Amplexus is the typical mating embrace of amphibians, which may be either inguinal, the ancestral mode, or axillary, which is considered to be the derived condition (Duellman and Trueb, 1994). There are many other different types of embrace, however. Indeed, Mollov et al. (2010) listed seven types of atypical amplexus or “aberrations” in amphibian mating behaviour, including multiple amplexus (involving two or more males and one female), abdominal amplexus, amplexus between a living male and a dead female (see Müller, 2016), heterospecific behaviour, i.e., amplexus involving different species, and amplexus between a male and an inanimate object, and between two males (see Theis and Caldart, 2015). Amplexus between anurans and caudates has also been observed (Moldowan et al., 2013; Simović et al., 2014).

The toads of the family Bufonidae are explosive breeders, a reproductive mode that is often subject to unusual forms of amplexus due to the indiscriminate behaviour of the males during breeding events (Hartel et al., 2007). Heterospecific amplexus has been observed in a number of bufonid species, resulting from the inability of the male to recognize conspecific females (Marco and Lizana, 2002; Yu and Sharma, 2012). Release calls are emitted by male toads when these are engaged in amplexus by other males (Stebbins and Cohen, 1995). These calls normally lead the male that actively embraced the other to stop the behaviour and release the other individual (Howard and Young, 1998).

In the present study, we report on an observed case of heterospecific amplexus between the males of two bufonid species, *Rhinella mirandaribeiroi* Gallardo, 1965 and *R. marina* Linnaeus, 1758. Both specimens were deposited in the collection of the Laboratório de Evolução, Campus de Bragança, Universidade Federal do Pará (J0A1_14 and J0A2_14). The event was recorded on 1st February, 2014, during the visual monitoring of a pond in the village of Joanes, on Marajó Island, in the Brazilian state of Pará (0.8431 S, 48.5135 W; 13 m a.s.l.). Monitoring was conducted over the nine-hour period between 18:00 h and 03:00 h. Males of both species (*R. marina* and *R. mirandaribeiroi*) were the first individuals to arrive at the pond during this period, and start to call. Homospecific amplexus was observed between the males of both species, although the behaviour was invariably terminated by the emission of release calls, i.e., release calls were effective in interrupting amplexus between males of the same species. Amplexus was also observed between males of *R. marina* and inanimate objects found in the pond, including stones and coconuts. At around 23:00 h, a male of *R. marina* was amplexed by a *R. mirandaribeiroi* male (Figure 1). The amplexus was not interrupted either by calls, emitted by both males, or by the male of *R. marina* inflating its body, and the amplexus continued until the end of the observation period (03:00 h, i.e., at least duration of four hours). Females of *R. marina* arrived at the pond at around midnight, when they began engaging in amplexus with conspecific males.

Amplexus involving males of the two species has been observed previously (Machado and Bernarde, 2011; Sodré et al., 2014). Atypical amplexus may be a by-product of the explosive mode of reproduction,
due to the relatively short duration of breeding events, reinforcing the indiscriminate amplexing behaviour of the males, which will tend to encourage the selection of mates by trial and error (Wells, 2010).

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References


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Figure 1. Heterospecific amplexus between male *R. marina* and *R. mirandaribeiroi* (A). The *R. mirandaribeiroi* male in detail (B).