

A PRELIMINARY LIST OF ANTS ASSOCIATED WITH APHIDS IN FLORIDA^{1, 2}

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ABSTRACT

A list is given of 18 species of ants found associated with 34 species of aphids in Florida.

Most ant species are omnivorous and combine phytophagous feeding with predation or scavenging. Honeydew, which is excreted by aphids and other Homoptera, is an especially important food (Richards 1953). The ants derive protein from their predatory or scavenging activities and carbohydrates from the honeydew (Wellenstein 1952 as cited in Way 1963). To supplement protein from other sources, ants may kill attended aphids or carry dead ones to their nests (Goidanich 1959, Herzig 1938, Kloft 1953, Steyn 1954, van der Goot 1916, Wellenstein 1952 cited in Way 1963, Nixon 1951, Pontin 1958).

Aphids derive many benefits from this association with ants, the most notable of which is protection from other predators and some parasites due to the aggressive behavior of attendant ants (Banks 1962, Wichmann 1955 cited in Way 1963, El-Ziady and Kennedy 1956, Nixon 1951). Ants may transport aphid eggs to their nests and care for the nymphs after they hatch (Pontin 1958, Zwolfer 1958 cited in Way 1963), transport aphids to the roots of host plants on which they feed (Davis 1917), Forbes 1894 cited in Way 1963, Webster 1907), and they may transport above-ground species directly to feeding sites (Eidmann 1927, Goidanich 1959 cited in Way 1963, Nixon 1951).

Attended colonies of some aphid species multiply more rapidly than unattended colonies, and some species, termed "myrmecophilous" species, cannot live unless they are tended by ants (Banks and Nixon 1958, El-Ziady 1960, El-Ziady and Kennedy 1956, Herzig 1938 cited in Way 1963).

Because of the extent to which mutualism between ants and aphids has developed, there is a need for more knowledge in the area. Too much of the research has been carried out with only a few species of ants and/or aphids, and very little is known about how many ant species are mutualistic and how many aphid species lend themselves to this association.

There have been several lists published of Florida ants (Smith 1930a,

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1930b, 1933; Van Pelt 1947; Wheeler 1932; Wilson 1964) but there are no published records on associations of ants with aphids. The following is a preliminary list of ants collected in association with specific aphids in Florida; however, mutualism was not established and predatism can not be entirely ruled out.

