

**MORPHOLOGICAL EVIDENCE FOR THE HYBRID *ENALLAGMA EBRIUM* X
HAGENI (ZYGOPTERA: COENAGRIONIDAE) FROM ONTARIO**

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On 18 June 2000, four species of Zygoptera including *Enallagma civile*, *E. cyathigerum*, *E. ebrium*, and *E. hageni* were collected from Burnside gravel pit pond, 45.2272° N, 75.7780° W, 5 km NE of Richmond, Ottawa, Ontario. This extensive gravel pit pond had been created 10 years earlier. Subsequent examination of the material revealed a single male specimen of a probable hybrid of *E. ebrium* and *E. hageni*.

Drawings of the anal appendages of the putative hybrid and putative parents from the site were prepared with the aid of a camera lucida and intermediate characteristics suggesting a hybrid origin were noted. Additional specimens of the putative parents from other locations were evaluated in order to compensate for potential variation in discriminating characters not evident in the sample from the hybrid location.

The putative hybrid has a bifid superior appendage, although the dorsal arm is much shorter than the ventral arm (Fig. 1D), and a medially directed sub-apical tooth on the inner side as well as a broad terminal surface directed more posteriorly than medially (Fig. 1E, F). Of the four *Enallagma* species found at Burnside pond, only *E. ebrium* has a bifid superior appendage in the male (Fig. 1A), suggesting that it is one of the parents. The other parent is expected to be a species with non-bifid superior appendages, a medially directed sub-apical tooth on the inner side of the superior appendage, and a broad posteriorly directed terminal surface. *Enallagma hageni* has all of these features to a greater extent than does the hybrid (Fig. 1G, H, I). Since these features are not possessed by *E. ebrium* (Fig. 1A, B, C), it appears that the specimen is not simply a freak of *E. ebrium*, but rather a hybrid between *E. ebrium* and *E. hageni*. These two species are closely related and indistinguishable except through close examination of terminal appendages in the case of males (Fig. 1), and posterolateral margins of mesostigmal plates in females (Westfall and May 1996).

Features to be expected if *E. cyathigerum* was the other parent, such as a narrower humeral stripe and black area on segment 2 isolated from the base of the segment, are not present in the putative hybrid. That *E. civile* is not a parent is suggested by the putative hybrid's relatively long and horizontal inferior appendages and lack of a visible tubercle on the superior appendages in lateral view. In *E. civile* the inferior appendages are shorter than the superior appendages and directed vertically, and the tubercle is distinct in lateral view.

There is a pale tubercle in *E. ebrium* within the claw on the inner dorsal surface of the lower arm and the medially directed terminal edge of the lower arm is thin. On the putative hybrid, the medial terminal edge of the lower arm is not thin-edged, but thick-edged and the tubercle-like tissue appears terminal (on the medial terminal edge of the lower arm) as would be expected in a hybrid involving *E. hageni* that has a terminal tubercle. The terminal tubercle of the hybrid and the medially directed spine (tooth) are best seen in a lateroventral view (Fig. 1F).

Hybrid Odonata are relatively rare. In damselflies (Zygoptera), only 14 specimens are listed by Corbet (1999) and in the large genus *Enallagma*, the only hybrids listed are two specimens of *E. carunculatum* x *civile*. To this may be added the recent reports of *E. anna* x *civile* (Donnelly 2000) and possibly also *E. optimolocus* (Miller and Ivie 1996) which may be *E. anna* x *carunculatum* (Westfall and May 1996).

