



FIG. 1. *Leptodactylus podicipinus* with three types of malformations: A) Left limb: only two digits are present (ectrodactyly) and both are short (brachydactyly); Right limb: ectromelia of the humerus and radio-ulna, digits are absent; B) Ectromelia of the tibiale and fibulare - the right ankle joint is present, indicating that the tibiale and fibulare are present, incomplete and the digits are absent.

in this species for the first time: ectrodactyly, brachydactyly, and ectromelia (Fig. 1). The specimens were deposited in the Herpetological Collection of Universidade Federal do Amapá (CECCAMPOS 00913, 01245; ICMBio collecting permit number 34220-2). The malformations are potential signals of ecosystem disruption, and the additional influence that this might have on other sympatric organisms is an important research priority. Further work at this site should include monitoring and wetland conservation plans in order to reduce the direct impact of human activities.

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**OOPHAGA PUMILIO (Strawberry Poison Frog). PREDATOR-PREY INTERACTIONS.** While a wide variety of vertebrates and invertebrates prey upon anurans (Toledo 2005. Herpetol. Rev. 36:395–400), very little is known about predators that attack and reject (or avoid) frogs with chemical defenses. Poison frogs are chemically defended by skin alkaloids, which are thought to be effective at deterring potential predators due to their unpalatability and/or toxicity (for review, see Saporito et al. 2012. Chemoecology 22:159–168). Anecdotal reports of successful predation upon dendrobatid poison frogs (Dendrobatidae) include an ant, fish, amphibian, and bird, as well as spiders and snakes (Alvarado et al. 2012. Herpetol. Rev. 44:298; Lenger et al. 2014.



FIG. 1. Attempted predation by an adult *Phrynus pseudoparvulus* on an adult *Oophaga pumilio* (Strawberry Poison Frog) at the Caño Palma Biological Station, Tortuguero, Costa Rica.

Herpetol. Notes 7:83–84); however, avoidance of these frogs due to their alkaloid-based defenses has only been reported in certain spiders, ants, and snakes (reviewed in Santos and Cannatella 2011. Proc. Natl. Acad. Sci. 108:6175–6180). Herein, we report an attempted predation event and subsequent rejection of the dendrobatid poison frog *Oophaga pumilio* by an amblypygid *Phrynus pseudoparvulus* (Tailless Whip Scorpion) from the Caño Palma Biological Station, Tortuguero, in northeastern Costa Rica (10.5936°N, 83.5278°W, WGS84).

*Oophaga pumilio* is conspicuously colored, terrestrial, and diurnal, and inhabits Caribbean lowland tropical rainforest from Nicaragua, through Costa Rica, and into Panama (Savage 2002. The Amphibians and Reptiles of Costa Rica. University of Chicago Press, Chicago, Illinois. 382–388 pp.). Amblypygids are opportunistic, nocturnal arachnid predators that prey mostly on arthropods (Armas and Viquez 2001. Rev. Ibér. Arac. 4:11–15), though they are also known to consume small vertebrates, including frogs (Toledo 2005. Herpetol. Rev. 36:395–400; Hernández et al. 2012. Herpetol. Rev. 43:465). At 2120 h on 30 May 2015, we observed an adult *P. pseudoparvulus* on a rotting log approach and seize the body of an adult *O. pumilio* that had been climbing the log (Fig. 1). Immediately after attacking (and similarly to predation attempts by ants and spiders reported in Santos and Cannatella 2011, *op. cit.*), the amblypygid released the frog and briefly wiped its pedipalps/chelicerae, potentially as a result of coming into contact with the frog's unpalatable alkaloids. The frog appeared unharmed after the predation event and quickly hopped away. Although *O. pumilio* is primarily diurnal, they can sometimes be found moving through the leaf-litter or on vegetation at night (Hilje and Yglesias 2010. Herpetol. Rev. 41:65), which would expose them to predators that are nocturnally active. Furthermore, the amblypygid was missing the post-femoral part of its left antenniform leg, and approached only after the frog's front right leg brushed against its outstretched right antenniform leg. Given that chemoreceptors on the pedipalps and/or chelicerae appear to have detected alkaloids, leading to rejection of the frog as a prey item, this suggests that undetectable quantities of alkaloids were present on the frog's leg, or that chemosensation associated with the amblypygid's antenniform legs may have been impaired. To our knowledge,

this represents the first report of both attempted predation and active avoidance of a dendrobatid poison frog by an amblypygid.

