

SHORT COMMUNICATION

Parental care and altitudinal range extension of the endemic frog *Bryophryne gymnotis* (Anura: Craugastoridae) in the Andes of southeastern Peru

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Parental care is employed by some animals to increase the probability of survival of their offspring (Clutton-Brock 1991) at the expense of energy and time investment by the parents (Wittenberger 1981, Crump 1996, Townsend 1996, Cheng and Khan 2010).

Amphibians have developed different strategies to protect eggs, tadpoles, and froglets. Seven modes of parental care are known: egg attendance, egg transport, tadpole attendance, tadpole transport, tadpole feeding, internal gestation, and froglet transport (Wells 1981, Crump 1995, 1996, Diesel *et al.* 1995, Bickford 2002, Cheng and Khan 2010).

Brachycephaloidea (Terrarana) includes 1073 species (Frost 2017), 57 of which are known to provide parental care (e.g., Townsend 1996, Vargas-S. and Castro-H. 1999, Mendoza-Quijano *et al.* 2002, Ryan *et al.* 2010, De la Riva and Burrowes 2014). In Peru, seven species of Craugastoridae are known to exhibit parental care: *Bryophryne cophites* (Lynch, 1975) (Catenazzi 2006), *Lynchius oblitus* Motta, Chaparro, Pombal, Guayasamin, De la Riva, and Padial, 2016 (Motta *et al.* 2016), *Phrynopus curator* Lehr, Moravec, and Cusi, 2012 (Lehr *et al.* 2012), *Pristimantis attenboroughi* Lehr and von May, 2017 (Lehr and von May 2017), *P. buccinator* (Rodrigues, 1994) (Carrillo and Catenazzi 2007), *P. colodactylus* (Lynch, 1979), and *P. lymani* (Barbour and Noble, 1920) (Duellman and Lehr 2009).

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Bryophryne gymnotis was described by Lehr and Catenazzi (2009) based on specimens from montane cloud forests of San Luis (type locality; 13°04'32.1" S, 72°22'55.3" W), Distrito de Huayopata, Provincia de La Convención, Departamento Cusco, between 3272 and 3354 m a.s.l., and was found under mosses, leaf litter, logs, and rocks. One unattended clutch was described in the original description (Lehr and Catenazzi 2009).

On 24 May 2014 during an expedition to the San Luis Private Conservation Area, we found five nests of *B. gymnotis* amid ground mosses within a 10 × 10 m leaf litter plot in the montane scrub (13°04'19" S, 72°22'87" W, 3530 m a.s.l.). Three females attended nests containing 16 eggs in Stage 3 (Townsend and Stewart 1985; Figure 1A), 14 eggs in Stage 1 (Figure 1B), and 15 eggs in Stage 3 (Figure 1C). The remaining two nests containing nine and 10 eggs were unattended. During another visit on 1 November 2016, we found three nests with eggs in Stage 13, all attended by females (Figure 1D–F).

Our observations document the second case of parental care by females in the genus *Bryophryne*, in addition to *B. cophites* (Catenazzi 2006). Our observations expand the known altitudinal distribution of *B. gymnotis* from the montane cloud forest at 3354 m to the transitional montane scrub at 3530 m, just below the wet grasslands (puna).

Tropical forests are regulators of water fluxes, climate stability, carbon retention, and other processes (Balvanera 2012, Wohl *et al.* 2012). This important area protects montane forest and humid grassland. Previously, this area has been subjected to logging, overgrazing, and burning (G. Toledo, pers. comm.). The creation of the San Luis Area of Private Conservation (MINAM 2015) will guarantee the conservation of this ecosystem and maintain gene flow among organisms in this significant biological corridor.

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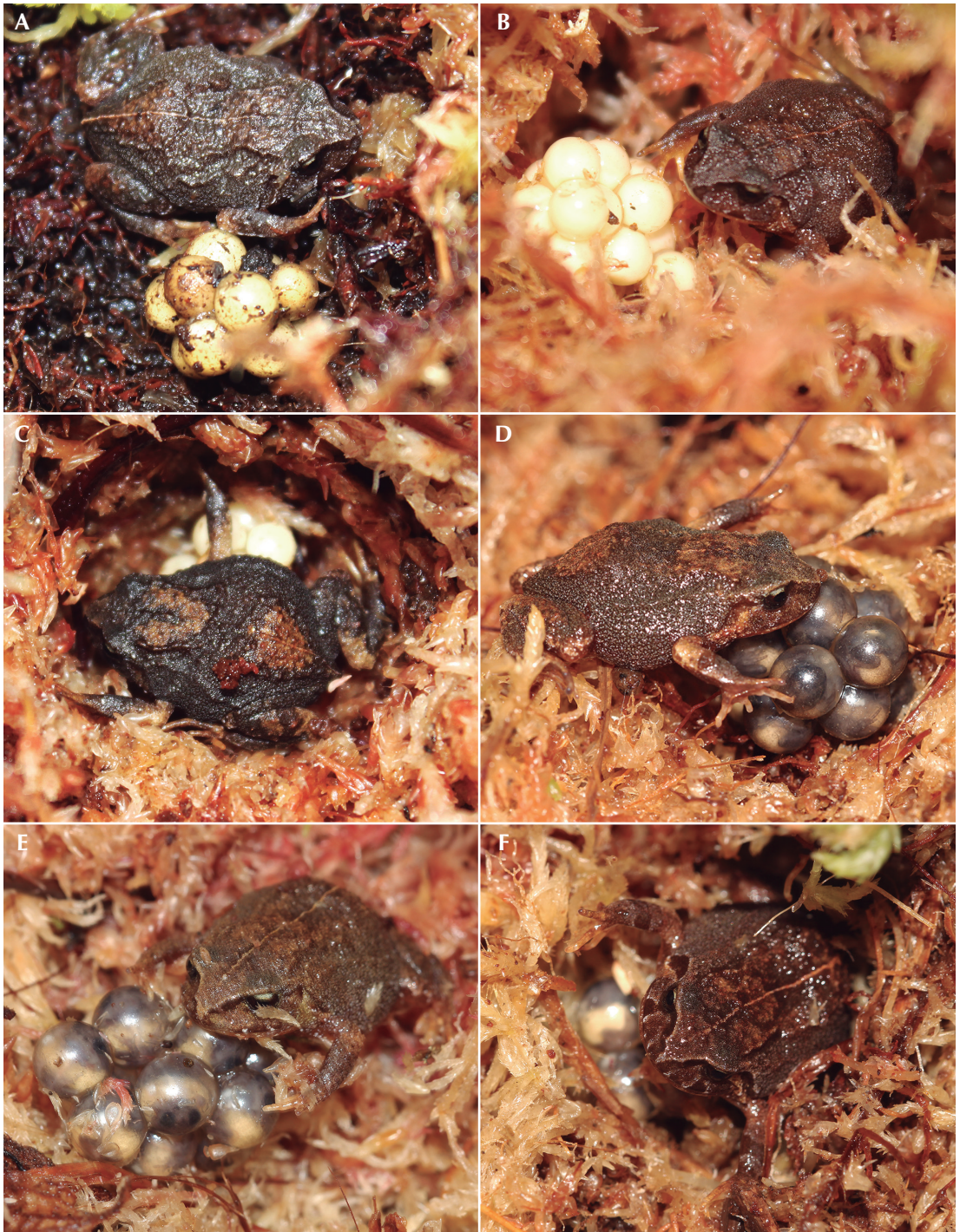


Figure 1. Females of *Bryophryne gymnotis* (unvouchered specimens) attending egg clutches. Photos: Luis Mamani.

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