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IDENTIFICATION OF FOUR ARACHNIDS CAPTURED ON SAN SALVADOR ISLAND, BAHAMAS: TWO SCORPIONS, ONE PSEUDOSCORPION AND A TAILLESS WHIP SCORPION FROM FORTUNE HILL RUINS

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ABSTRACT

In January, we collected a series of arachnids from the Fortune Hill Settlement trail as we turned over rocks. Specimens were sent to the American Museum of Natural History and images to the Western Australian Museum for identification. Four arachnids were identified. The tailless whip scorpion (or amblypygid) is a common Caribbean species: *Phrynus marginemaculatus*. The frequently encountered long-clawed scorpion is *Centruroides guanensis*, a common species in the Bahamas and Caribbean (including the Florida Keys). The infrequently encountered short-clawed scorpion is a diplocentrid scorpion, the first record of its family in the Bahamas. Based on the prominent transverse carina on the ventral surface of Metasomal segment V, it can be placed in the genus *Cazierius*. Unfortunately, it is an adult female and diplocentrid species classification relies mostly on secondary sexual characters of the adult male. As these diplocentrid scorpions tend to have quite restricted distributions and this is the first record of a diplocentrid from the Bahamas, this may be a new species. The pseudoscorpion appears to be a species of the family: Olpiidae, tribe: Hesperolpiinae, either genus *Aphelolpium* or *Planctolpium* (both are found in the Caribbean), more likely *Aphelolpium*. In any case, no species of Olpiidae has been recorded from the Bahamas, so this is also a new island record. The two more common arachnids are frequently encountered in the field on San Salvador and are represented in the Gerace Re-

search Centre collection (though not identified). The other two (*Cazierius* and *Aphelolpium*) represent first reported sightings in the Bahamas, and potentially new species.

INTRODUCTION

The Arachnids belong to phylum Arthropoda, the joint-legged invertebrate group that also includes the Insecta and Crustacea. Arachnids form a class under subphylum Chelicerata and are distinguished from other arthropods by their terrestrial nature, lack of antennae or jaws, and four pairs of walking appendages (Snow 1970). This study addresses the collection and identification of two apparently undocumented Arachnid species from San Salvador Island, one a member of Order Scorpiones and the other a member of Order Pseudoscorpiones, as well as two other previously observed Arachnid species (members of Order Amblypygi and Order Scorpiones) from the Fortune Hill settlement ruins on San Salvador Island.

METHODS

The two scorpion and single amblypygid species were found by flipping over rocks near colonial ruins at the Fortune Hill Settlement on San Salvador (Figure 1), and the fourth pseudoscorpion species was found in the same petri dish as the short-clawed scorpion shortly after collection. All specimens were preserved in 70% ethanol at the Gerace Research Centre for

drawing and further characterization, returned to Minnesota, USA and then photographed under an Olympus SZX16 dissecting scope with an Olympus DP71 microscope camera. The scorpion and amblypygid specimens were sent to Dr. Lorenzo Prendini at the American Museum of Natural History and the pseudoscorpion images were sent to Dr. Mark Harvey at the Western Australian Museum for identification to the lowest classification possible.

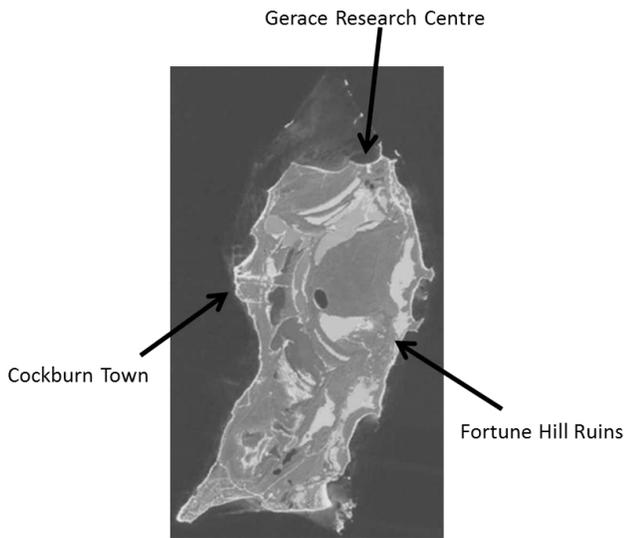


Figure 1. Infrared image of San Salvador Island with key locations indicated.

RESULTS

The tailless whip scorpion (Figure 2) has been previously observed on San Salvador (Gerace Research Centre Repository), but without species identification. It was identified as the common Caribbean species *Phrynus marginemaculatus* by Dr. Prendini at the American Museum of Natural History.

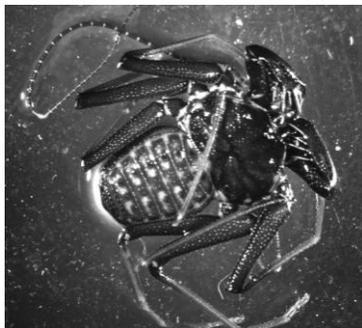


Figure 2. The tailless whip scorpion *Phrynus marginemaculatus* (approximately 1.5 cm in length).

