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A NORTH FLORIDA ANT FAUNA
(Hymenoptera: Formicidae)

By

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INTRODUCTION

This paper updates and summarizes the ant fauna of Alachua County, Florida, with two basic objectives. The first objective is presentation of a current, documented check-list consistent with existing taxonomy and an insight on species groups where taxonomic changes are likely in subsequent revisions. The second objective seeks to identify changes in the fauna since Van Pelt's pioneer survey of 1948, and provide a basis for similar comparisons in the future.

The county consists of 902 square miles in northcentral Florida and embraces essentially all inland habitats of the northern peninsula. This rich habitat variability is reflected in its ant fauna of 110 species. Few other regions of comparable size and latitude support a larger ant diversity also documented in part for greater than 50 years. A review of the earlier work, current taxonomic authorities, and questionable or rejected records precede the new list.

EARLIER STUDIES

W. M. Wheeler (1932) was the first writer to specifically treat Alachua County ants. Sixteen years later, Van Pelt (1948) published the results of an intensive collecting effort in the region and reported 49 species as currently recognized. Van Pelt mentions two additional Alachua County records in his 1950 thesis dealing with the ants of the Welaka Reserve. The imported fire ant, Solenopsis invicta, was probably established in the county by the mid 1950s though the date of initial recognition in the literature is lost in the wealth of studies addressed to that species. Wojcik et al. (1975) and Buren et al. (1975) reported Pheidole rogersi and a Conomyrma species currently named insana respectively. Subsequent studies, addressed to specific genera, have greatly expanded our knowledge. The first work was J. F. Carroll's 1975 thesis on the Florida species of Aphaenogaster. Unfortunately, this study remains unpublished. C. A. Thompson's 1980 thesis on Solenopsis (Diplorhoptrum) species of Florida included a large amount of Alachua County material. Most of that study also remains unpublished; however, Thompson (1982) recognized a new species that is part of the fauna covered here. Trager (1984), Naves (1985), Ward (1985), and Dubois (1986) recently published taxonomic revisions of Paratrechina, Pheidole, Pseudomyrmex, and Monomorium respectively, and each study makes significant contribution to the Florida fauna.

CURRENT TAXONOMIC AUTHORITIES

The nomenclature used in this list follows the current catalog of the Formicidae (Smith, 1979) modified with the following exceptions. The treatment of specimens in the Aphaenogaster texana complex rests in part on data and conclusions given in Carroll's above-mentioned thesis. The 1979 catalog recognizes Aphaenogaster texana carolinensis and A. miama, a form originally considered as a subspecies of A. texana, as occurring in Florida. The earlier names of A. t. silvestrii and A. t. panama, also cited for Florida, are deleted. Creighton (1950) suggested some taxa in Aphaenogaster were based on the descriptions of minimum specimens and may be invalid. Noting this variability, Carroll was unable to find satisfactory differences between specimens thought to represent both A. miama and A. t. carolinensis. He concluded the two were conspecifics but did cite differences between A. t. texana, a western form, and A. t. carolinensis indicating distinct species were involved. He would thus assign all Florida material in the complex to the name A. carolinensis. My collecting experience and specimens I have been able to study are consistent with this view. Publication of the Carroll thesis appears unlikely and I depart from the practice of following only published studies by listing all appropriate specimens as A. carolinensis. I hope a revision of Aphaenogaster will examine this matter in justifiable depth.

The treatment of Solenopsis (Diplorhoptrum) must also consider the unpublished Thompson thesis. That study found the following species in Alachua County: Solenopsis pica, S. pergandei, S. nickersoni, and two groups thought by Thompson to each include two to three species. One of these groups includes S. tennessensis and possibly two undescribed species. All specimens I have studied appear to be conspecific and consistent with the characters of S. tennessensis. The second group is related to S. molestata, a form described by Say in 1836. Many Diplorhoptrum specimens over a wide geographic area have been reported under that name; however, Thompson gives good reason to believe these specimens are not conspecific. Say's type specimens are lost and his description does not give sufficient detail for clear recognition. Thompson concluded that most Florida specimens are S. carolinensis, a species described by Forel in 1901. Otherwise an undescribed species and possibly S. texana were thought to compose the Florida members of the S. molestata complex. I have seen a large number of specimens from many habitats representing this group and can see no evidence of more than one species. I follow Thompson in assigning the name of S. carolinensis to these specimens. The five species in the difficult group are distinct using this conservative treatment and the variations can await future revisions.

