

SCIENTIFIC NOTES
SPIDERS AND ANTS OF TEXAS CITRUS GROVES

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Spider species (Araneae) inhabiting citrus ecosystems have been collected and identified in Florida (Muma 1975, Mansour et al. 1982) and California (Carroll 1980), but there is no comparable information from Texas. The seasonal abundance of selected arthropod predators was studied by Fuchs & Harding (1976) in southern Texas, and spiders were identified only to order. Except for ant species regarded as potential pests of citrus (Schuster & Dean 1957, Dean et al. 1983), the identity of ant species occurring in citrus ecosystems remains largely obscure.

Spiders and ants were collected from southern Texas citrus ecosystems from August 1990 to March 1991 (a total of 12 sampling dates) over a wide area of Hidalgo and Cameron counties by using hand collection, an aspirator and sweep net. Species were gathered from citrus leaves, branches, trunks and from the ground surrounding the trees on a qualitative basis; no quantitative collection methods were used. With the addition of three spider species collected from citrus trees by one of the authors in 1983 (D.A.D.), and two species of ants listed in Dean et al. (1983), a total of thirty three species of spiders from 13 families and twelve species of ants were identified (Table 1).

Comparing spider species using only relative frequency of discovery, 36% of the total number of spiders collected were orb weavers of the family Araneidae, with 63% of these belonging to the species *Metazygia zilloides* (Banks). The next most numerous family was comb-footed spiders (Theridiidae, 12%), followed by crab spiders (Thomisidae, 11%), jumping spiders (Salticidae, 11%), wolf spiders (Lycosidae, 9%), long-jawed orb weavers (Tetragnathidae, 4.5%), ground spiders (Gnaphosidae, 4.5%), horizontal orb weavers, sac spiders and ghost spiders (Uloboridae, Clubionidae and Anyphaenidae, respectively, all with 3%), mesh web weavers, pirate spiders and lynx spiders (Dictynidae, Mimetidae and Oxyopidae, respectively, all with 1%).

Relative numbers of ant individuals were not compared, but the tropical fire ant, *Solenopsis geminata* (Fabr.) was observed in citrus groves more recurrently than any other. The tropical fire ant, although a predator of insect pest species of other crops, is considered a potential pest of citrus by Dean et al. (1983). *Solenopsis geminata* is capable of occasionally girdling citrus trees, may often tend honeydew excreting insect pests like aphids, mealybugs and brown soft scale (which may interfere with their parasitoids and predators), and can attack pickers and other field workers (Dean et al. 1983). Most of the other ants, except *Atta texana* and *Pogonomyrmex barbatus*, also tend aphids.

There have been few studies of spider predation in citrus groves and most of these used a mixture of field and laboratory observations. Mansour & Whitcomb (1986) found spiders, largely the sac spider *Cheiracanthium mildei* L. Koch, to be important controlling factors of the barnacle scale, *Ceroplastes floridensis* Mask (Homoptera: Coccidae) in citrus groves in Israel. Carroll (1980) suggested that sac spiders were the most important spiders in terms of control on citrus arthropod pests, and Cherry & Dowell

TABLE 1. SPIDERS AND ANTS COLLECTED FROM CITRUS GROVES IN CAMERON AND HIDALGO COUNTIES, TEXAS.

Araneae

Uloboridae

Philoponella oweni (Chamberlin)¹*Uloborus glomosus* (Walckenaer)

Dictynidae

Dictyna annexa (Gertsch & Mulaik)

Theridiidae

Achaearana schullei (Gertsch & Mulaik)*Coleosoma acutiventer* (Keyserling)*Dipoena abdita* Gertsch & Mulaik*Steatoda triangulosa* (Walckenaer)*Theridion crispulum* Simon¹*Tidarren haemorrhoidale* (Bertkau)

Mimetidae

Mimetus epeiroides Emerton

Tetragnathidae

Tetragnatha laboriosa Hentz*Tetragnatha* sp.

