

Antipredator behavior in the Aruba Whiptail (*Cnemidophorus arubensis* Wagler)

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A common response among lizards to the approach of a predator is to attempt to avoid detection by moving out of the predator's view. This may involve moving to the opposite side of a twig or tree trunk, moving into a burrow, or moving into vegetation or other structures (McElroy 2019). Here, I report an unusual behavior to avoid detection in the Aruba Whiptail (*Cnemidophorus arubensis*), a teiid endemic to the island of Aruba. This behavior involves movement into a shadow in the open, with no further concealment.

The observations reported here occurred between 11.00 and 11.30 h during sunny weather on 30 December 2023, at Natural Bridge. Aruba Whiptails are plentiful at and near the fence along the south edge of the parking lot (12.540833, -69.958611, elevation 13 m asl) and among the boulders and vegetation (mainly grass, with scattered shrubs and forbs) to the west and southwest of the parking lot. The whiptails at the fence responded to the approach of a human by moving into the shadow of the fence and allowing the human to approach more closely, to within 2 m. A continued approach prompted the lizards to retreat into a thicket of low-growing fabacean shrub immediately south of the fence.



Figure 1. Aruba Whiptails (*Cnemidophorus arubensis*) in the shadow of a fence, having moved there in response to approaching humans. (A) Adult male (photo by the author). (B) Same adult male (circled) (still from video by the author (Senter 2024a)). (C) Second adult male with adult female (both circled) (photo by Jennifer Senter).

The fence consists of vertical wooden posts, an upper wooden rung, and a lower wooden rung, forming a series of horizontal rectangles. Within each rectangle is a pair of diagonal wooden beams configured in an "X." The lizards that allowed a close approach remained within the shadow of a post, rung, or diagonal beam, as long as a human was present. In some cases, the lizard would remain motionless, and in other cases, the lizard would resume walking but remain within the shadow of the fence. In all cases, the lizard was on the concrete of the parking lot, under the open sky, with no further cover than the shadow of the fence. The lizards behaved as if the shadow was sufficient cover, with no further concealment necessary (Senter 2024a, b). Indeed, it made them less conspicuous to the human eye, although not invisible (Fig. 1). Jennifer Senter and I observed this behavior in multiple individuals. We did not keep count, but our photos and videos record this behavior in at least two adult males and at least two adult females. When no human was nearby, whiptails on the unshaded portion of the concrete of

the parking lot exhibited no behavior that indicated discomfort related to high temperature. Their retreat into the shadow of the fence in response to a human approach is therefore unlikely to be related to the temperature of the unshaded concrete surface.

The response of the whiptails among the boulders to the west and southwest of the parking lot was different. I approached several adult males and females there for photography and video footage, and each lizard fled before I could get within 4 m of it. None stayed in the open. Instead, all fled into concealment amid vegetation or behind boulders. Some employed the arm-waving display that is well known in this species, immediately before or during fleeing from me. This display, which consists of circumducting the forelimb at the shoulder, is known both in *C. arubensis* and in its congeners on Curaçao (*C. murinus*) and Bonaire (*C. ruthveni*) (Baird et al. 2003; Cooper et al. 2004; van Buurt 2005, 2011). Previous observers have noted that the display occurs in response to an approaching human (Baird et al. 2003; Cooper et al. 2004; van Buurt 2005, 2011), and field experiments with *C. ruthveni* indicate that it is a pursuit deterrent display (Cooper et al. 2004). In contrast, we did not notice any arm waving among the whiptails at the fence, and our video footage does not reveal any.

It would be interesting to determine whether the behavioral differences between the whiptails in the two habitats (parking lot + fence, vs. rocks + grass) are learned or innate, and whether similar differences are present at corresponding habitats in *C. arubensis* elsewhere in Aruba and among whiptails of other species. Further observations will be necessary to make these determinations.

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