The list follows the recent studies cited above on Paratrechina, Pheidole, Pseudomyrmex, and Monomorium without change. Bolton (1977) has clarified Tetramorium taxonomy and the species earlier cited as T. guineense is actually T. bicarinatum. The 1979 catalog lists the north Florida Odontomachus specimens insularis; however, Brown (1976) showed the correct name for these ants was O. brunneus. I use the name Odontomachus auripunctata to conform with the 1979 catalog; however, reassignment of the species to Wasmannia is likely.
In addition, revisions in progress will affect the taxonomy of ants in this fauna and the following notes alert the reader to the groups involved. J. C. Trager is continuing the late W. F. Buren's study of the southeastern Conomyrmex species. The names of both C. flaviceps and C. insana will change and a previously undescribed species existing in the county will be recognized. The above names will, however, be used here along with Conomyrmex species A. and the reader can make appropriate changes when the names are available. J. C. Trager also has unpublished data indicating Leptogenys elongatus is a distinct species.

Two Camponotus forms, existing as distinct species with confused taxonomies, occur in the county. One form has attributes of C. racilis, a name now synonymized with C. sayi. The other ant has C. pavidus attributes, but this name is now in synonymy with C. nearticus, and W. M. Wheeler earlier considered C. pavidus as a variety of C. racilis; see citations in 1979 catalog. Camponotus nearticus and both of these forms coexist in Alachua County. Suitable names are as yet unavailable and I list the rascilis-like form and the pavidus-like form as Camponotus species A and B respectively. Finally, color races in Oecromatogaster canadensis, and variation in pilosity in specimens listed as Brachymyrmex dentipes may receive taxonomic recognition.

QUESTIONABLE RECORDS

Five species taken by a single collector and not documented by existing specimens are retained in the list and a short explanation is appropriate. W. M. Wheeler (1932) reported the northern species Ponera pennsylvanica. The species has been recently collected south of Alachua County in Lake and Marion Counties and is known to be uncommon and sporadic in occurrence near the margins of its distribution. Wheeler and Wheeler (1963), Van Pelt (1948) reported Leptothorax bradleyi and Xenomyrmex floridanus, but, unfortunately, the specimens were not found in the Van Pelt collection. In his thesis, he states that Marion and Smith identified these species and the latter form was not uncommon on sweetgum trees. Smith was a well-recognized authority on ants and I judge his determinations worthy of recognition. Van Pelt (1958) reported Leptothorax wheeleri. The species is known both north and south of Alachua County and the report is accepted. The fifth undocumented species is Aphaenogaster flemingi reported by Carroll (1975) in xeric hardwood forest. The species is not uncommon today in similar habitats along Florida's east coast and I accept Carroll's report.

The earlier studies include remarkably few cases where misdeterminations are clearly suggested. Wheeler (1947) reported Iridomyrmex humilis on the basis of a single specimen. Van Pelt (1968), following M. R. Smith, concluded the identification was in error and as no further specimens have been found near the county, the same conclusion is followed here. Van Pelt (1948) reported Oecromatogaster laeviuscula, Dolichoderus plagiusus, and Pheidole floridanus. The taxonomy of Oecromatogaster in 1948 was largely modified by Buren (1968). Specimens listed as C. laeviuscula in Van Pelt's collection, now in the Florida State Collection of Arthropods, Department of Plant Industry, Gainesville, are consistent with C. clara as delimited by Buren (1968). Buren notes that no records of the true C. laeviuscula were known east of the Mississippi River. The species is thus deleted from the list.

