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A SURVEY OF INSECTS OF THE FLORIDA KEYS: COCKROACHES (BLATTODEA), MANTIDS (MANTODEA), AND WALKINGSTICKS (PHASMATODEA)

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ABSTRACT

A survey of cockroaches, mantids, and walkingsticks in native forests in south Florida found 15 species, from a total of about 40 (15 of which are introduced) which occur in all of Florida. Three cockroach species are added to the Florida fauna. *Compsodes schwarzi* (Caudell), previously known from Mexico and Texas, is reported from Florida for the first time. *Neoblatella detersa* (Walker) and *Symploce morsei* (Hebard), both known from elsewhere in the West Indies, are reported for the United States for the first time. The only introduced species found to have invaded native habitats is the

parthenogenetic cockroach *Pycnoscelus surinamensis* (Linnaeus). *Parcoblatta fulvescens* (Saussure & Zehnter) has invaded from the southeastern United States. The other 13 species are Neotropical (Caribbean or Mexican) in origin.

RESUMEN

Se hizo una encuesta de cucarachas, come-piojas, e insectos palos en bosques nativos del sur de la Florida, encontrándose 15 especies de un total de cerca de 40 (15 de las cuales son introducidas) que ocurren en toda la Florida. Se añaden tres especies de cucarachas a la fauna de la Florida. Se reporta por primera vez a *Compsodes schwarzi* (Caudell) de la Florida, previamente conocida de México y Texas. Se reporta por primera vez de los Estados Unidos a *Neoblattella detersa* (Walker) y a *Symploce moresei* (Hebard), ambas conocidas de las Indias Occidentales. La única especie introducida que se ha encontrado invadiendo habitaciones naturales es la cucaracha partenogenética *Pycnoscelus surinamensis* (Linnaeus). *Parcoblattaa fulvescens* (Saussure & Zehnter) ha invadido desde el sudeste de los Estados Unidos. Las otras 13 especies son Neotropicales (del Caribe o Mejicanas) de origen.

A survey of some of the insect fauna was made in south Florida, mostly between 1984 and 1986, in about 30 sites, mostly in the Florida Keys (see Peck 1989 for details). Most collections were made with continuously collecting "large area window traps" or "flight intercept traps" (see Peck & Davies 1980) in closed canopy West Indian hardwood hammock forests. The purpose was to contribute to understanding the species composition of these poorly known habitats. This paper reports on the cockroaches, mantids, and walkingsticks found to walk or fly into the traps used in the survey. Voucher specimens are in the collections of the first author; the Florida State Collection of Arthropods, Gainesville; The National Museum of Natural Sciences, Ottawa, Canada; and in the Lyman Entomological Museum of Macdonald College, McGill University, Ste Anne de Bellevue, Quebec, Canada H0A 1C0. Detailed specimen data are available from the first author. Most determinations can be easily made with the keys in Helfer (1972). The only previous survey of these insects from south Florida is that of Rehn & Hebard 1912, 1914a).

RESULTS

The Cockroaches (Blattodea)

Sixty-five species of cockroaches are known from the continental United States (Pratt 1988). Keys to most of the genera are in Rehn (1950). Distributional data and references are given by Princis (1962-1971). Twenty-eight of these species are known from Florida, and another 5 species may occur there. Of these, about 15 species were probably introduced by man. Of the native species, 11 are known or may be expected in south Florida (Hebard 1917, Helfer 1972, Rehn & Hebard 1912, 1914a). Eleven species were found in this study. The (probably) native species *Latiblatella rehni* Hebard, *Phoetalia* (= *Leurolestes*) *pallida* (Brunner) and *Hemiblabera tenebricosa* Rehn & Hebard were expected but not found. Three species were found to be new records for Florida.

Family Blaberidae

Pycnoscelus surinamensis (Linnaeus), The Surinam cockroach.

Seventy-two specimens were taken throughout south Florida in the Deering Estate,

Old Cutler Hammock, Long Pine Key (open pinelands), Grossman Hammock, south Key Largo, Fat Deer Key, Key Vaca, Ohio Key, Bahia Honda Key, No Name Key, Big Pine Key (No Name Road, Watsons and Cactus Hmacks), Middle Torch Key, Cudjoe Key, and Sugarloaf Key (Sec. 25). Adults were present throughout the year but most abundant from August to December. The species is circumtropical and was probably spread by man from Asia. It is established in natural habitats in the U.S. from Florida to Texas. The species is parthenogenetic, thelytokous and ovoviviparous (Roth 1967). Florida probably was occupied by multiple invasions from Central or South America (Parker et al. 1977).

