

The heads of all available dried specimens of female *Ophiogomphus* were examined at 50X. These were from the Bick, Daigle, Dunkle, and Knopf Collections, and the Florida State Collection of Arthropods.

It was found that *O. morrisoni* Selys and *O. severus* Hagen may have identical color patterns and can be differentiated with certainty only by head structure: (1) The sagittal length of the vertex from the anterior edge of the post-ocellar ridge to the anterior edge of the occiput is 0.51-0.58 of the closest width between the compound eyes in *morrisoni*, 0.32-0.49 in *severus*; (2) *morrisoni* has a deep groove between the eye and occiput on each side of the back of the head, *severus* has a mound-like ridge connecting eye and occiput; (3) The dorsal surface of the occiput is concave in *morrisoni*, convex in the middle in *severus*; and (4) *morrisoni* may have a pair of spines on the crest of the occiput which are always lacking in *severus*.

A total of 149 female *Ophiogomphus* were studied, of which 10 were reared and 21 were teneral. The 118 non-teneral females were included in 13 of the 15 described Nearctic species. No non-teneral females were available of *O. anomalus* Harvey or *O. edmundo* Needham.

Because the male epiproct is of diverse shapes in different species of *Ophiogomphus*, the markings it produces on the dorsal head surface of female are varied. For example, the male epiproct of *O. rupinsulensis* (Walsh) has no sharp points, and left no discernable marks whatsoever on the heads of females, even on a female collected in copulation (except 2 females had apparently been in tandem with male *O. carolus* Needham). Conversely, the sharply hooked epiproct of *O. severus* punched holes in 86% of the mated females examined in the vertex posterior to the median ocellus, often one large hole as wide as the distance between the lateral ocelli.

Five species of *Ophiogomphus* had holes punched in the vertex or occiput by the male epiproct. Of the non-teneral females examined, these included 2/4 *O. aspersus* Morse, 1/9 *O. colubrinus* Selys, 1/7 *O. morrisoni*, 5/14 *O. occidentis* Hagen, and 18/21 *O. severus*.

#### HEAD DAMAGE DUE TO MATING IN *OPHIOGOMPHUS* DRAGONFLIES (ANISOPTERA: GOMPHIDAE)

Damage to the compound eyes of some female Aeshnidae and Gomphidae by the male epiproct during mating attempts has been noted by several authors (references in S.W. DUNKLE, 1979, *Odonatologica* 8: 123-127). The maximum injury in these cases was the denting of the lenses of perhaps 50 ommatidia in each compound eye. The head damage here reported in *Ophiogomphus* is nearly the maximum possible to imagine and still allow the female to live.

The head damage here reported in *Ophiogomphus* is the most extreme form of mating mark so far reported in the Odonata. Such injury is also probably the most extreme form possible short of crippling the female. Presumably the punctures described here penetrate into the hemocoel, but possibly a dorsal tracheal air sac is present in the head, which should be looked for in fresh specimens. The cranial holes as observed were not sealed with a blood clot, and it appeared that pathogenic bacteria, fungal spores, and dry air had free access to the inside of the head. Such holes certainly seem maladaptive, and why natural selection has allowed this damage remains to be explained. Female specimens of all other Nearctic gomphid species were examined but no similar damage was seen.

The loans of specimens by GEORGE and JUANDA BICK, JERRELL DAIGLE, and KENNETH KNOPF are greatly appreciated.

S.W. Dunkle, Department of Entomology,  
University of Florida, Gainesville, Florida  
32611, United States.