

**EGG PREDATION BY *CATOLACCUS* PROB. N. SP.
(HYMENOPTERA, PTEROMALIDAE) ON THE SPIDER,
DICTYNA COLORADENSIS (DICTYNIDAE)**

This note documents predation by the wasp, *Catolaccus* prob. n. sp. on the eggs of *Dictyna coloradensis* Chamberlin in northern Idaho and eastern Washington. Egg sacs of *D. coloradensis* were collected from the rangeland weeds, spotted knapweed (*Centaurea maculosa* Lamarck) and yellow starthistle (*C. solstitialis* L.) (Asteraceae). One or the other of these plant species dominated each collection site (see below). Web height, when collected from spotted knapweed and yellow starthistle, were an average of (\pm SE) 64.7 (\pm 7.2, $n = 18$) and 39.2 (\pm 2.8, $n = 36$) cm, respectively. In spotted knapweed, the webs were found in the stems, whereas in yellow starthistle they were located among the flower spines.

Collections were made in three areas: (1) north Idaho panhandle (Farragut State Park [8.3 km E of Athol] and Athol [1.6 km E of Athol] sites; Kootenai Co.) where spotted knapweed comprised the primary web substrate; (2) eastern Washington (Chief Timothy State Park [8.3 km W of Clarkston]; Asotin Co.) and (3) north central Idaho (the Pond [5.1 km NW of Culdesac] and Central Grade [6.4 km NE Hatwai] sites; Nez Perce Co.) where egg sacs were collected from yellow starthistle substrates. Twenty webs were collected ca. weekly from May through September and egg sacs present were examined for the presence of the wasp.

Dictyna coloradensis egg sacs collected at various sites were found to be infested with a predacious pteromalid, *Catolaccus* prob. n. sp. (based on the taxonomic determination by Eric E. Grissell). Larvae of this pteromalid were found feeding upon eggs within the egg sac. When an egg sac was infested, all eggs were consumed by a single pteromalid larva. Although the pteromalid eggs were never found, they were either laid singly or multiple ovipositions resulted in the mortality of all but one individual as only a single pteromalid adult was reared from all parasitized egg sacs.

The spider egg sacs were flocculent white, constructed of dense silk and always attached adjacent to the web retreat in the center of the hackled-band, mesh web. No external evidence of parasitism could be identified on the web or egg sacs,

thus we suspect wasp eggs were laid within the egg sac by the thin wasp ovipositor (ca. 1 mm long).

Most species of *Catolaccus* are secondary parasites of ichneumonid or braconid parasites of Lepidoptera or Coleoptera (Burks 1954). We found no other records of spider egg predation by members of this genus. Another pteromalid, *Arachnopteromalus dasys* Gordh, has been reported as an egg sac parasite (= egg predator) of several uloborid spider species (Gordh 1976, 1983; Peaslee and Peck 1983); thus, predation of cribellate spider eggs by pteromalids may have evolved more than once along independent lineages (G. Gordh, pers. comm.).

The percent parasitism of egg sacs collected at the different sites during 1982 were: Athol, 19% ($n = 183$); Farragut State Park, 23% ($n = 13$); Chief Timothy State Park, 24% ($n = 17$); and 0% ($n = 49$) at the Pond site. During the 1983 season, for unknown reasons, the percent parasitism dropped dramatically: Farragut State Park, 7% ($n = 84$); Central Grade, 0% ($n = 26$); and the Pond site, 0% ($n = 22$). Percent parasitism over the sites was 16% ($n = 262$) during 1982 and 5% ($n = 132$) during 1983. Wasp parasitism of 2 and 3 egg sacs located in single webs occurred three times each. *Dictyna coloradensis* females produce an average of 2-3 egg sacs (Wheeler 1985); thus, when attack occurs, egg predation may significantly reduce reproductive success of this spider. However, the cause(s) of the decline in parasitism rates (e.g., weather, defensive response, alternate hosts) between the two years is yet unknown.

Adult wasps were occasionally observed alighting and walking freely on *D. coloradensis* webs in the laboratory and in the field, apparently without provoking the spider. The pteromalid was never found ensnared in the spider webs. Field observations of *D. coloradensis* indicate that the adult females remain in the web with the eggs and the first two instars until spiderling dispersal, perhaps to assist in prey capture or to guard the offspring against natural enemies (Wheeler 1985). On two occasions ants entering the webs of mature females were confronted with apparently defensive charging and web tugging by the spider. After 5 min of observation in both cases, a standoff resulted where neither the ants nor the spiders appeared to gain an advantage. However, based upon our wasp observations, protection from this egg predator may be ineffective due to wasp adaptations for walking freely on webs and the lack of spider defensive responses to wasp infestation.

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LITERATURE CITED

- Burks, B. D. 1954. Parasitic wasps of the *Catolaccus* group in the Americas. USDA Tech. Bull. No. 1093.

- Gordh, G. 1976. A new genus of Pteromalidae from Missouri, the type-species of which parasitizes *Uloborus octonarius* Muma (Hymenoptera: Chalcidoidea; Araneida: Uloboridae). J. Kansas Entomol. Soc., 49:100-104.
- Gordh, G. 1983. New distributional and host records for *Arachnoptromalus dasys* Gordh (Hymenoptera: Pteromalidae), an egg-sac parasite of uloborid spiders (Araneida). Proc. Entomol. Soc. Washington, 85:181.
- Peaslee, J. E. and W. B. Peck. 1983. The biology of *Octonoba octonarius* (Muma) (Araneae: Uloboridae). J. Arachnol., 11:51-67.
- Wheeler, G. S. 1985. The bionomics of two spiders, *Dictyna coloradensis* Chamberlin and *D. major* Gertsch (Araneae: Dictynidae): potential antagonists to the biocontrol of weeds. M.S. Thesis, University of Idaho, Moscow, 103 pp.

G. S. Wheeler and **J. P. McCaffrey**, Department of Plant, Soil, & Entomological Sciences, University of Idaho, Moscow, Idaho 83843 USA. (present address of senior author: Department of Entomology and Nematology, Bldg. 339, IFAS (0711), University of Florida, Gainesville, Florida 32611-0711 USA).

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