Araneidae

Araniella displicata (Hentz)*Eriophora* sp.*Metazygia zilloides* (Banks)*Metepeira* sp.*Neoscona arabesca* (Walckenaer)*Neoscona utahana* (Chamberlin)

Unidentified

Lycosidae

Pardosa pauxilla Montgomery*Pardosa delicatula* Gertsch & Wallace

Oxyopidae

Oxyopes acleistus Chamberlin

Gnaphosidae

Cesonia sp.*Sergiolus lowelli* Chamberlin & Woodbury

Clubionidae

Cheiracanthium inclusum (Hentz)*Trachelas deceptus* (Banks)*Trachelas volutus* Gertsch¹

Anyphaenidae

Aysha sp.

Thomisidae

Misumenops dubius (Keyserling)*Misumenops* sp.

Salticidae

Eris sp.*Metaphidippus galathea* (Walckenaer)*Phidippus audax* (Hentz)*Thiodina* sp.

Hymenoptera: Formicidae

Atta texana (Buckley)

TABLE 1.(Continued)

<i>Camponotus abdominalis</i> (Fabr.)
<i>Camponotus planatus</i> Roger
<i>Conomyrma flavus</i> (McCook)
<i>Crematogaster arizonensis</i> (Wheeler) ²
<i>Crematogaster clara</i> Mayr ²
<i>Forelius anatis</i> (Andre)
<i>Forelius foetidus</i> (Buckley)
<i>Forelius pruinosus</i> (Roger)
<i>Forelius</i> sp.
<i>Pogonomyrmex barbatus</i> (F. Smith)
<i>Solenopsis geminata</i> (Fabr.)

¹Collected from citrus and identified by D.A.D. inc 1983.

²Listed in Dean et al. 1983.

(1979) found spiders contributed to significant reductions of citrus blackfly (*Aleurocanthus woglumi* Ashby) populations. Overall, more evidence from the literature suggests that spiders are more effective controlling mobile, visually acute citrus insect pests such as aleyrodids, leafhoppers, planthoppers, hemipterans and adult flies than on the other pests, including sessile external and sessile internal pest categories (Breene et al. 1992).

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REFERENCES CITED

- BREENE, R. G., D. A. DEAN, M. NYFFELER, AND G. B. EDWARDS. 1992. Biology, predation ecology and significance of spiders in Texas cotton ecosystems with a key to the species. Texas Agric. Exp. Stn. Bull. (In Press).
- CARROLL, D. P. 1980. Biological notes on the spiders of some citrus groves in central and southern California. Entomol. News 91: 147-154.
- CHERRY, R. H., AND R. V. DOWELL. 1979. Predators of citrus blackfly (Hom.: Aleyrodidae). Entomophaga 24: 385-391.
- DEAN, H. A., J. V. FRENCH, AND D. MEYERDIRK. 1983. Development of integrated pest management in Texas citrus. Texas Agric. Exp. Stn. Bull. B1434.
- FUCHS, T. W., AND J. A. HARDING. 1976. Seasonal abundance of arthropod predators in various habitats in the Lower Rio Grande Valley of Texas. Environ. Entomol. 5: 288-290.
- MANSOUR, F., J. W. ROSS, G. B. EDWARDS, W. H. WHITCOMB, AND D. B. RICHMAN. 1982. Spiders of Florida citrus groves. Florida Entomol. 65: 514-522.
- MANSOUR, F., AND W. H. WHITCOMB. 1986. The spiders of a citrus grove in Israel and their role as biocontrol agents of *Ceroplastes floridensis* [Homoptera: Coccidae]. Entomophaga 31: 269-276.
- MUMA, M. H. 1975. Spiders in Florida citrus groves. Florida Entomol. 58: 83-90.
- SCHUSTER, M. F., AND H. A. DEAN. 1957. Some species of ants in the citrus grove and their control. J. Rio Grande Hort. Soc. 11: 44-50.