

Summary and Discussion

The subfamily Macrocentrinae contains 56 valid Nearctic species occurring from Florida to the Arctic Circle (one, *Macrocentrus thoracicus* Nees, is introduced from Japan). Of 43 species formerly placed in the genus *Macrocentrus* Curtis, two are moved to *Austrozele* Roman, three are moved to *Hymenochaonia* Dalla Torre (one had previously been moved there by Achterberg [1993b]), and *Macrocentrus crambivorus* is placed as a junior synonym of *M. crambi*. Of 13 new species described herein, two are added to *Dolichozele*, two added to *Hymenochaonia*, nine added to *Macrocentrus*. Furthermore, since the completion of this paper, the author has examined almost 150 additional specimens that appear to represent 20 to 25 new species.

This revision makes it clear that further study of the Macrocentrinae is needed, especially the phylogeny of the subfamily. Because six of the genera occur in two or more major zoogeographic regions, a worldwide approach would be desirable to assure that key taxa are included.

Additional characters would also be helpful. Two largely unexplored character-suites for Macrocentrinae include features of the immature stages and data derived from molecular studies. Characters of the immature head capsule are known to be useful for other braconid groups (Achterberg 1984, Quicke and Achterberg 1990, Wharton et al. 1992), but such material is almost unavailable for the Macrocentrinae. Furthermore, it is desirable to have male and female representatives for all included taxa. Females are especially needed to substantiate the validity of the species of *Macrocentrus*. At present, the association of immatures and males with identifiable females is possible only through rearing parasitized hosts, field collection of both sexes at the same location and time, or by biochemical means.

It is hoped that the keys, descriptions, figures, and summaries of host and distributional data presented here will stimulate additional collecting, encourage ecological and systematic research, and promote biological control efforts using these parasitic wasps.