Van Pelt's 1948 paper was based on a thesis of the preceding year wherein detailed collecting information was included; however, the thesis makes no mention of a Dolichoderus species. The specimens may have been collected just shortly before the 1948 publication but no specimens were found in his collection, and no authority was given for the determination. I conclude the record was D. mariae known to occur in the region. Pheidole floridanus was also reported in Alachua County by Wojcik et al. (1979); however, Naves (1985) distinguishes the species from P. anastatis noting the latter form only occurs in north Florida.

DOCUMENTATION

Two documentations are given for each species where possible. A collection housing Alachua County specimens and a published report of such material appear for most species. Additional documentation could be cited for the majority of species. The five species mentioned above having only literature reference and unreported species represented in collections complete the list. The C. Johnson and J. C. Trager collections cited many places in the list will become part of the Florida State Collection of Arthropods. The species are arranged by subfamilies omitting tribe names. The sequence of genera follows Smith (1979) and species within a genus appear alphabetically. The number(s) following each species document its Alachua County distribution using sources tabulated below. The following citations and collections are number-coded for their entry into the species list.


SPECIES LIST

DORYLINAE (3 species)

Neivamyrmex enrochus (Emery 1894) 14; Neivamyrmex opaciceps (Emery 1894) 12, 13; Neivamyrmex tessartae Watkins 1972 12, 13.

PSEUDOMYRMICINAE (11 species)

Amblypyge pallipes (Haldeman 1844) 13, 14; Proceratium pergasum (Emery 1895) 16; Proceratium silaceum Roger 1863 13; Dioctophyllum testaceum Roger 1863 14; Cryptocone gliva (Roger 1863) 2, 14; Pseudomyrmex ferrugineus Buckley 1866 1; Hypoponera sociops (Mayr 1887) 2, 14; Hypoponera sociops (Sorel 1893) 2, 14; Hypoponera punctatissima (Roger 1863) 14, 15; Leptomyrmex elongatus smithi Wheeler 1925 2, 15; Centromyrmex brunneus (Patton 1894) 2, 14.

PSEUDOMYRMICINAE (5 species)

Pseudomyrmex ejectus F. Smith 1858 9, 14; Pseudomyrmex
MYRmCINAE (60 species)

Pogonomyrnex diadus (Latreille 1802) 2, 14; Aphaenogaster antennes (Emery 1895) 2, 14; Aphaenogaster carolinensis Wheeler 1915 5, 14; Aphaenogaster floridana M. R. Smith 1928 5; Aphaenogaster floridana M. R. Smith 1941 2, 14; Aphaenogaster fulva Roger 1863 5, 14; Aphaenogaster lasioides Mayr 1886 2, 14; Aphaenogaster nesper Mayr 1885 10, 14; Aphaenogaster normani Emery 1895 2, 14; Aphaenogaster carolinensis Mayr 1895 2, 14; Aphaenogaster testaceum Mayr 1895 2, 14; Aphaenogaster clara May 1870 13, 14; Aphaenogaster lineolata (Say 1836) 2, 14; Aphaenogaster spinicollis Mayr 1870 7, 14; Aphaenogaster seminigra Emery 1895 8, 14; Monomorium trageri Dubois 1886 13, 14; Monomorium viridium Brown 1934 13, 14; Monomorium pharaonis (Linnaeus 1758) 2, 13; Monomorium pharaonis Emery 1895 2, 13; Solenopsis carolinensis Forel 1901 6, 14; Solenopsis invicta Buren 1972 13, 14; Solenopsis geminata (Fabricius 1804) 2, 14; Solenopsis globularia littoralis Creighton 1930 7, 14; Solenopsis nigerrima Thomsen 1972 8, 14; Solenopsis pergandi Forel 1901 6, 14; Solenopsis pica Emery 1895 6, 14; Solenopsis tener-seennis M. R. Smith 1942 6, 14; Lepthothorax bradleyi Wheeler 1913 2; Lepthothorax pergandi Forel 1895 7, 14; Lepthothorax texanus davisi Wheeler 1905 13, 14; Lepthothorax wheeleri Smith 1929 3; Nysson mexicanum Emery 1895 3, 14; Tetramorium bicarinatum (Nylander 1846) 7, 13; Tetramorium similissimum (P. Smith 1891) 2, 13; Ochetomyrmex auripunctatus (Roger 1863) 14; Strumigenys elegans Emery 1890 10, 14; Strumigenys louisianensis Roger 1863 2, 14; Strumigenys silvestrii Emery 1905 14; Smithitruma humitri Brown 1950 14; Smithitruma carolinensis Brown 1964 14; Smithitruma clavipes (Roger 1863) 13, 14; Smithitruma dietrichi (M. R. Smith 1931) 13; Smithitruma ohiensis (Kennedy and Smith 1947) 13; Smithitruma ornata (Mayr 1887) 13, 14; Smithitruma talpa (Scheer 1936) 13, 14; Trichopasca neowannena (Emery 1889) 13, 14; Eupolyphaga floridana brown and Kemp 1960 13, 14; Pseudomyrmex rimosus (Spinola 1835) 13, 14; Trachymyrmex septentrionalis (McCook 1880) 2, 14.

