Although a lot of variables that influence life history of an organism exist, defensive ability of prey could lead to an improvement in the ability to explore its environment and consequently obtain resources (Sinclair and Arcese 1995; Lima, 1998, Downes, 2001). Large repertoires of defensive tactics have been described for many snakes (Martins and Oliveira, 1998; Sawaya et al. 2008; Martins et al. 2008; Fiorillo 2016), however, there are many gaps in our knowledge, and even for the best-known species, details about defensive behaviours are still being described (e.g. Marques et al. 2001; Martins et al. 2008; Menezes et al. 2015). Understanding prey/predator interactions like those between snakes and their potential predators (mammals, birds, reptiles and invertebrates) is an important step towards a better knowledge of the ecology and evolutionary biology of the species involved (Greene, 1988). Brodie et al. (2002) provide evidence that geographic structure is an important component in coevolutionary interactions between garter snakes and their preys (newts) in which resistance levels of snakes to newts toxins vary substantially.

The genus *Gomesophis* Hoge & Mertens 1959 includes only *Gomesophis brasiliensis* (Gomes, 1918; Figure 1), a rare species that is infrequently encountered (Marques et al. 2001). It occurs in the following Brazilian states: Distrito Federal, Minas Gerais, São Paulo, Paraná, Santa Catarina, and Rio Grande do Sul (Peters and Orejas-Miranda, 1970; Prudente and Brandão, 1998; Fortes et al. 2010; Gonzalez et al. 2014). This species is associated with lentic environments such as swamps, floodplains (Amaral, 1932), being found also in ponds in forests (Lema, 2002). Its diet includes earthworms and it shows a seasonal reproduction pattern, associated with the rainy season (Marques et al., 2001; Oliveira et al., 2003).

A few antipredatory displays such as dorsoventral neck compression and hiding the head have been previously reported for *G. brasiliensis* (Amaral, 1932; Marques et al. 2001; 2015). Here we present four new defensive displays for the species, recorded during a field study conducted from September 2015 to August 2016 at the Serra do Papagaio State Park (22° 8’ S, 44°43’ W; 1730 m a.s.l.), municipality of Baependi, Minas Gerais. We found a total of seven individuals of *G. brasiliensis*, from which we could observe seven different defensive behaviours: (1) cloacal discharge (contents of the cloaca are expelled), (2) gaping (display of buccal mucosa), (3) making neck S-coil, (4) striking, (5) escape, (6) burying itself in the mud, and (7) hiding the head. An individual that was manipulated in a swamp area buried itself in the mud and remained still after that (fig. 1B). When touched in the head region, all individuals curled, hiding the head (fig. 1D). The most frequent of these behaviours was cloacal discharge (fig. 1E). Escape behaviour was observed in an individual that sensed the proximity of the researcher, launching itself inside a small stream. Gaping (oral mucosa display), neck s-coil, and strikes were displayed by a single individual, an adult male (Fig. 1A and 1C).

Snake defensive displays could be related to habitat use (Martins et al., 2008). The cryptic coloration in *G. brasiliensis* associated with the burying habit in...
swampy environments may decrease the possibility of detection by visually oriented predators (e.g., birds; Martins et al., 2008). Therefore, visual displays (gaping, oral mucosa display and neck s-coil and strikes) would be exhibited less frequently. The most frequent anti-predator tactic observed was cloacal discharge. This is a common defensive tactic presented by snakes (Martins and Oliveira, 1998; Marques et al. 2001; 2005; 2015). Defence seems to be less conservative than other aspects of Neotropical snakes (e.g., feeding habitats, habitat use, and reproduction; Martins and Oliveira, 1998; Martins et al. 2002; Martins et al., 2008). However Martins et al. (1996) suggest that defensive tactics seem to correlate with phylogeny. The cloacal discharge behaviour may have been the most observed, simply because it is a common behaviour, with low energy costs and because it is well established among snakes in their evolutionary history.

Acknowledgements. The authors are grateful to Instituto Estadual de Florestas (IEF) for permission to work at the park, Marcio Martins for reviewing an earlier draft of the manuscript, Marcelo Ribeiro Duarte for suggestions on the manuscript, CAPES for financial support, and Emmanuel M. J. Landroz and Clarice N. L. Silva for fieldwork assistance.

References

Figure 1. Gomesophis brasiliensis, from Serra do Papagaio State Park, municipality of Baependi (Minas Gerais, Brazil), displaying defensive behaviours. (A) neck S-coil, (B) burying itself in the mud, (C) gaping, (D) hiding head, and (E) cloacal discharge.
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