Family Blattidae

Eurycotis floridana (Walker), The stinking cockroach.

Twelve specimens were taken on Long Pine Key (open pinelands), Big Pine Key (Watsons Hammock) and Big Torch Key. Adults were present only from March to June. These are flightless cockroaches which must walk into flight intercept traps. The species is distributed from the Keys to Georgia and Mississippi.

Family Polyphagidae

Compsodes schwarzi (Caudell), Schwarz's cockroach.

One specimen was caught in open pineland forest in Long Pine Key, Everglades National Park, 28.VIII-5.IX.1986 (identification confirmed by L. Roth; specimen deposited in FSCA). The species is otherwise known only from northwestern Mexico, Arizona, and Brownsville, Texas. This is the first record for Florida. A much smaller species, *Compsodes cucullatus* (Saussure & Zehntner) has been collected, apparently only once, at Paradise Key (= Royal Palm Hammock) (Blatchley 1920). It was described from Guatemala and may have been introduced.

Family Blattellidae

Cariblatta lutea minima Hebard, The least yellow cockroach.

One hundred sixty-eight specimens were found, mostly in hardwood hammock forests, in south Florida and the Keys in Long Pine Key (open pinelands), Royal Palm Hammock, Grossman Hammock, south Key Largo, Fat Deer Key, Key Vaca, No Name Key, Big Pine Key (Cactus and Watson's Hammocks), Big Torch Key, Cudjoe Key, Sugarloaf Key, and Stock Island. Adults occur throughout the year but were most abundant from May to September. This subspecies is restricted to south Florida, the Keys and Cuba. The subspecies *C. lutea lutea* (Saussure & Zehntner) ranges from central Florida to North Carolina, and Louisiana. The subgenital plates of the two seem to be distinctive and do not intergrade. They may represent two specific taxa (L. Roth, personal communication).

Chorisoneura texensis Saussure & Zehntner, The small yellow Texas cockroach.

Four specimens were found only on the south Florida mainland in hardwood hammock forests in Royal Palm Hammock (Everglades N.P.) and Grossman Hammock (Chekika Recreation Area). Three of these were from November to February, and one was collected between May and August. The species ranges from Texas to North Carolina and to south Florida.

Euthlastoblatta gemma (Hebard), The shortwing gem cockroach.

Five specimens were found only in hardwood hammock forests of the Keys; on Big Pine Key (Cactus and Watson's Hammocks), Big Torch Key and Cudjoe Key. Adults were caught only from August to February. The species ranges from Florida and Georgia to Texas, and the Bahamas. Princis (1965) transferred the species from the genus *Aglaopteryx*. Another species, *E. diaphana* (Fabricius), has much the same distribution (Princis 1962-1971).

Ischnoptera deropeltiformis (Brunner), The dark wood cockroach.

This was the most frequently found cockroach. Two hundred twenty-eight specimens were taken in south Florida and the Keys, in the Deering Estate, Long Pine Key (pinelands), Royal Palm Hammock, Grossman Hammock, south Key Largo, Fat Deer Key, No Name Key, Big Pine Key (Watson's Hammock), Middle Torch Key, Big Torch Key, Cudjoe Key, and Sugarloaf Key. The species ranges from the Keys north to New Jersey, and west through Indiana to Kansas and Texas.

Neoblatella detersa (Walker)

Forty-five specimens were found in south Florida and the Keys, in Old Cutler Hammock, the Deering Estate, Long Pine Key (pinelands), Royal Palm Hammock, south Key Largo, No Name Key, Middle Torch Key, Big Torch Key, Cudjoe Key, and Sugarloaf Key (identification confirmed by L. Roth; specimens deposited in FSCA). Adults were present in all seasons of the year. The species was previously known with certainty only from Jamaica and Haiti (Princis 1959, 1962-1971; Rehn & Hebard 1927: 74). It had been reported earlier from Homestead, Lakeland, and Everglades, Florida (Rehn & Hebard 1914a: 379, 1914b: 98), but these determinations were later stated to be misidentifications of *Latiblatella rehni* Hebard (Hebard 1917: 38, Rehn & Hebard 1927: 76), which otherwise occurs in the Bahamas and Cuba. We found no material with the characters of *L. rehni*.

