

NOTES ON *PARABLASTOTHRIX NEARCTICA*
(HYMENOPTERA: ENCYRTIDAE)

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Abstract.—New host records and a range extension are reported for *Parablastothrix nearctica*, as well as inaccuracies in the original description. Only one adult emerges from each host, suggesting the species is monoembryonic. *Parablastothrix* has been placed in the Copidosomatini, but its mode of reproduction contrasts with the other genera of the tribe, all of which appear to consist of polyembryonic species.

Key Words: *Parablastothrix nearctica*, *Paradelius rubra*, *Stigmella variella*, Copidosomatini, polyembryony

Parablastothrix nearctica Miller (Hymenoptera: Encyrtidae) was described from specimens collected in the eastern United States and reared from two leafminers, a *Coptodisca* sp. (Lepidoptera: Heliozelidae) and an *Obrussa* sp. (Lepidoptera: Nepticulidae) (Miller 1965). In parts of this and some subsequent papers, this species was also referred to as *P. nearcticus*: this suffix is incorrect because the generic name is based on the Greek feminine *thrix*.

In March 1994, I collected five cocoons from the underside of leaves of a coast live oak (*Quercus agrifolia* Nee) at our experiment station in Albany, California. Three of these were formed by *Stigmella variella* (Braun) (Lepidoptera: Nepticulidae), from each of which emerged a single *Parablastothrix* adult (two females and one male). A male *Paradelius rubra* Whitfield (Hymenoptera: Braconidae) emerged from the fourth cocoon.

The *Parablastothrix* adults exhibited a frenetic activity, typical of many hyperparasitoids. But when I dissected the four empty cocoons, I found no more than one meconial pellet in each cocoon, indicating both

species were solitary, primary parasitoids. The fifth cocoon held a dead, well-formed *P. rubra* male pupa. In October 1994, I collected 10 more *Parablastothrix* adults (nine females and one male) from the foliage of the same trees.

The *Parablastothrix* specimens were identical to those reported in a study on parasitoids of leafmining lepidopterans on oaks in northern California, dating back to 1961 (Green 1979). All specimens had yellow legs with darkened metatibiae, and a green body with a bronze hue, but which otherwise matched the description of *P. nearctica*. Green (1979) reported this encyrtid emerged individually from cocoons of *S. variella*, and from undetermined stages of *Coptodisca powellella* Opler, *Bucculatrix albertiella* Busck (Lepidoptera: Lyonetiidae) and *Phyllonorycter sandraella* (Opler) (Lepidoptera: Gracillariidae), while still in their leaf mines.

Miller (1965) reported that *P. nearctica* had white legs, and the overall body color was black with bluish and greenish reflections. Reexamination of the holotype and two paratypes of *P. nearctica* revealed that

the original description was in error. All three type specimens have dark metatibiae and a green body, identical to the California specimens. Thus the latter represent a range extension of *P. nearctica*. I have seen additional specimens of *P. nearctica* collected from Arizona and central and southern California.

Hosts have been recorded for only 8 of the 17 described *Parablastothrix* species—all are leaf-mining Lepidoptera from the families Gracillariidae, Lyonetiidae, and Nepticulidae (Hedqvist 1976, Logvinovskaya 1981, Khan 1983, Trjapitzin 1989). An undescribed *Parablastothrix* sp. was reported as a solitary, primary parasitoid on a nepticulid, a heliozelid, and a gracillariid on pecan in Georgia (Dutcher and Heyerdahl 1988).

Hoffer (1955) placed *Parablastothrix* in the tribe Microteriyini (subtribe Pentacnemii), with *Calometopia* Mercet and *Pentacnemus* Howard. Noyes and Hayat (1984) synonymized *Pentacnemus* with *Copidosoma* Ratzeburg, and Trjapitzin (1989) synonymized *Calometopia* with *Parablastothrix*. Trjapitzin and Gordh (1978) placed *Parablastothrix* in the subtribe Parablastothrichina within the Copidosomatini, but remarked on the absence of proven polyembryony. Noyes and Hayat (1984) considered the genera in this subtribe to be morphologically closer to the Aphycina (tribe Aphycini); however they did not formally place these genera in their scheme of systematic relationships. Recent work by G. Zolnerowich (pers. comm.) retains *Parablastothrix* as a more basal lineage within the Copidosomatini.

Within the Copidosomatini, polyembryony appears to be the rule, having been reported in all species whose biologies have been investigated, including species of *Apilophrys* De Santis, *Copidosoma* (= *Litomastix* Thomson), *Copidosomopsis* Girault, *Paralitomastix* Mercet, *Agieniaspis* Dahlbom, *Holcothorax* Mayr and *Paraleurocerus* Girault (Noyes 1980, Noyes and Hayat 1984). Polyembryony may also occur in

Coelopencyrtus Timberlake (Timberlake 1919, Trjapitzin 1960, Taylor 1961, Annecke 1968), but this mode of reproduction has never been conclusively demonstrated.

Solitary parasitism presupposes monoembryony. However, such evidence is not conclusive, because the polyembryonic species *Macrocentrus ancylivorus* Rohwer (Hymenoptera: Braconidae) is known to develop as a solitary parasitoid (Daniel 1932). Embryological studies have not been conducted on any *Parablastothrix* species. Nevertheless, the solitary habit of *P. nearctica* and the absence of any mention of multiple emergences from all other *Parablastothrix* rearing records, suggests that polyembryony is absent in the entire genus. Such a lifestyle would then biologically separate this genus from the remainder of the Copidosomatini.

Material examined.—ARIZONA. COCHISE Co.: 10 mi. W. Portal, on *Juniperus*. CALIFORNIA. ALAMEDA Co.: Albany, *Stigmella variella* on *Quercus agrifolia*; Berkeley Hills, *S. variella* on *Q. agrifolia* and *Phyllonorycter sandraella*; Patterson Reserve, Del Valle Lake, *Stigmella* sp.; CONTRA COSTA Co.: Antioch, *S. variella* on *Q. agrifolia*; 3 km E of Antioch, *S. variella* on *Q. agrifolia*; Cowell, *S. variella* on *Q. agrifolia*; Oakley, *S. variella* on *Q. agrifolia*; Russellmann Park; Russell Tree Farm, 6 km NE of Orinda, *S. variella*; MARIN Co.: Novato, *Coptodisca powellella* on *Q. agrifolia*; Sausalito, on *Q. agrifolia*; MONTEREY Co.: 10 km SE of Big Sur; SAN MATEO Co.: Woodside, *Bucculatrix alberitiella* on *Q. agrifolia*; SANTA BARBARA Co.: Santa Cruz Island, Canada de la Cuesta, *Stigmella* sp. on *Q. dumosa*; SONOMA Co.: Sonoma, *Stigmella* sp. on *Q. agrifolia*. MICHIGAN. MIDLANDS Co.. VIRGINIA. Falls Church. MISSISSIPPI. HINDS Co.: Jackson, *Coptodisca* sp. on *Vaccinium arboreum* Marsh, holotype (no. 8800, deposited in Canadian National Collection, Ottawa, Ontario) and paratype (deposited in United States National Museum, Washington, D.C.). WEST VIRGINIA, MONON-

GALIA Co.: Morgantown, *Obrussa* sp., paratype (deposited in U.S.N.M.).

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