- Camponotus abdominalis floridanus* (Buckley)—Polk Co., Bartow 2 V 1966 (H. Denmark), with *Cinara tujafilina* (DeG.) on *Thuja orientalis* L.; Putnam Co., Palatka 15 IX 1968 (R. Nielsson), with *Aphis spiraeicola* Patch and *A. coreopsidis* (Thomas) on *Bidens pilosa* L.; Alachua Co., Gainesville 21 IX 1968 (R. Nielsson), with *Aphis illinoisensis* Shimer on *Vitis* sp., and with *A. coreopsidis* (Thomas) on *Bidens pilosa* L.; Gadsden Co., S-270 1 mi N of S-271, 17 IX 1969 (R. Nielsson), with *A. rumicis gerardiae* (Thomas) on *Erechtites hieracifolia* (L.) Raf.; Alachua Co., Gainesville 7 V 1970 (R. Nielsson), with *Cinara pinivora* (Wilson) on *Pinus serotina* Michx.; Leon Co., Tall Timbers Research Station 22 V 1970 (R. Nielsson), with *C. atlantica* (Wilson) on *Pinus elliotii* Engelm.; 2 VI 1970 (R. Nielsson), with *Aphis* sp. (*rhamni* ?) on *Eupatorium capillifolium* (Lam.) Small and on *Solidago* sp.; Alachua Co., Gainesville 19 IX 1970 (R. Esser), with *Aphis gossypii* Glover on *Melanthera hastata* Michx.
- C. pylartes fraxinicola* M. R. Smith—Alachua Co., Gainesville 15 IX 1969 (D. Habeck), with *Aphis illinoisensis* Shimer on *Ampelopsis arborea* (L.) Rusby.
- Conomyrma pyramicus* Roger—Baker Co., Glen St. Mary (nursery) 4 VI 1957 (E. Holder), with *Aphis coreopsidis* (Thomas); Walton Co., S-183A 1 mi E of S-183, 19 VII 1967 (R. Nielsson), with *Cerosiphia rubifolii* (Thomas) on *Rubus* sp. (*trivialis* ?); Alachua Co., Gainesville 31 VII 1968 (D. Habeck), with *Aphis spiraeicola* Patch on *Pyracantha* sp.; 22 IX 1968 (R. Nielsson), with *Dactynotus tuataiae* Olive on *Ambrosia* sp.; Leon Co., Tall Timbers Research Station 14 V 1969 (R. Nielsson), with *D. ambrosiae* (Thomas) on *Eupatorium* sp. (*compositifolium* ?); 15 V 1969 (R. Nielsson), with *D. chrysopsidicola* Olive on *Eupatorium capillifolium* (Lam.) Small; Alachua Co., Gainesville 12 III 1970 (A. Tissot, R. Nielsson), with *Hyadaphis pseudobrassicae* (Davis) and *Myzus persicae* (Sulzer) on *Sophia pinnata* (Walt.) Britton; 5 mi W of Gainesville 17 V 1970 (D. Wojcik), with *Rhopalosiphum mardis* (Fitch) on corn; Leon Co., Tall Timbers Research Station 2 VI 1970 (R. Nielsson), with *Aphis craccivora* Koch on *Sonchus* sp., *Aphis* sp. (*rhamni* ?) on *Eupatorium capillifolium* (Lam.) Small and on *Solidago* sp., *Cerosiphia rubifolii* (Thomas) on *Rubus* sp., *Dactynotus ambrosiae* (Thomas) on *Solidago* sp., and with *D. ciefi* Olive on *E. capillifolium* (Lam.) Small.
- Crematogaster ashmeadi* Mayr—Volusia Co., De Land 17 II 1959 (A. Brill), with *Toxoptera aurantii* (Fonsc.); Marion Co. 28 IX 1964 (E. Holder), with *Myzocallis* sp. on *Quercus* sp.; Liberty Co., Torreya State Park 19 IX 1968 (R. Nielsson), with *Aphis illinoisensis* Shimer on *Vitis* sp.; Alachua Co., Gainesville 21 IX 1968 (R. Nielsson), with *A. spiraeicola* Patch on *Ambrosia* sp.; 22 IX 1968 (R. Nielsson), with *A. coreopsidis* (Thomas) on *Baccharis halimifolia* L.; Dade Co., Everglades National Park 25 III 1969 (D. Habeck), with *Aphis* sp. on *Cyperus* sp.; (R. Nielsson), with *A. gossypii* Glover on *Bidens* sp.; Manatee Co., Myakka Park 8 IV 1969 (D. Habeck), with *Myzus varians* Davidson on *Clematis* sp.; Alachua Co., Gainesville 14 IV 1969 (D. Habeck), with *M. persicae* (Sulzer) on *Gnaphalium* sp.; Dade Co., Rockdale 27 IV 1969 (R. Nielsson), with *Aphis* sp. on *Gaura angustifolia* Michx.; Leon Co., Tall Timbers Research Station 13 V 1969 (R. Nielsson), with *Aphis folsomii* Davis and *M. persicae* (Sulzer) on *Parthenocissus quinquefolia* (L.) Planch.; 14 V 1969 (R. Nielsson), with *A. illinoisensis* Shimer on *Vitis* sp.; Flagler Co., Bunnell 6 VIII 1969 (W. Coleman, R. Wilkinson), with *Cinara watsoni* Tissot on *Pinus elliotii* Engelm.