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**OOPHAGA VICENTEI** (Vicente's Poison Frog). **HABITAT USE.** This diurnal species is considered to be an exclusive tree-dweller with reproductive behavior that strongly depends on existence of bromeliads (Löters et al. 2007. *Poison Frogs. Biology, Species & Captive Husbandry*. Edition Chimaira, Frankfurt am Main. 668 pp.). This species bears potent skin alkaloids that must be acquired through its diet of leaf-litter arthropods (Saporito et al. 2004. *Proc. Natl. Acad. Sci. USA* 101:8045–8050; Saporito et al. 2009. *Heterocycles* 79:277–297). Here, we report the observation of a female *Oophaga vicentei* wandering and foraging on the forest floor. This species, similar to other members of the genus, are rarely seen on the ground (Myers et al. 1984. *Am. Mus. Nov.* 2783:1–20).

At 1019 h on 18 March 2014, at Isleta town (8.5467°N, 81.1282°W, WGS84; 571 m elev.), Santa Fe District, Veraguas province, Republic of Panama, we observed a female *Oophaga vicentei* wandering and foraging on the ground. The area is a primary premontane tropical forest with high slopes (> 30%), where the species is normally heard vocalizing above 15 m high in the trees and rarely seen. Our observation might suggest that this species is not fully tied to an arboreal lifestyle, adding to previous habitat descriptions for the species (see Jungfer et al. 1996. *Herpetofauna* 18:17–26). Interestingly, in some terrestrial poison frogs like *Dendrobates auratus*, the male may climb up high on trees searching for bromeliads to transfer tadpoles from the ground (Summers 1989. *Anim. Behav.* 37:797–805) and in *Oophaga pumilio* a female transferred a tadpole as high as 12 m up a tree (Young 1979. *Biotropica* 11:238–239). Our observed female was not carrying any tadpole when seen; therefore it is uncertain whether this behavior was driven by reproduction. As most of the known behavior of *O. vicentei* is based on captive observations, more research on this species in the wild is needed.



FIG. 1. Female *Oophaga vicentei* that was observed on the ground.

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**PAPURANA ELBERTI** and **DUTTAPHRYNUS MELANOSTICTUS** (Asian Common Toad). **INTERSPECIFIC AMPLEXUS.** The Lesser Sunda Islands of eastern Indonesia are oceanic islands with a small assemblage of anuran fauna that have colonized the region by over-water dispersal. The island of Sumba contains only five native frogs: *Fejervarya cancrivora* (Crab-eating Frog), *Litoria everetti* (Everett's Tree Frog), *Polypedates leucomystax* (Four-lined Tree Frog), *Kaloula baleata* (Flower Pot Toad), and *Papurana elberti*. We conducted field surveys at the northern edge of Laiwangi Wanggameti National Park (Desa Priang Kareha, Kecamatan Tabundung, Kabupaten Sumba Timor) on the southwestern portion of the island and encountered a large stream flowing over limestone cliffs in a densely forested habitat. The only frogs found in this stream were *P. elberti* and a very large number of *Duttaphrynus melanostictus* (Asian Common Toad). This finding represents a new geographic distribution record for *D. melanostictus* (see Reilly et al. 2016. *Herpetol. Rev.* 47, *in press*). *Papurana elberti* is restricted to Sumba, Timor, and Wetar Islands, while *D. melanostictus* is native to southern Asia and the Greater Sunda Islands of Java and Sumatra. While conducting a night survey of the stream on 24 October 2012, we found a male *P. elberti* amplexing a male *D. melanostictus* (10.0210°S, 120.0579°E, WGS 84; 348 m elev.) (Fig. 1). Although the individuals observed in amplexus were not collected, other specimens from this expedition are housed at either the Museum of Vertebrate Zoology (MVZ), Berkeley, California, USA or at the Museum Zoologicum Bogoriense (MZB), Cibinong, Indonesia.

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FIG. 1. A male *Papurana elberti* in amplexus with an introduced male *Duttaphrynus melanostictus* on the island of Sumba, Indonesia.

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