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**NOTES ON THE BROWN WIDOW SPIDER, *LATRODECTUS GEOMETRICUS*
(ARANEAE: THERIDIIDAE) IN BRAZIL**

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Three species of the cosmopolitan genus *Latrodectus* were reported by Bücherl (1964) as occurring in Brazil: *L. mactans mactans* (Fabricius) from Recife, Pernambuco and from Pôrto Alegre, Rio Grande do Sul; *L. curacaviensis* (Müller) from the beaches of Guanabara and Bahia; and *L. geometricus* C. L. Koch from the city of Pôrto Alegre, Rio Grande do Sul and from the states of Minas Gerais, Bahia and Rio de Janeiro. Levi (1959) cited records of *L. geometricus* from the states of Paraíba, Pernambuco, Minas Gerais and Rio de Janeiro. In the United States *L. geometricus* has been reported as an introduced species from both Hawaii (Levi, 1967) and Florida (Levi and Levi, 1968). The present paper contains observations on *L. geometricus* in the state of Espírito Santo and in the city of Manaus, Amazonas, Brazil in 1969 and 1970.

MORPHOLOGY AND COLORATION

The brown widow males are about half as long as females and the sexes differ in body shape. The abdomen of males is elongate whereas that of females is globose.

In contrast to most other species of *Latrodectus*, color patterns of juvenile *L. geometricus* do not differ from the adult patterns. Adult males, although appearing solid black from afar, have the basic color patterns typical of the females. Four atypical males, one from a beach and three from yard walls, had feminine shapes and coloration.

In both sexes the brown carapace is bordered with a dark band and has a dark stripe down the entire midline. The sternum is brown and is bordered with a dark band.

The tarsus of the pedipalps in both sexes is darker (brown) than the proximal segments.

The legs are brown to tan with dark brown bands at the joints. The dark bands are distal on the femur, patella, tibia and metatarsus and also proximal on the patella.

Abdominal background coloration varies. It is white, tan, brown, reddish-brown or aqua in females and is black, brownish-black or white (rarely) in males. The three midline spots on the abdominal dorsum vary from simple white spots with black, line-borders to multicolored bull's-eyes. Bull's-eye colors include orange, tan, white, yellow, reddish-brown, aqua and gray. The single open-ended posterior spot is similar to the bull's-eye spots. Some females also have dark lines extending posteriorly and/or anteriorly from the midline.

Between each lateral abdominal stripe is an orange island. There is a black spot between the origin of each lateral stripe.

A ventral abdominal hourglass is complete on all ages and sexes of the brown widow spider. Generally, the hourglass is orange and has a thick and complete yellow border. The hourglass of juveniles is lighter in color compared to those of adults.

HABITATS

Latrodectus geometricus was observed in two habitats—on ocean beaches and around buildings.

With few exceptions the brown widow spiders collected on the beaches¹ were found in webs on runner plants, *Ipomoea biloba*, which were abundant from the high tide mark

¹Praia do Jucu, Praia da Costa, Praia do Camburi; all are in the vicinity of Vitória, Espírito Santo.

to a kilometer or more inland. The spiders were collected in a 20 meter wide strip of beach between the high tide mark and a road. *Ipomoea biloba* was the predominant vegetative form in this strip.

Most female brown widow spiders were collected from their resting area which was a sturdy pup tent-like web in the natural fold of an *I. biloba* leaf (Fig. 1). Irregular, tangled webbing extended up to about 30 cm from the tent area. Some lines extended about 80 cm between plants or between portions of the same plant. Rarely, webbing extended to the ground.

Most males were taken from webs that were occupied by females. The one exception was a lone male found on an exposed leaf of an isolated *I. biloba* runner. The spider was removed from a tight-fitting, open-ended, cylindrical web casing which was fastened along the leaf axis.

Invertebrate species (number in parentheses) observed on the beaches include spiders (9), flies (2), lepidoptera (3), "bumble bees" (2), "honey bees" (1), wasps (2), ants (3), orthoptera (2), coleoptera (2), aphids (1), homoptera (1) and crabs (1). The only potential vertebrate predators of *L. geometricus* observed on the beaches were one or two species of gray lizards (the smaller one, perhaps juveniles of the larger, had a pink tail ventrally).

L. geometricus was observed around buildings in Manaus, Amazonas and in three locations² in the vicinity of Vitória, Espírito Santo.



Fig.1 A *Latrodectus geometricus* female hangs inverted in her web in an *Ipomoea biloba* plant growing on an ocean beach.

²a) CALiR (Centro de Aperfeiçoamento do Líder Rural): located south of Vitória on highway BR-101 near the Viana-Cariacica border. b) Sta. Cecília: yard of a private home on Rua Sta. Lucia located several km east of downtown Vitória. c) Bento Ferreira: Rua Afonso Sarlo located about 100 m from the harbor channel and about 3 km east of downtown Vitória.

