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Behavioral responses of *Trachemys dorbigni* (Duméril & Bibron, 1835) (Testudines: Emydidae) facing a potential risk of predation

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Abstract. Behavioral responses in front of potential predation risks are critical for survival and diverse among reptiles. *Trachemys dorbigni* (Duméril & Bibron, 1835) (Testudines: Emydidae) is a terrapin species of the Family Emydidae with geographical distribution along Southern South America. Here, we report behavioral responses displayed by a *T. dorbigni* individual facing potential risk of predation. After captured, the individual withdrawn head and limbs into the carapace and, shortly after released, it ran toward a deeper region of a pond and dig the muddy substrate through movements of its carapace and paws burying itself into the mud submerged in water. Withdrawal into the carapace, flight into water or a burrow, and similar burial behaviors occur in Testudines, but until now they were not reported in *T. dorbigni*. These animals might use the behavioral responses reported here when facing risks of predation, which may difficult capturing and therefore increase chances of survival.

Keywords: Defensive mechanisms; Predation; Terrapin; Testudines; Turtle.

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Behavioral responses in front of potential predation risks are critical for survival and are greatly diverse among reptiles (Greene, 1988). *Trachemys dorbigni* (Duméril & Bibron, 1835) is a terrapin species of the Family Emydidae with geographical distribution encompassing Uruguay, Argentina and Brazil that occur in wetlands and in lentic and lotic freshwater environments (Bujes and Verrastro, 2008; Bujes, 2010). Previous studies approached different aspects of the natural history of this species, such as reproduction and the use of spatial and trophic resources (see Bujes, 2010 for a review). Here, we report behavioral

responses displayed by a *T. dorbigni* individual facing a potential risk of predation.

On 15 July 2008, in the Parque Estadual da Serra do Tabuleiro, Restinga (sand dune plains) of the Baixada do Maciambu, Municipality of Palhoça, State of Santa Catarina, Brazil (27º 49' 34" - 27º 49' 39" S, 48º 36' 59" - 48º 37' 27" W), around 15:15 h, we sighted a *T. dorbigni* individual swimming in a pond. We captured the terrapin manually and when we handled the individual, it responded with withdrawn of head and limbs into the carapace (Figure 1A). We released the individual at the margin of the pond where it was caught and, shortly after released, the individual started running toward a deeper region of the pond (Figure 1B) and dig the muddy substrate through movements of its carapace and paws (Figure 1C). The sequence of movements after we released the individual lasted approximately 30 s and, finally, the terrapin buried itself into the mud submerged in water (Figure 1D).