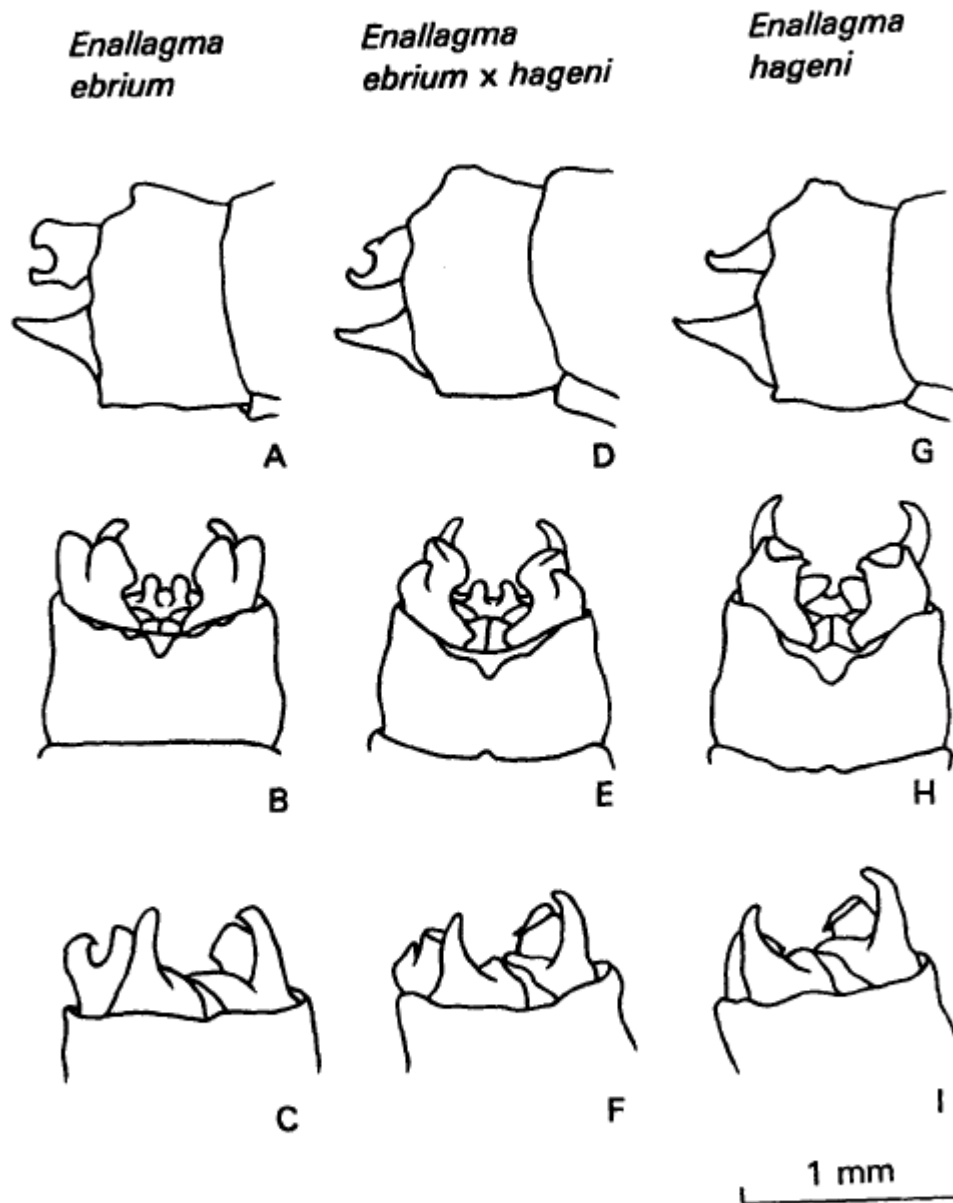


FIGURE 1. Male terminal appendages viewed laterally (A, D, G), dorsally (B, E, H) and lateroventrally (C, F, I) in *Enallagma ebrium* (A, B, C), *E. ebrium x hageni* (D, E, F) and *E. hageni* (G, H, I). Camera lucida drawings by P.M. Catling based on material from Burnside Pond, Ottawa, Ontario.

The putative *Enallagma ebrium* x *hageni* specimen has been placed with *E. ebrium* in the Canadian National Collection of Insects, Arachnids, and Nematodes (CNCI, Agriculture and Agri-food Canada, Ottawa).

References

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