P. ridibundus*, an introduced non-native species (Gregory and Isaac, op. cit.).

Grass Snakes are abundant at the reintroduction site but their impact on the Pool Frog program is unknown. The frog ingested was a relatively large male: mean SUL for males = 52 mm, range = 42–63, N = 54; females are a little larger, mean SUL = 54 mm, range = 42–74, N = 61 (J. Buckley and J. Foster, unpubl. data). Grass Snakes at this site are relatively small, although large adults in the population grow to 700–800 mm TL (unpubl. data), presumably large enough to prey on all sizes of *P. lessonae*.

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PHYSALAEMUS ERIKAE. DEFENSIVE BEHAVIOR. One of the most common defensive strategies performed by some species of the family Leituporidae is the elevation of the pelvic region, during which large dark inguinal glands are shown to potential predators (Duellman and Trueb 1994. Biology of Amphibians. McGraw-Hill Publ. Co., New York. 670 pp.).

*Physalaemus erikae* is endemic to southern Bahia, Brazil and can be found on the borders of Atlantic Rainforest fragments, clearings, and cacao plantations (Cruz and Pimenta 2004. J. Herpetol. 38(4):480–486). This species also shows inguinal glands, however these are much smaller than in other species that show the above-described defensive display.

On 10 Oct 2009, in the municipality of Urucuca we collected three *P. erikae* in a temporary pond near a cacao plantation. During a photo session in the laboratory one of the frogs (MZUESC 8417) assumed a defensive posture, lifting the body and opening its mouth when we pointed a finger in its direction. In most cases, the frog opened its mouth at the approach of the finger and closed it soon after, but in some cases the frog kept the mouth open even after the finger was removed. This behavior lasted about 90 seconds and was not displayed again by any of the collected frogs.

This behavior has been described for other amphibian species, but generally the behavior is more complex than the one related here. *Hemiphractus fasciatus* shows its orange tongue during the month opening display and may try to bite a predator; notably this species has a pair of odontoids on the lower jaw that are able to pierce human skin (Myers 1966. Herpetologica 22:68–71). When threatened, *Calyptrotepehaella gayi* inflates the lungs, raises its body, opens its mouth, emits loud vocalizations, and may even jump towards the potential predator (Veloso 1977. Herpetologica 33:434–442).

The defensive behavior observed in *P. erikae* is less complex, as the frog only adopted a threatening pose without any aggressive action towards the potential predator. This behavior is similar to that observed in species of the genus *Leptopelis* (Perret 1966. Zool. Jahrb. Syst. 93:289–464). Our report is the first case of this type of behavior in a species of the family Leituporidae.

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