The single specimen observed in Manaus was found in a minute, irregular, tangled web under the overhang of a step in front of the Matriz Church. This was an adult female with dark, wine-red abdominal background coloration.

At CALiR numerous light brown females with egg cases were seen in webs on the east wall of the building. At the foot of this wall was a small frog-rearing pool which was illuminated at night to attract insects. A cursory examination of the other walls failed to reveal additional specimens.

In Sta. Cecilia one large, light-brown female was collected from her web which was located about 60 cm from the ground in the northeast corner of a cement yard fence. The yard was about 70 m in altitude and was about 5 km west and 2 km north of the nearest seashores. Two tiny, unidentified spiders were found in close association with the outer surface of the web.

The remainder of the specimens were collected in Bento Ferreira. Several specimens were taken from small webs in tiny plants along the street curb. The webs were noticed only because of litter caught in the short lines fastened to the curb. Many others were taken from skimpy webs on a 1.8 m high brick wall and a 1 m high rough, cement wall. The resting area of the webs was usually located in deep and shallow holes in the brick wall and along the right angles of both walls. Single to multiple web lines extended up to about 1 m from the holes. Several males were taken from the angles of the rough cement wall. They were not associated with webs or females. Most of the specimens from Bento Ferreira were taken along the foundation of a building. The foundation was 3 m long and had a 5 cm overhang about 30 cm from the cemented ground. Large, dense, irregular, tangled webs were located in corners at each end of the foundation. Smaller webs were seen under the overhang. All sizes of females were present and most had white background coloration. Several atypical males (with white, globose abdomens) were taken along the overhang as well as were typical males (with dark, elongate abdomens). At this site there was an abundance of green-brown lizards and some geckos. These were the only potential vertebrate predators of the spiders observed at this site.

BEHAVIOR

The beach dwelling females usually hung inverted in the tent area of their webs. The tent webbing was very tough and tight woven and it did not have a rear exit. The spiders appeared to be non-aggressive. When disturbed the usual reaction of the female was to retreat to the depth of the tent and retract her legs. Further provocation caused the spider to flee, usually to just under the tent leaf surface. If provoked further she would flee deep into the plant or on occasion would drop to the ground and retract her legs which resulted in excellent camouflage (both on the beaches and on cemented surfaces). As a last alternative she would flee along the ground seeking shelter or would reclimb plants or webs. The spiders were equally agile on the ground, in the plants and on the webs. Some females refused to leave the tent area and clung so tightly to the web that they were either dismembered or the webbing was stripped from the leaf. The females on walls usually retreated to their holes, to the depth of their webs or they dropped to the ground. One female made an outward leap of about 25 cm from a wall to escape. Males rarely tried to escape by dropping to the ground. They usually fled along the webbing or along the walls. Perhaps the sexual difference in coloration influenced this behavior.

On the beaches males were found in the tent area of webs occupied by females as well as in the peripheral, tangled webbing. Two males per web was not uncommon and three males were found in the web of one female. Males often lacked one to several legs, especially when there was more than one per web.

White, tufted, spherical egg cases were often found in the tent areas. Three egg cases were found with one female. Old empty egg cases, found in various portions of the web, were often encased in a dried leaf, presumably a former tent area. Only once was an egg case observed near the ground. It was found with a large female under an old board beneath a plant in an area of regrowth. The beach had been cleared by burning several months earlier.

Several webs were frequently encountered in close apposition but most were a meter or more apart.

Females were not observed capturing or consuming prey. Remnants of prey found in and around webs included small click beetles, "saúva" ants, a caterpillar and ichneumonid wasps.

DISCUSSION

The *L. geometricus* on the beaches were capable of fantastic repopulation. One beach (Camburi) had been totally cleared by burning and was devoid of spiders except for five specimens of other species found near the periphery of the burn zone. Three months later this beach was well covered with the usual plants and *L. geometricus* was there in abundance, almost equal to the preburn level as judged by ease of collection.

It was intriguing why *L. geometricus* on the beaches was found only in the *I. biloba* plants. There was plenty of driftwood, coconut shells, paper and other debris to provide cover and burrows. However, a near relative, *Steatoda ancorata* (Holmberg), was frequently observed in this debris type habitat as well as under sand level leaves of plants occupied by *L. geometricus*.

Webs were easily located from a distance since the tent area was generally well exposed. Less exposed webs were detected by observing reflected sunlight from solitary web runners. Initially a lepidopteran nursery web was mistaken from afar as a *L. geometricus* tent. The lepidopteran web was closed and loosely woven in contrast to the tightly woven, open-ended spider tents.

In contrast to other widow spiders, *L. geometricus* has a tufted egg case. Only one non-tufted case was seen and it appeared to be under construction. Twice, other objects on the beaches were mistaken for the egg case. One was a small clover-like flower head of a low-growing plant. The second was a plant burr which had many long, sharp spikes. Perhaps this was valuable mimicry since a lizard would hesitate to eat an egg case if it had prior experience with a burr.

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