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Establishment of the adventive centipede *Rhysida longipes longipes* (Newport, 1845; Scolopendromorpha: Scolopendridae: Otostigminae) in South Florida

Kenneth P. Wray*, Micaiah Ward, and Darin R. Rokyta

Since 1956, the adventive centipede *Rhysida longipes longipes* (Newport, 1845; Scolopendromorpha: Scolopendridae: Otostigminae) has been documented on 4 occasions from the South Florida counties Miami-Dade and Monroe (Chamberlin 1958; Crabill 1960; Shelley 2002; Shelley & Edwards 2004) with a 5th, unverified sighting likely representing this species (see Shelley & Edwards 2004 for detailed review). In all but one of these incidences, only single individuals were observed, so Shelley & Edwards (2004) were hesitant to conclude that this centipede was established, and added that further work would be needed to determine whether this was the case.

Between 2 and 4 p.m. on 7 Dec 2014, while searching for specimens of *Scolopendra alternans* Leach, 1813 (Scolopendromorpha: Scolopendridae) for research on the evolution of centipede venom, we discovered a large population of unknown centipedes in and around the property of the Island Christian School campus in Islamorada (24.936662°N, 80.614126°W), Upper Matecumbe Key, Monroe County, Florida, USA. The centipedes were observed under various natural cover objects (e.g., fallen logs and oolitic limestone boulders) and discarded materials (e.g., plywood and carpet), many of which housed multiple (from 3 to 6) specimens. When we lifted these cover objects, centipedes immediately began to scatter for surrounding hiding spots, which often held additional specimens. Although most centipedes ranged between 60 and 80 mm in length, several were between 30 and 50 mm, and at least 4 were less than 25 mm. All centipedes were easily identified as conspecific based on coloration, though the smallest specimens were slightly brighter in coloration than the larger ones. We collected 16 of the largest specimens and observed another 15 to 20. At ca. 9 p.m. on the same day, we examined a single, large specimen of the same species under discarded clothing within a remnant strip of tropical hardwood hammock at the edge of an agricultural field in southeastern Miami-Dade County (25.407578°N, 80.521744°W), but the specimen escaped before it could be secured.

In the laboratory, 16 specimens were examined and identified after being anesthetized with carbon dioxide. In life, the body coloration was olive-brown dorsally, with scattered green markings, and faded into reddish-orange on the cephalic plate and 1st tergite, as well as the last 2 or 3 tergites (Fig. 1A). The terminal legs were light orange basally, whereas the remaining articles (= ambulatory legs) were straw yellow over their length. Using Shelley & Edwards (1987), we keyed each specimen to *R. longipes longipes*, verifying that the 1st tergite overlapped the base of the cephalic plate, the spiracles were circular and non-valvular, and that there was a pair of spiracles present on Segment 7 (Fig. 1B). Two specimens were deposited as vouchers in the Florida State Collection of Arthropods.

These collections represent 2 new localities of *R. longipes longipes* in South Florida, USA. More importantly, the Upper Matecumbe Key location represents the first observation of numerous specimens representing multiple size classes. Given the observations presented here, and the fact that this locality is intermediate between a Key West, Florida, record and several records from the greater Miami, Florida, area, we suggest that this species 1) is far more widespread throughout southern Miami-Dade County and the Florida Keys of Monroe County than is currently known and 2) is established on at least Upper Matecumbe Key. This region of Florida supports numerous landscape nurseries, increasing the likelihood that this species will spread.

There are at least 3 native species of scolopendrid centipedes in southern Florida: *Scolopendra viridis* Say, 1821, *Hemiscolopendra marginata* Say, 1821, and *S. alternans*, the last of which in the United States is restricted to southern-most Florida. Interestingly, the first author previously had visited the Upper Matecumbe Key site in Mar 2007 and discovered 2 large specimens of *S. alternans* but did not see any other scolopendromorph centipedes. Though several specimens of geophilomorph centipedes were discovered alongside the *R. longipes longipes*, no specimens of *S. alternans* were observed on this most recent collecting trip, despite extensive searching. However, less than 16 km away, we found 14 specimens of *S. alternans* in a very small area but no specimens of *R. longipes longipes*. Though these observations are limited to just 2 sites on a single occasion, we cannot rule out the possibility that ecological interactions, such as differential predation or ecological displacement, between native and exotic centipedes are responsible for these observations. The sub-tropical to tropical South Florida climate and the diverse flora and fauna (Myers & Ewel 1990; Whitney et al. 2004) provide ample opportunity for exotic species to become established. The role of this species as a top-level leaf-litter predator that may be competing with ecologically similar native scolopendrids suggests that there is a high priority for further work to document the extent of its colonization and its potential ecological and commercial impact.

We thank G. B. Edwards for verifying the identification of the specimens as *R. longipes longipes* and for reviewing a version of this manuscript.

Summary

We recorded 2 new collection localities of the nonnative centipede *Rhysida longipes longipes* (Scolopendromorpha: Scolopendridae: Otostigminae) and documented for the first time that a breeding

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Fig. 1. A. Adult *Rhysida longipes longipes* collected from Islamorada (24.936662°N, 80.614126°W), Upper Matecumbe Key, Monroe County, Florida, USA. B. Anterior, lateral view of same centipede showing key diagnostic features: 1st tergite overlaps the base of the cephalic plate, the spiracles are circular and non-valvular, and a pair of spiracles is present on Segment 7.

population is established in South Florida, USA. Specimens of several size classes were collected in a large property on Islamorada, Upper Matecumbe Key, Florida, USA. Further work is necessary to assess the extent of its range and its impact on the local ecosystem.

Key Words: exotic; invasive; Chilopoda; *Scolopendra*; natural history; ecology

Sumario

Documentamos dos nuevas localidades y confirmamos el establecimiento de una población reproductora del ciempiés no nativo *Rhysida longipes longipes* (Scolopendromorpha: Scolopendridae: Otostigminae) en el sur de la Florida por primera vez. Los animales se observaron de varias clases de tamaño a través de una gran propiedad en Islamorada, Upper Matecumbe Key, Florida. Se requieren nuevos trabajos para acceder a toda la extensión de su área de distribución y su impacto en el ecosistema local.

Palabras Clave: exótico; invasivo; Chilopoda; *Scolopendra*

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