DISCUSSION

The species diversity will doubtlessly increase with future work; however, the main patterns in the faunal composition are now recognizable. Both temperate and subtropical groups coexist in the region and a few of these species have very likely colonized the area since 1948. Sixty-one species or 5.4% out of the 110 species were not present in Van Pelt's 1948 list. A large part of these new records compose the small, litter-dwelling species and Van Pelt did not operate litter extractions to obtain this part of the fauna.

From the litter species, Strumigenys silvestrii is here reported for the first time in Florida and only the second time in the continental United States. Strumigenys elegans and Eupolyphaga floridana were previously known only from the more tropical southern third of the peninsula. The two above Strumigenys species are probably recent colonizers as they are associated with habitats where exotic plants have been established in recent years. Eupolyphaga floridana lives in a variety of natural habitats and may have occupied the area for many years. All seven species of Smithitruma are missing from Van Pelt's list though they were most likely here in 1946 as well as other litter ants such as Discothyrea testacea and the smaller Solenopsis species.

Very little evidence points to a loss of species previously occupying the region. The records of Ponera pennsylvanica and Lepthothorax bradleyi have been mentioned above. The erratic distribution of the Ponera species near its range limit suggests it was never abundant here and is likely still extant in some localized sites. Lepthothorax bradleyi is a rare species in all collections and its preferred habitat unknown. The single record of Aphaenogaster flaviceps in Alachua County given in Carroll's thesis and its absence in Van Pelt (1948) points also to a species never common in this fauna. The case of Pseudomyrmex floridana is the strongest likelihood of a true loss to the fauna. Very cold winter freezes have occurred in the area since 1948 and this tropical arboreal species may well have lost its northern colonies. Paratrechina pharaonis has only been collected once in the county. This area is the northernmost locality for that species and its continued presence is uncertain.

While Van Pelt passed over the smaller litter fauna, it is unlikely that he missed larger species occupying habitats he regularly investigated. For instance, I judge that Typhomyrmex rimosus, Ochetomyrmex auripuncta-
in, Pseudomyrmex mexicanus, and Pheidole moerens would have been taken by Van Pelt's collecting methods. Their absence from his list is a strong case for their recent colonization. Formica archboldi, also missing in Van Pelt's work, is likewise puzzling as the species is present today in several sites throughout the country. Solenopsis invicta reached the area also after 1948 and the above observations show no evidence for the imported fire ant having evicted any species of our native ant fauna. In fact, the fauna more likely increased in this period. Of course, relative abundance and habitat usage may have changed.

Another feature of the fauna worthy of note is the series of congeneric species groups. Nine species of both Pheidole and Paratrechina, 8 species of Solenopsis, including all subgenera, 7 species of Pheidole and Paratrechina, and 6 species each of Camponotus and Cataglyphis exist within the fauna. This assemblage offers excellent opportunity for ecological studies on coexisting, congeneric ants.

Finally, the author regrets the uncertainty in species recognition associated with Diplorhoptrum and cases where species must be named A or B. I hope revisions will remove these problems in the near future.

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LITERATURE CITED