Gonatodes humeralis (Guichenot, 1855) (Squamata: Sphaerodactylidae): Behavior

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Gonatodes humeralis is a small (maximum snout-vent length 42 mm) sphaerodactylid gecko (Fig. 1), common in a large part of the Amazonian region, present both in rainforest and in disturbed habitats like secondary forest and urban parks with trees. It is typically found on tree trunks up to 1.5 m above the ground, but it also occurs on the leaf litter and higher up on trees (Avila-Pires, 1995; Vitt *et al.,* 2000). During fieldwork (22 and 23 February 2012) at the Scientific Station Ferreira Penna (ECFPn), National Forest of Caxiuanã, Melgaço, Pará, Brazil, we observed interactions between two males and between male and female in the deforested area (surrounded by rainforest) between the buildings of the station, which we describe here. A 735 MB video of the event can be downloaded here.

When observation started (at about 15:30 h), one male was running after the other. They then stopped at an approximate distance of 60-80 cm apart and started to signal to each other by raising their tales and waving them. Getting closer to each other, one assumed a position parallel to the other, pushing its body and head up and down (mainly by moving the forelegs), with the yellow gular region inflated; the tail was kept slightly curved upward, not moving. After a while the other did the same, with its head facing the opposite direction of the other male. At some moments, one of the hands moved, raising and lowering in unison with the body movement. During part of this behavior, they walked simultaneously slightly forward and sideways, nearing each other.



Figure 1: A male of *Gonatodes humeralis* from Floresta Nacional de Caxiuanã, Pará.

When they were approximately 30 cm apart, one of them suddenly and rapidly ran toward the other, which ran away. After a moment, when each one was more or less hidden and motionless, the lizard that had been chased away returned, facing the opponent, gular region inflated and tail raised. A new round then started, with tail waiving, approximation, displaying, and a new "attack" by the same individual. Following this second "attack", they went a greater distance apart. The chased one, even though not approaching the other, kept facing it, head up, tail waiving. The other answered in the same way, but finally they started moving further away. However, they continued waving their tail and looking toward the other lizard for several minutes, even though they probably could no longer see each other. The chaser jumped onto a large leaf and moved to its edge, apparently scanning the surroundings in the direction where the opponent should be, moving its tail slightly sideways. The whole interaction lasted 20-30 minutes.

After a while, the chaser went to a place nearby where a female was, which may have been the trigger for the agonistic behavior between the two males. He approached her, slowly waving the tail sideways, but she moved away. They kept moving closer and further apart, moving around. Once, the male faced the female, raised his head with the gular region expanded, and moved his head in gentle circles, making the yellow gular sac more apparent. However, there was no further visible interaction. As it got darker (around 17:30-18:00 h), they disappeared into holes of a cloth wound around the upper extremity of a fire hydrant and observation was suspended.

The next day, at about 16:00 h, specimens of *Gonatodes humeralis* were seen in the same area. This time there were two couples about 2 m apart. One of them was in the same spot as the couple of the previous day and was probably formed by the same individuals (we will call them the first couple, the other the second couple). In both cases males and females were interacting, with males approaching females with laterally waiving tails, from time to time stopping and inflating and deflating the gular region, but females tended to go away from males. In one instance the male of the second couple passed the female about 10 cm from her (coming from a position behind her), making the displays mentioned above, and she started walking parallel to the male, with tail low and rolled toward the opposite side (rejection sign?). She then stopped in a place where a

plant hid her from the male, while he continued walking and displaying, and she then ran further away. The first couple returned to the same cloth where they were last seen the day before (contrary to the previous day, the male led and the female followed). Once more, besides some displays by the male, nothing happened. We stopped observations again as it got darker.

Gonatodes humeralis reproduces all year round, with multiple clutches of a single egg during the year (Avila-Pires, 1995; Hoogmoed, 1973; Vitt *et al.,* 1997, 2000), but it is not certain whether there is seasonal fluctuation in the intensity of reproduction. The observations here reported were during the rainy season and an egg could be seen in the abdomen (through the skin) of most females collected. Likewise another couple was found copulating one day before these observations, all indications of an active reproductive period. Nunes (1984) mentioned male-female interactions during February, in Manaus, with females similarly running away. She also mentioned a male making push ups while approaching a female. Our observations indicate an elaborate display, both in male-male and male-female interactions, in *G. humeralis,* and point out the importance of the yellow gular region and of the tail in such displays.

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***Xenodon merremi,* Quatro Barras, PR (Foto: M. V. Segalla).**