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RECORDS OF THE
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PART 2: NOTES

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AND
LUCIUS G. ELDREDGE, EDITORS



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Phasioormia pallida should thus be deleted from the Hawaiian checklist.

Ormia ochracea is a phonotactic parasite of crickets. Most flies have auditory organs located in the antennae that are adapted to detecting mating calls and wing beats in the 100 to 500 Hz range. *Ormia* flies have specialized auditory organs on the prosternum (similar in structure to orthopteran tympanal organs) that are used to cue in to the high-frequency (above 3 kHz) call of the male cricket (Robert *et al.*, 1992). The ormiine cricket parasite is not native to Hawai‘i nor is the cricket (*Teleogryllus oceanicus*), upon which the fly is a parasite here. It is thought that the parasite was introduced to Hawai‘i along with an alien cricket, possibly in the cricket “pet trade” (crickets are kept as pets by some Asians).

Acknowledgment

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Two ant species (Hymenoptera: Formicidae) new to the Hawaiian Islands

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Two new ant species records are reported for the Hawaiian Islands. Specimens for both species were first collected in the spring of 2000 by K-12 students and classes as part of an ongoing survey for the little fire ant, *Wasmannia auropunctata* (Roger), on Hawai‘i Island. Discovery of the little fire ant on Hawai‘i and Kaua‘i (Conant & Hirayama, 2000) elicited survey and control activities by the Hawaii Department of Agriculture (HDOA) and stimulated the creation of a traveling educational curriculum through the University

of Hawai'i. Intermediate and high school students collected ants from their backyard environment with the goal of finding additional infestations of *W. auropunctata*. One of us (DSG) analyzed and identified all ants in these samples, which contained the two species new to Hawai'i, and mapped their distributions. Details of this program will be reported elsewhere (D. Gruner, unpubl.). Concurrently, HDOA (RAH. & MEC) discovered one of these ant species during surveys on the island of O'ahu.

Voucher specimens are deposited at the Bishop Museum (BPBM), the Department of Agriculture (HDOA) in Honolulu, the California Academy of Sciences (CAS), Los Angeles County Museum of Natural History (LACM), and Harvard University Museum of Comparative Zoology (MCZ).

Solenopsis sp.

New state record

Specimens of a minute, slow-moving, yellowish brown ant were collected from samples of seashore paspalum grass and soil from a golf course in Ewa, O'ahu, in October 2000 by HDOA staff. Neil Reimer (HDOA Plant Quarantine) and one of us (MEC) identified this ant as a species of *Solenopsis* new to Hawai'i. Specimens collected by students in Hilo and Hawaiian Beaches in May 2000 and March 2001 were later confirmed as the same *Solenopsis* species.

Workers of *Solenopsis* sp. are yellowish with a light brown abdomen. They are just under 1 mm in length, and individuals are monomorphic (Fig. 1). *Solenopsis* sp. are inconspicuous and not easily found. Foraging worker ants have been collected from nearshore soils and grasses, under debris along a parking lot curb, and from several peanut butter baited chopstick collections. We collected two queens from a single excavated nest in Hawaiian Beaches Estates on the island of Hawai'i (6 Oct 2002). The nest was underneath a large boulder, 6–12 cm deep in damp soil. The queens were sent to Brian Fisher (CAS), but without further determination.

Two other *Solenopsis* species are widespread and common in the Hawaiian Islands: *S. geminata* (Fabricius), a fire ant known for its painful stings; and *S. papuana* Emery, a tiny dark brown species slightly larger than this species. These ants are related to the red imported fire ant, *Solenopsis invicta* Buren, an aggressive and serious pest of agricultural, urban, and native environments found in parts of the mainland U.S. but not in Hawai'i (Nishida, 2002). Though they have stingers, no complaints on tiny stinging ants have been reported for the two smaller species.

Solenopsis papuana was the most common ant reported from more than 220 student collections on east Hawai'i, occurring in over half the samples. Students collected the new *Solenopsis* from only 3 localities tightly clustered within 200 m in Hilo. We later collected the ant from another series of locations within a small radius in Hawaiian Beaches. The discrete geographical range of this species, coupled with its distinctive color, behavior, and smaller size, indicates this species is indeed different than the species currently known as *S. papuana* in the islands. Several experts examined specimens but were unable to determine the identity of this species. It is cryptogenic and may be undescribed.