- C. atkinsoni* Wheeler—Union Co., Lake Butler 27 V 1957 (E. Holder), with *Myzocallis* sp.; Alachua Co., Gainesville 2 V 1960 (R. Esser), with *Aphis* sp., prob. *vernoniae* Thomas, on *Vernonia ovalifolia* T. & G.; Jackson Co., S-164 4 mi W of 169 and 273 6 mi S of 2, 18 VII 1967 (R. Nielsson), with *Aphis coreopsidis* (Thomas) on *Baccharis halimifolia* L.; Holmes Co., S-179 1.6 mi W of 79, 20 VII 1967 (R. Nielsson), with *A. coreopsidis* (Thomas) on *B. halimifolia* L.; Alachua Co., Gainesville 3 X 1967 (D. Habeck), with *Lachnochaitophorus obscurus* (Tissot) on *Quercus* sp.; Sumter Co., Wildwood 26 VI 1968 (E. Holder), with *A. coreopsidis* (Thomas); Alachua Co., Gainesville 19 IX 1970 (R. Esser), with *A. gossypii* Glover on *Melanthera hastata* Michx.
- C. minutissima* Mayr—Leon Co., Tall Timbers Research Station 19 IX 1968 (R. Nielsson), with *Dactynotus ruralis* (Hottes & Frison) on *Eupatorium* sp.
- Crematogaster* sp.—Dade Co., Everglades National Park 25 III 1969 (D. Habeck), with *Aphis* sp. on *Cyperus* sp.; Rockdale 27 IV 1969 (R. Nielsson), with *Aphis* sp. (*rhamni* ?) on *Gaura angustifolia* Michx.; Leon Co., Tall Timbers Research Station 14 V 1969 (R. Nielsson), with *Dactynotus tissoti* (Boudreaux) on *Erigeron* sp. and *Aphis illinoisensis* Shimer on *Vitis* sp.; Flagler Co., Bunnell 6 VIII 1969 (W. Coleman, R. Wilkinson), with *Cinara watsoni* Tissot on *Pinus elliottii* Engelm.
- Dolichoderus pustulatus* Mayr—Holmes Co., S-173 2.5 mi E of 79, 20 VII 1967 (R. Nielsson), with *Aphis coreopsidis* (Thomas) on *Baccharis halimifolia* L.
- Iridomyrmex pruinosus* (Roger)—Alachua Co., Archer 9 X 1968 (R. Nielsson), with *Dactynotus ciefi* Olive; Manatee Co., Myakka Park 8 IV 1969 (D. Habeck), with *Myzus varians* Davidson on *Clematis* sp.; Dade Co., S. Miami 4 V 1969 (R. Nielsson), with *Aphis* sp. on *Baccharis halimifolia* L.; Madison Co., 6 mi W of Lee 22 V 1970 (R. Nielsson), with *A. illinoisensis* Shimer on *Vitis* sp.; Leon Co., Tall Timbers Research Station 2 VI 1970 (R. Nielsson), with *D. ciefi* Oive on *Eupatorium capillifolium* (Lam.) Small.
- Paratrechina longicornis* (Latr.)—Alachua Co., Gainesville 2 X 1968 (R. Nielsson), with *A. craccivora* Koch and *A. spiraeicola* Patch.
- Paratrechina* sp.—Alachua Co., Gainesville 11 VIII 1969 (D. Habeck), with *A. illinoisensis* Shimer on *Vitis* sp.; 12 VIII 1969 (R. Nielsson), with *A. spiraeicola* Patch on *Viburnum* sp. (*abovatum* ?).
- Pheidole dentata* Mayr—Palm Beach Co., S. Boynton Beach 24 IV 1956 (G. Baker), with *A. gossypii* Glover.
- P. morrisoni* Forel—Alachua Co., Gainesville 28 VII 1969 (R. Wilkinson), with *A. spiraeicola* Patch on *Jasminum* sp.
- Prenolepis imparis* (Say)—Alachua Co., Gainesville 4 IV 1968 (D. Habeck, R. Nielsson), with *Periphyllus negundinis* (Thomas) on *Acer negundo* L.
- Pseudomyrmex brunneus* F. Smith—Manatee Co., Myakka Park 8 IV 1969 (D. Habeck), with *Myzus varians* Davidson on *Clematis* sp.; Alachua Co., Gainesville 15 IX 1969 (D. Habeck), with *Aphis illinoisensis* Shimer on *Ampelopsis arborea* (L.) Rusby.
- Solenopsis geminata* (Fab.)—Baker Co., Glen St. Mary 4 VI 1957 (E. Holder), with *A. coreopsidis* (Thomas); Jackson Co., US 90 at Apalachicola River 17 IX 1968 (R. Nielsson), with *Aphis* sp. on *Helenium* sp.; Leon Co., Tall Timbers Research Station 2 VI 1970 (R. Nielsson), with *Aphis vernoniae* (Thomas) on *Eupatorium capillifolium* (Lam.) Small.
- S. molesta* (Say)—Dade Co., Rockdale 20 IV 1969 (R. Nielsson), with *A. coreopsidis* (Thomas) on *Baccharis halimifolia* L.
- S. saevissima richteri* (Forel)—Putnam Co., Palatka 15 IX 1968 (R. Nielsson), with *A. coreopsidis* (Thomas) on *Bidens pilosa* L.; Gadsden Co., S-270 1 mi N of S-271, 17 IX 1968 (R. Nielsson), with *A. rumicis gerardiae* (Thomas) on *Erechtites hieracifolia* (L.) Raf.; Alachua Co.,

Gainesville 12 III 1970 (A. Tissot, R. Nielsson), with *Myzus persicae* (Sulzer) on *Sophia pinnata* (Walt.) Britton; Levy Co., Otter Creek 30 IV 1970 (A. Tissot, R. Nielsson), with *M. lythri* (Schrank) on *Lythrum* sp.; Leon Co., Tall Timbers Research Station 23 V 1970 (R. Nielsson), with *Aphis rhamni* Fonsc. on *Eupatorium capillifolium* (Lam.) Small and on *Solidago* sp.

Solenopsis sp.—Dade Co., Rockdale 20 IV 1969 (R. Nielsson), with *A. coreopsidis* (Thomas) on *Baccharis halimifolia* L.

Wasmannia auropunctata (Roger)—Hillsborough Co., Tampa 5 IX 1957 (D. Stokes), with *Toxoptera aurantii* (Fonsc.).

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