Several lineages of anurans around the world use foam for the protection of eggs after deposition, suggesting that it is probably a convergent behaviour among them (Heyer, 1969; Duellman and Trueb, 1994; Seymour and Loveridge, 1994). However, the construction of foam nest is a particular reproductive strategy observed in some leptodactylids, which allowed them to successfully establish in semi-dry environments such as savannas, during the Miocene (Heyer, 1975). This behaviour represents one of numerous strategies evolved in tropical and subtropical frogs to protect their eggs and develop tadpoles to deal with environmental challenges like dehydration, predation, and microbial degradation (Hodl, 1986; Downie, 1988, 1990, 1993; Menin and Giaretta, 2003; Cooper et al., 2005).

Usually, the foam is generated by the male through a series of kicks during the amplexus, in a combination of movements which may vary according to the species, but that commonly involve bouts of activity and rest (Heyer, 1977). However, this behavior can involve both sexes in *Leptodactylus latrans* (pers. obs.). Some species of *Pleurodema* and *Physalaemus* occasionally produce communal foam nests (Ryan, 1985; Hold, 1990, 1992; Cardoso and Arzabe, 1993; Barreto and Andrade, 1995; Giaretta and Menin, 2004; Zina, 2006; Giaretta and Gomes Facure, 2006; de Lacerda et al., 2010). The survival rate of eggs and tadpoles in communal foam nests is greater than in an individual nest (Zina 2006). The lower surface to volume ratio of communal nests increases the resistance of the nest to desiccation by retaining higher humidity for longer periods. Zina (2006) suggests that communal nesting, particularly in species with small foam nest could represent an important adaptive advantage for survival in dry environments, such as savannas and dry forests.

Although communal nesting is a facultative behaviour of some species of leptodactylids, there is only a few reports of this reproductive strategy in nature (de Lacerda et al., 2010). In this paper, we report for the first time an observation of a communal nest in *Physalaemus gracilis* from Montevideo, Uruguay. The observation was made on January 5, 2013 at 3:40 am in an artificial semi-permanent pond of 115 m² of surface and 40 cm of depth (-34.850086; -56.365106, WGS84, elevation: 27 m). The foam nest was on the margin of the water body, and had an oval shape of 200 mm of major axis and 120 mm of minor axis (Fig. 1). Five pairs were observed simultaneously in amplexus, one of them was collected and deposited in the vertebrate collection of the Facultad de Ciencias, Universidad de la República, Uruguay (ZVC-B 23222; ZVC-B 23223). Unlike previous observations (de Lacerda et al., 2010) of *Physalaemus* sp. (aff. *olfersii*), males were alternately giving kicks to the generation of foam nest. The general shape of the foam nest reported here was the same observed by these authors in Brazil.

Hold (1992) and Giaretta and Facure (2006) have mentioned that the occurrence of communal foam nests could result unintentionally from massive aggregations of adults during reproduction (Hold, 1992; Giaretta and Facure, 2006). Additionally, in some species, the distribution of resting supports for egg-laying seems to influence the formation of communal nests (Hold, 1990; Giaretta and Menin, 2004; Giaretta and Gomes Facure, 2006). There was a relatively low density of adults in the pond (approximately 15) and only two individual nests were observed in addition to the communal. *Physalaemus gracilis* usually place its foam nest among aquatic vegetation in shallow water (Langone, 1995; Camargo et al., 2005; Maneyro and Carreira, 2013), thus resting supports does not seem to play an important role.
for egg-laying females as in other species. Therefore, it seems that adult density and the physical structure of the pond were not related to the communal nest. Moreover, if we consider that the observation was made in one of the hottest months of the year, and that the pond dried after three days, it is plausible that the formation of the communal nest may be related to a strategy to avoid dehydration, as pointed out by Zina (2006).

References


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