Infestations of *Solenopsis* sp. have been found at a site in Pearl City 8.5 km away from the original golf course collection site in Ewa, O'ahu, and at four sites separated by more than 30 km on Hawai'i. This strongly suggests the ant has been established on both islands for years. We believe it is more widely distributed in the Hawaiian Islands, but it

is unlikely this species will be pestiferous on the scale of its relatives, *Solenopsis geminata* and *S. invicta*.

Material examined: **HAWAII:** Hilo, Naniakea St., 19° 41' 27" N, 155° 04' 37" W, 70 m, 2 May 2000, peanut butter baits (pbb), T. Benevides of Waiākea High School (BPBM); Hilo, Waiākea Intermediate School, 200 W. Puainako St., 19°41' 45"N 155°04' 52" W 50 m, 24 May 2000, pbb, D.S. Gruner (BPBM); Hawaiian Beaches, Kamanu St., 19° 33' 43" N, 154° 53' 24" W, 15 m, 6 Mar 2001, 6 Oct 2002, hand collected, D.S. Gruner (BPBM; CAS; LACM); Hawaiian Beaches, Moana & Pu'u Makai, 19° 32' 57" N, 154° 57' 24" W, 75 m, 6 Oct 2002, hand collected, D.S. Gruner (MCZ; 2 queens: CAS); **O'AHU:** 'Ewa, Oct 2000, R.A. Heu & M. Chun (HDOA); Pearl City 10 Oct 2002, Spam bait trap, R.A. Heu & D.S. Alontaga (HDOA).

***Pheidole moerens* Wheeler**

New state record

This little-known ant species was submitted to Neil Reimer and tentatively identified as *Leptothorax* sp. At that time, no major workers of this species had been collected, so the dimorphic quality of the species was not known. In March 2001 we obtained soldiers from a colony in Hawaiian Beaches and immediately revised the determination to *Pheidole* sp. Stephan Cover (MCZ) identified the species as *Pheidole moerens* Wheeler. This species is now known from at least eight localities widely distributed in the Puna District of Hawai'i.

Pheidole moerens is native to the Greater Antilles, first described from Puerto Rico (Wheeler, 1908). It has been recorded from other Caribbean islands, such as the Virgin Islands, Haiti, the Bahamas, and the Florida keys (Kempf, 1972; Pressick & Herbst, 1973; Deyrup *et al.*, 1988). It is widespread in mainland Florida and several other southeastern states (Wojcik *et al.*, 1975; Glancey *et al.*, 1976; Deyrup & Trager, 1986, J. Wetterer, pers. comm.), but first collected from the western U.S. (California) in 1995 (Martínez, 1997). The ant was found nesting only around California fan palms, *Washingtonia filifera* (Lindley) Wendland, in lowland nearshore areas. This suggests an introduction mode to the Hawaiian Islands similar to that hypothesized for the recently introduced little fire ant, *Wasmannia auropunctata* (Conant & Hirayama, 2000). In Hawai'i, *W. auropunctata* is often found in nurseries and in association with planted *Caryota* spp. fishtail palms. Thus, *P. moerens* probably was imported accidentally with commercial plants and soil for horticulture. Its distribution suggests it has been on Hawai'i for a number of years.

Pheidole moerens is related to two species already widespread in the Hawaiian Islands. *Pheidole megacephala* (Fabricius) was introduced in the 19th century (Smith, 1879). It is abundant on all the main islands except Kaho'olawe, as well as several leeward islands. *Pheidole fervens* Smith is recorded from Kaua'i, O'ahu, Maui, and Hawai'i. *Pheidole fervens* is more abundant locally in wet regions, such as the Hilo and Puna districts of Hawai'i Island, than *P. megacephala* (D. Gruner, unpubl. observ.). Both are considered aggressive invaders, and detrimental to native arthropods and agriculture in island and continental systems (Reimer *et al.*, 1993; Hoffman *et al.*, 1999; LaPolla *et al.*, 2000). Five other *Pheidole* species have been intercepted but not recorded as established in the Hawaiian Islands (Nishida, 2002). *Pheidole moerens* had not been intercepted from or known as established in any other location in the Pacific. In comparison, *P. moerens* is not predicted to be a major new, complementary pest or a high priority for containment or eradication.

