

## Southwestern Association of Naturalists

---

Host Plant Ovipositional Preferences and Usage by *Oecleus nolinus* (Homoptera: Cixiidae)

Author(s): Harold G. Fowler and Walter G. Whitford

Source: *The Southwestern Naturalist*, Vol. 30, No. 4 (Nov. 27, 1985), pp. 610-611

Published by: Southwestern Association of Naturalists

Stable URL: <https://www.jstor.org/stable/3671061>

Accessed: 15-06-2021 15:51 UTC

---

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact [support@jstor.org](mailto:support@jstor.org).

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at <https://about.jstor.org/terms>



JSTOR

*Southwestern Association of Naturalists* is collaborating with JSTOR to digitize, preserve and extend access to *The Southwestern Naturalist*

overlap might be an artifact of collecting technique (i.e., can trapping). However, traps were checked with such frequency that it is doubtful that adjacent males would have had the chance to move into such short-term unoccupied areas.

There was a highly significant difference in the total number of individuals captured in 1977 and 1978 ( $X^2 = 11.5$ ,  $P < 0.01$ ). Nineteen animals were marked in 1977 and 46 were marked in 1978. This difference in total number of individuals marked is probably a function of differential rainfall between the two years. Summer 1977 was preceded by normal rainfall, whereas summer 1978 was preceded by above normal rainfall in late winter and spring. Rainfall patterns and total rainfall greatly affect primary productivity and, concomitantly, arthropod prey availability (Whitford and Creusere, *Herpetologica* 33:54-65, 1977). It would appear that *H. maculata* responds to increased prey availability by increased population density. The same phenomenon was demonstrated for *H. maculata* and several other species of lizards by Whitford and Creusere (1977) in southeastern New Mexico.

Size of home range did not change significantly between years; however, there was a marked difference in percent overlap of home ranges between years ( $t = 2.28$ ,  $P < 0.01$ ). Percent overlap in 1977 was 24.6% and in 1978 averaged 60.8%. This is very different from the response of *Cnemidophorus uniparens* at the same locality (Hulse, 1981). *Cnemidophorus uniparens* did not exhibit any change in population size or structure between 1977 and 1978, but average home range size in 1978 was approximately half that of 1977. If home range size is merely a function of energetics one would predict a reduction in size with increased food availability as in the case of *C. uniparens*. The fact that *H. maculata* does not adjust home range size in response to prey density suggests some function other than, or in addition to, energetics in home range usage.

Jones and Droge (1980) suggested that differences in home range size between males and females might be a function of lack of association with specific habitat structure (e.g., trees or rocks) in *Holbrookia* and the need of males to have a large home range in order to increase the probability of encounters with females. In a case such as this, optimal home range size would remain unaffected by increased prey availability. Mate location is also important for females and should in all probability affect optimal female home range size as well. Since female home range size is also unaffected by prey density it seems probable that selection has favored production of a home range that maximizes potential for mate encounter in females as well as in males. It would be interesting to see if home range size changes significantly after the reproductive season. Unfortunately the data from the present study are not detailed enough to determine if home range size is adjusted downward after reproduction.

Financial support for this study was provided by an Indiana University of Pennsylvania Faculty Research Grant. The Section of Amphibians and Reptiles of the Carnegie Museum of Natural History provided much of the field equipment used during the study. I am grateful to both of the above organizations. Mr. Guy Miller of Portal, Arizona kindly allowed me access to his range land for construction of the study site.—ARTHUR C. HULSE, *Dept. of Biology, Indiana Univ. of Pennsylvania, Indiana, PA 15705*.

**HOST PLANT OVIPOSITIONAL PREFERENCES AND USAGE BY *OECLEUS NOLINUS* (HOMOPTERA: CIXIIDAE).**—*Oecleus nolinus* Ball and Klingenberg, has been reported from Texas, Arizona and New Mexico (Kramer, *Trans. Amer. Entomol. Soc.* 103:379-449, 1977). Its known host plant range is restricted to the plant family Agavaceae; Kramer (ibid.) reported it from *Yucca glauca*, *Yucca elata* and *Nolina macrocarpa*.

During May and June, 1979, we observed large numbers of *O. nolinus* at the Jornada Experimental Range, 60 km NNE of Las Cruces, Dona Ana Co., New Mexico. They used three plant species (*Yucca baccata*, *Y. elata* and *Dasyliiron wheeleri*) as ovipositional sites. *Dasyliiron wheeleri* is an apparent new host for *O. nolinus*. Townsend (Psyche 6:353-354, 1928) recorded an *Oecleus*, probably *O. nolinus* but recorded as *O. decens*, ovipositing on *Yucca angustifolia* (= *Y. elata*?) and *Y. macrocarpa* (= *Y. baccata*?) in southern New Mexico.

