

## The defensive tail display of *Anilius scytale* (Serpentes: Aniliidae)

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The tail display in snakes could be assigned to several contexts, including intraspecific signals for courtship or territorial behavior, luring preys (e. g. Sazima, 1991; Sazima and Puerto, 1993; Hartmann and Almeida, 2001; Martins, Marques and Sazima, 2002), diverting attacks to the tail and/or disorienting predators, warning or intimidating signaling, or more than one of these (Greene, 1973). Most reports mention that tail display in snakes is a response to stress, such as tactile stimulus; if so, it could be suggested that it is usually a response to attack, and has a defensive function (Greene, 1973). The snakes show elaborate antipredator mechanisms and the defensive tail display is widespread throughout the group (Greene, 1988; Sazima and Abe, 1991; Marques, 2000). But in most cases, this behavior is only mentioned or briefly described. For *Anilius scytale* the defensive tail display is already recorded, but it is only briefly mentioned or illustrated (e.g. Greene, 1973, 1988; Martins and Oliveira, 1999; Maschio et al., 2010). Here, I report in detail and illustrate the defensive tail display of *Anilius scytale*.

*Anilius scytale* is a monotypic species of the family Aniliidae that dwells Amazonian forests (Peters and Orejas-Miranda, 1986), and gallery forests in northward Brazilian Cerrado. It is a medium sized fossorial snake (206-1184 mm in total length), also found on the ground or in the water (Martins and Oliveira, 1999). It is reddish orange dorsally, with irregular black bands that could form a checkered pattern (Figure 1). It is yellowish cream ventrally, with ventral extensions of some black bands. The tail is short with a blunt tip.

On 13<sup>th</sup> October 2004, a captive female specimen of *A. scytale* (405 mm snout-vent length, and 15 mm tail length) kept at the Laboratório de Herpetologia of Instituto Butantan performed a defensive tail display,

while it was being photographed in a plastic tray with leaf litter. The display was observed repeatedly after tactile stimulus on that occasion, but the duration of each behavioral sequence was not recorded. The snake was collected around 21:00 h on the street, next to the sidewalk in an urban area of “Bairro Francisca Mendes



**Figure 1.** Defensive tail display sequence of the Red Pipesnake *Anilius scytale* (female, 405 mm SVL, 15 mm TL).

II", Manaus city, Amazonas State, Northern Brazil (M. E. Oliveira, pers. comm.). Just after being placed on the leaf litter, the snake elevated the tail (Figure 1A), and waved it laterally, approximately 90°, exhibiting its ventral yellowish part (Figure 1B). Always with tail elevated, the snake sometimes moved to the front and back, and folded it up above the body, upwards, maximizing the exhibition of the yellowish venter (Figure 1C). The snake also hid the head under its body while performing the tail display (Figures 1A and 1C).

The defensive tail display occurs in several species of different snake families, being already recorded in Aniliidae, Cyliodrophiidae, Elapidae, Colubridae and Dipsadidae (cf. Greene, 1973; Sazima and Abe, 1991; Marques, 2000). So it could be considered as a basal trait in snakes, but most probably it has evolved independently several times throughout the group. The very similar tail display of *Erythrolamprus aesculapii* (family Dipsadidae) and *Simophis rhinostoma* (family Colubridae) has been considered convergent and mimetic with *Micrurus* species (Elapidae; Sazima and Abe, 1991). Therefore, at least in colubrids, tail display may have evolved independent of that one in *Anilius* and other basal groups. The tail display of *Anilius* and some species of *Cylindrophis* (e. g. *C. ruffus*, *C. maculatus*) is different from that of *Erythrolamprus*, *Simophis*, and *Micrurus* (cf. Sazima and Abe, 1991), as it does not form a complete circle. It is probably a result of phylogenetic morphological constrains of those basal snakes that have relatively shorter blunt tails. The defensive tail display of *A. scytale* could be a mimetic behavior as well, as it is sympatric and syntopic with many forms of venomous snakes of the genus *Micrurus*. Moreover, could also be related to disorienting predators, an intimidating signaling, and/or diverting attacks to the tail, as the snake also hides the head under its body.

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