Soldiers and minor workers of *Pheidole moerens* are significantly smaller than both congeners. The minor worker, light brown in color, is 1.5–1.75 mm in total body length. The major worker is slightly larger, 2.5–2.75 mm in length, somewhat darker, and with a

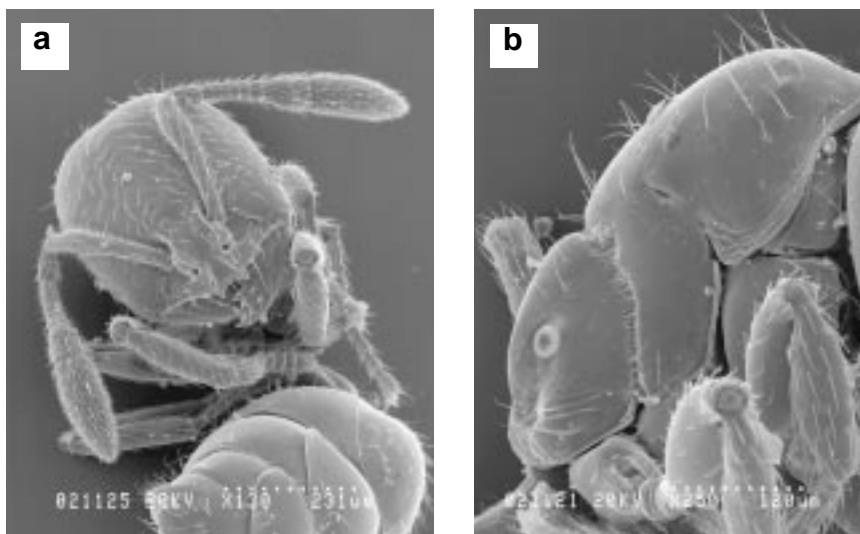


Fig. 1: Scanning electron micrographs of *Solenopsis* sp.; a) head, b) lateral thorax.

larger and broader head as is characteristic with the genus *Pheidole*. The frons surface of the major worker is moderately reticulate (Fig. 2a), intermediate to the smooth *P. megacephala* and the rugose *P. fervens*. The thorax is densely reticulate (Fig. 2b); both the larger species are moderately smooth.

Material examined: **HAWAII:** Kea'au, Ha'a Pl., 19° 37' 50" N, 155° 02' 08" W, 80 m, 7 Feb 2001, pbb, R. Badua of Kea'au High School (BPBM); Hawaiian Paradise Park, Kaloli Dr. & 2nd Ave, 19° 36' 43" N, 154° 57' 37" W, 30 m, 7 Feb 2001, pbb, S. Sheffield of Kea'au High School (BPBM); Hawaiian Paradise Park, 5th Ave, 19° 35' 50" N, 154° 57' 05" W, 25 m, 7 Feb 2001, pbb, S. Schulte of Kea'au High School (BPBM); Hawaiian Paradise Park, Paradise Dr. & 13th Ave, 19° 35' 14" N, 154° 57' 47" W, 50 m, 6 Feb 2001, pbb, T. L. Mabry of Kea'au High School (BPBM); Hawaiian Paradise Park, Mākua Dr. & 20th Ave, 19° 34' 02" N, 154° 57' 37" W, 60 m, 7 Feb 2001, pbb, S. Isko of Kea'au High School (BPBM); Hawaiian Beaches, Maiko St., 19° 32' 46" N, 154° 54' 16" W, 60 m, 6 Feb 2001, pbb, K. Kekauoha of Kea'au High School (BPBM); Hawaiian Beaches, Papai St., 19° 33' 38" N, 154° 53' 27" W, 15 m, 2 May 2000, pbb, N. Keohuhu of Pāhoa High School (BPBM); Hawaiian Beaches, Kamanu St, 19° 33' 43" N, 154° 53' 24" W, 15 m, 3 May 2000, pbb, A. Dressler of Pāhoa High School; 6 Mar 2001, 6 Oct 2002, hand collected, D.S. Gruner (BPBM; LACM; MCZ; CAS); Hawaiian Paradise Park, Kaloli Dr. & 2nd Ave, 19° 36' 52" N, 154° 57' 51" W, 45 m, 6 Oct 2002, pbb, D.S. Gruner (BPBM); Hawaiian Beaches, Hawaiian Beaches Park, Manini St., 19° 32' 56" N, 154° 54' 12" W, 75 m, 6 Oct 2002, pbb, D.S. Gruner (BPBM); Pāhoa, May 2000, pbb, anonymous of Pāhoa High School (BPBM).