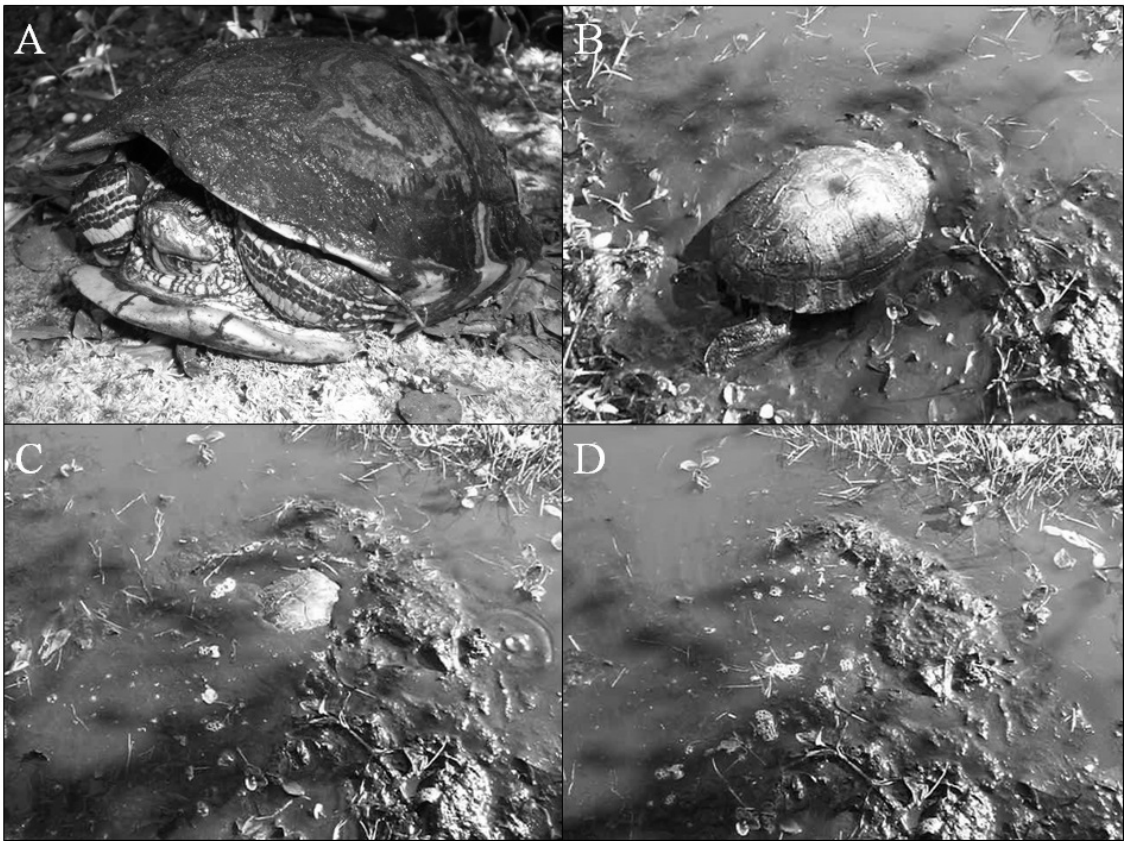

Figure 1. Defensive behaviors exhibited by *Trachemys dorbigni* in the Municipality of Palhoça, State of Santa Catarina, Brazil. When the individual was caught (A) it withdrawn head and limbs into the carapace. Shortly after released, (B) the terrapin started running toward a deeper region of the pond (note the right hind paw extended) and (C) dig the muddy substrate through movements of its carapace and paws. Approximately 30 s after we released the individual, (D) it completely buried itself in mud submerged in water. Note in C and D the mud that emerged from the bottom of the pond due to movements of the terrapin, which is not present in B at the beginning of the individual's locomotor escape. Photographs by Thiago Maia-Carneiro.

Withdrawal into the carapace and flight into water or a burrow is common in testudines (turtles, terrapins, and tortoises - Greene, 1988). Considering the burial, similar behaviors are reported to occur for example in *Terrapene carolina bauri* (Linneus, 1758) (Emydidae) (Jennings, 2007) and in *Phrynops tuberosus* (Peters, 1870) (Chelidae) (Rodrigues and Silva, 2013), but until now these behaviors were not reported in *T. dorbigni*. We made unsuccessful inspections to find the *T. dorbigni* individual sometime after it buried itself, suggesting that it moved under the mud, supposedly for avoidance of the potential risk of predation, which could be a fourth behavioral response. However, as the pond where we captured the terrapin was large and its water muddy and dark, we could not state whether the individual actually slipped into the mud because it was in a shallow part and went out elsewhere in a deeper region of the pond or whether it buried itself in the mud and gone out shortly after the burying. It is worth noting that stressing conditions during manipulation might have influenced the behavioral responses by the *T. dorbigni* individual in Baixada do Maciambu, however, they were analogous to those that may be experienced in real predation attempts.

Both invertebrates (insects - Parris et al., 2002) and vertebrates (fishes, frogs, lizards, snakes, birds, crocodilians, alligators, and humans - Greene, 1988; Gyuris, 1994; Janzen et al., 2000; Bujes, 2010, and references therein, Maia et al., 2012) might be threats for Testudines. These animals might use the behavioral responses reported here (withdrawal of head and limbs into the carapace, locomotor escape, and burial) when facing risks of predation, which may difficult capturing and therefore increase chances of survival.

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Conflicts of interest

Authors declare that they have no conflict of interests.

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