The pseudoscorpion (Figure 3) was found crawling in the same petri dish as *Cazierius*, likely originating either from mixed leaf litter or association with the scorpion itself. It was tentatively identified as a member of family Olpiidae, subfamily Hesperolpiinae, and genus *Aphelolpium* from images sent to Dr. Harvey at the Western Australian Museum.



Figure 3. The pseudoscorpion *Aphelolpium* sp, a potential new species (approximately 3.0 mm in length).

The long-clawed scorpion (Figure 4) has been previously observed on San Salvador (Gerace Research Centre Repository). The repository does not document the species name of the scorpion; it was tentatively identified as the bark scorpion *Centruroides guanensis*, a member of family Buthidae commonly found in the Caribbean and south Florida, and that identification was confirmed by Dr. Prendini.



Figure 4. The buthid bark scorpion *Centruroides guanensis* (approximately 5.5 cm total length).

The short-clawed scorpion specimen (Figure 5) is a different species based upon several morphological features. This scorpion is darker in coloration than the *Centruroides* scorpion and has five sensory pectine segments versus twenty in the other scorpion (Figure 6). The short-clawed scorpion is also shortened, has more muscular and shorter pedipalp terminal claws (Figure 7), and has more fine hairs around its chelicerae (Figure 8) as compared with *Centruroides*. It was drawn dorsally and ventrally (Figure 9) and, based upon the prominent transverse carina on the ventral side of metasomal segment V, subsequently identified as a diplocentrid of the genus *Cazierius* by Dr. Preindini; however, species was not determinable from the adult female collected, as species identification in this group is largely based on male secondary sexual characteristics.



Figure 7. Contrasting pedipalp terminal claws of *Centruroides* (left) and *Cazierius* (right) scorpions.

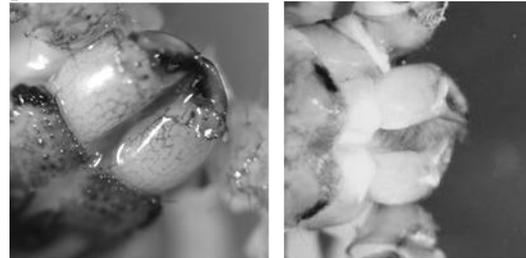


Figure 8. Contrasting chelicerae of the *Centruroides* (left) and *Cazierius* (right) scorpions.



Figure 5. The diplocentrid scorpion *Cazierius* sp, a potential new species (approximately 2 cm in length).

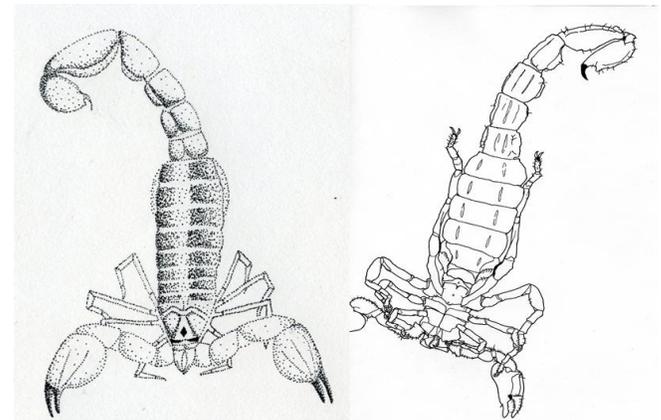


Figure 9. Dorsal (left) and ventral (right) drawings of *Cazierius* sp.

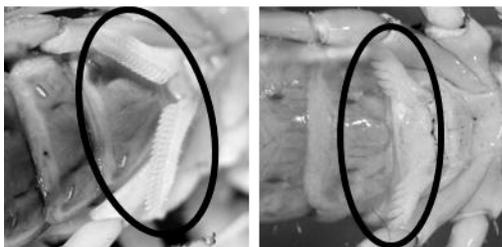


Figure 6. Contrasting pectines of the *Centruroides* (left) and *Cazierius* (right) scorpions.

DISCUSSION

The two arachnid species *Centruroides guanensis* and *Phrynus marginemaculatus* have been previously observed on San Salvador Island, however this study confirms their identity as common species of the Caribbean.

The scorpion *Cazierius sp* and pseudoscorpion *Aphelolpium sp* are members of families not previously documented in the Bahamas, and as such are important scientific findings. As a diplocentrid scorpion, the *Cazierius* scorpion here described typically has a very localized distribution and as such may be a new species. Collection of adult males is necessary to confirm this. The pseudoscorpion may similarly be a new species. Previous scientists have found pseudoscorpions on San Salvador, such as the Chthonid *Paraliochthonius carpenteri* (Muchmore 1984), and this pseudoscorpion may have travelled to the Bahamas in association with insects, a process termed phoresy (Szymkowiak, et al., 2007). Specimen identification by the Western Australian Museum's Dr. Harvey should also determine whether this is a new species discovery.

ACKNOWLEDGMENTS

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trated the dorsal side of the short-clawed scorpion.

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