Acknowledgments

We are grateful to K-12 students and teachers from Waiākea Intermediate, Waiākea High, Kea'au High, and Pāhoa High & Intermediate Schools for their sampling efforts providing the majority of these new records. Student collections and research by D. Gruner was

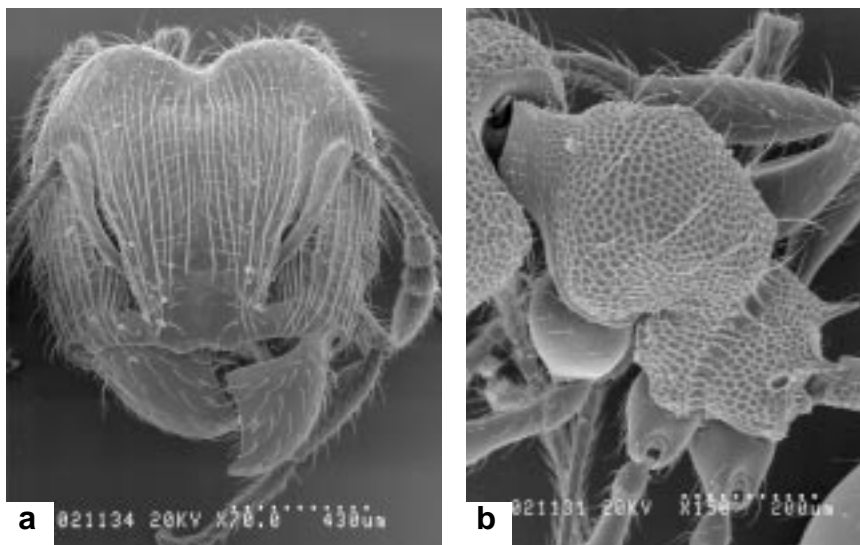


Fig. 2: Scanning electron micrographs of *Pheidole moerens* Wheeler; **a**, head of major worker, **b**, lateral thorax.

supported by NSF DUE-9979656 to the Center for Conservation Research and Training of the University of Hawaii at Mānoa, and by the Environmental Leadership Program. R.A. Heu and M. Chun thank S. Delizo for his help in providing soil samples on O‘ahu. Surveys were supported and funded in part by the USDA-APHIS Cooperative Agricultural Pest Survey (CAPS) Program. We are indebted to Dennis Kunkel who prepared the scanning electron micrographs used as figures. Neil Reimer provided the initial diagnosis of new records; Stephan Cover identified species to the level reported here; Ed Wilson, Brian Fisher, Roy Snelling, James Trager, William Mackay, and Katsuyuki Eguchi also examined specimens.

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An immigrant darkling beetle new to Hawaii (Coleoptera: Tenebrionidae)

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A recent collection of beetles suspected to be a new introduction to Hawai‘i has solved a twenty-year-old question of identification. On the western coast of Kaua‘i in 1982, I took a single specimen belonging to the Middle American genus *Ulus* Horn (Coleoptera: Tenebrionidae) but because it was an abraded female, it lacked characteristics that would allow specific identification and I was hesitant to report its discovery. Species of the related genus *Blapstinus* and other opatrine genera are established in the islands (Nishida 1994) and are well represented in collections, but no Hawaiian specimens of *Ulus* were being found. Now, with new material from O‘ahu listed below, the species has been identified as *Ulus hirsutus* Champion. This is the first report of the insect in the Hawaiian Islands and its agricultural pest status.

Ulus hirsutus Champion

New state record

Recently collected specimens and data were forwarded to Natalia J. Vandenberg, Systematic Entomology Laboratory, USDA, and to me from Bernarr Kumashiro, Hawaii Department of Agriculture, and G.A. Samuelson, Bishop Museum. Dr. Asher Ota, entomologist at Hawaii Agriculture Research Station, provided information on the occurrence and feeding of the beetles, as quoted from B. Kumashiro, below. My fieldwork in 1982 was assisted by Margaret S. Collins, Marianne Early and Dennis Chun.