Parcoblatta fulvescens (Saussure & Zehnter), The fulvous wood cockroach.

Twenty-four specimens were found in mainland and Keys forests on Long Pine Key (pinelands), south Key Largo, Middle Torch Key, and Cudjoe Key. Adults were present throughout the year but most abundant between June and August. The species is known to range from the Keys to New York and west to Iowa and Texas.

Plectoptera poeyi (Saussure), The Florida beetle cockroach.

Seventy-seven specimens were found only in the Keys, in hardwood hammock forests on Fat Deer Key, Vaca Key, Big Pine Key (Cactus Hammock and No Name Road), Middle Torch Key, Cudjoe Key and Sugarloaf Key. Adults were present in similar numbers in all seasons of the year. This small beetle-like species is known only from Florida and Cuba.

Symploce morsei (Hebard)

Twenty specimens were found only in the Keys in hardwood hammock forests, on south Key Largo, No Name Key, Middle Torch Key, and Cudjoe Key (identification confirmed by L. Roth; specimens deposited in FSCA). Adults were present throughout the year. The species is otherwise known only from the Bahamas (Roth 1984). These are the first U.S. records.

Mantids (Mantodea)

Twenty species of mantids are known from the United States, of which 6 occur in Florida but only four are known from south Florida (Gurney 1951, Helfer 1972, Rehn & Hebard 1914a). They are only rarely taken in flight intercept traps.

Mantoida maya Saussure & Zehntner, The little Yucatan mantid.

Twenty-seven specimens were found in south Florida and the Keys at the Deering Estate, Long Pine Key (open pinelands), south Key Largo, Vaca Key, Big Pine Key (No Name Road, Watson's and Cactus Hammocks), No Name Key, Big Torch Key, and Middle Torch Key. Adults occurred between June and September. The species occurs in south Florida and the Yucatan Peninsula of Mexico.

Gonatista grisea (Fabricius), The grizzled mantid.

Only 4 specimens were found, on Royal Palm tree trunks at the Deering Estate, in August. The species ranges from South Carolina, through Florida, to Cuba.

Thespionia graminis (Scudder), The grass-like mantid.

Only seven specimens were taken in open pinelands on Long Pine Key in August. The species ranges from Florida to Mississippi.

Walkingsticks (Phasmatodea)

Twenty-six species of walkingsticks are known from the United States of which up to 5 may occur in Florida, but only four are known from south Florida (Rehn & Hebard 1914a). *Manomera tenuescens* (Scudder), *M. brachypyga* Rehn & Hebard, and *Aplopus mayeri* Caudell were expected in the Keys and south Florida but were not found in this survey.

Anisomorpha buprestoides (Stoll), The two-striped walkingstick

Many specimens were found under boards, but few were collected in flight intercept traps. Records are from Long Pine Key (open pinelands) and in hammock forest in south Key Largo, Big Pine Key (No Name Road), and Middle Torch Key. Adults were found from August to January. The species ranges from south Florida to southeastern Georgia.

Biogeographical Considerations

A total of 15 species of cockroaches, mantids, and walkingsticks was found in native habitats in south Florida. This is out of a total of about 40 species in these groups (15 of which are introduced) which occur in all of Florida. These groups of insects are predominantly tropical in distribution and diversity. Only one introduced species, *Pycnoscelus surinamensis* was found to have invaded native habitats. Only *Parcoblatta fulvescens* has many related species in the United States north of Florida. It may have colonized from that direction. All the other genera have more species in the West Indies or in circum-Caribbean and other Neotropical countries. The ancestral colonizations for these were most probably either across the Caribbean, or along the northern coast of the Gulf of Mexico. For eight of these this colonization occurred sufficiently in the past that their contemporary descendant species distributions are now limited to the southern United States or northern Mexico. The remaining five species (*N. detera*, *P. poeyi*, *S.*

morsei, *M. maya*, and *G. grisea*) still have native distributions including the West Indies or southern Mexico.

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