The placement of eggs and intensity of ovipositional activity varied according to the plant species utilized (Table 1). The mean numbers of ovipositions per leaf in the field were greatest on *Y. elata* followed by *Y. baccata* and *D. wheeleri*, corresponding to the plants biomass rankings at the site (US/IBP Desert Biome Research Memorandum 74-4, 1974) (Table 1).

Ovipositional sites were constant on a given plant species (Table 1), at different locations along the leaf of each species. The egg was inserted in the upper side of the leaf and covered by a white

TABLE 1.—Ovipositional sites, ovipositional intensity and laboratory oviposition by *Oecleus nolinus* on three different host plants. Data on host plant density taken from unpublished IBP reports.

| Host plant                 | Site of oviposition        | Density |      | Ovipositions leaf |
|----------------------------|----------------------------|---------|------|-------------------|
| <i>Yucca elata</i>         | Tip of leaf; upper surface | *1.8    | ha-1 | *363              |
|                            |                            | **0.3   | -1   | **27              |
| <i>Yucca baccata</i>       | Center of leaf; one third  | *0.9    | ha-1 | *54               |
|                            | from tip; upper surface    | *0.3    | -1   | **9               |
| <i>Dasyliiron wheeleri</i> | Margin of leaf, one half   | *0.3    | ha-1 | *26               |
|                            | from top; upper side       | **0.3   | -1   | **2               |

\*field data

\*\*lab data per 48 hours

fluffy secretion of filamentous wax. Description of wax secretion in the related genus *Oliarus* is given in Zimmerman (Insects of Hawaii, vol. 4, page 95, 1948).

Marked females remained stationary over their eggs for as long as 2 weeks. No act of maternal protection was observed, but the female presence may have protected eggs from foraging ants, or against small egg-parasitic Hymenoptera.

To determine if the field patterns of resource utilization (Table 1) were in response to resource abundance, or to inherent preferences, 10 females were collected from plants of each species and were confined in sealed terraria with a freshly cut leaf of each species. This test was replicated three times. After 48 hours, the ovipositional patterns followed the same order of the rankings observed in the field (Table 1). However, if the number of ovipositions per leaf observed in the field data is divided by the relative biomass of the plant present, *D. wheeleri* then ranks higher than *Y. baccata* (87 vs 60) but still less than that for *Y. elata* (202). The distribution of ovipositions in the laboratory was significantly different from the field ( $X^2=7.79$ ,  $P<0.025$ ), but was not significantly different using transformed data. In either case, *Y. elata* is the preferred ovipositional host.

This study was supported, in part, by NSF Grant DEB-77-16633 to W. G. Whitford.—HAROLD G. FOWLER AND WALTER G. WHITFORD, *Dept. of Biology, New Mexico State Univ., Las Cruces, NM 88003*. (Present address HGF: *Dept. of Entomology, Univ. of Florida, Gainesville, FL 32611*).

THE ARMY ANTS OF THE STATE OF CHIHUAHUA MEXICO (HYMENOPTERA: FORMICIDAE: ECITONINAE).—Watkins (J. Jans. Entomol. Soc. 55:197-247, 1982) recently summarized the information concerning army ants in Mexico. He was able to collect extensively in all of the states except four in the extreme northwest, including Chihuahua. During a 2-year field project in Chihuahua, we were able to collect numerous army ants. Most of our data are from males collected at ultra-violet light traps. Often the males would not actually enter the trap, but would be collected on a white table used to support the trap or on the soil surface near the trap, between 2100 and 2400 Mexican time. We collected 3 species not previously recorded from Chihuahua including 1 species not previously recorded from Mexico.

The following list contains all of the species known to occur in the State of Chihuahua. (\* = first record for Chihuahua; \*\* = first record from Mexico; Mpio. = Municipio, which is roughly equivalent to county in the United States). Unless otherwise indicated, our records are from UV light traps.

*Labidus coecus* (Latreille)—reported by Watkins.

*Neivamyrmex agilis* Borgmeier—reported by Watkins.

*N. andrei* (Emery)\*—Mpio. Villa Ahumada, El Bronco, 26 June 81; Mpio. Villa Ahumada, 5km W of Sueco, 30 June 82.

*N. carolinesis* (Emery)\*\*—Mpio. Guerrero, Est. Terrero, 18 July 81; Workers collected under rock together with *Pheidole* sp. They were apparently raiding the *Pheidole* nest; Mpio. Janos, 7K.S. San Lorenzo, 18 May 82; Single male flying in afternoon.

*N. harrisi* (Haldeman)—Mpio. Villa Ahumada, 85 K.S. Cd. Juarez, 14 June 81; Mpio. Chihuahua, 45 K.S. Sueco, 21 June 81 and 20 July 81; Mpio. Villa Ahumada, Vado Station, 26 June 81; Mpio. Camargo, 8 K.N. Camargo, 6 August 81; male captured on soil surface; Mpio. Camargo, 85 K.N., Camargo, 6 August 81; additional localities reported by Watkins.