

AN INTEGRATIVE APPROACH TO UNDERSTANDING THE EVOLUTION AND SYSTEMATICS OF CHALCIDOIDEA: A RECENT MEGARADIATION OF HYMENOPTERA.

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Chalcidoidea (jewel wasps) are among the most species rich, ecologically important, and biologically diverse groups of terrestrial organisms. Their diversity is staggering, with an estimated 500,000+ species provisionally placed in 22 families and 83 subfamilies. These minute wasps (mostly 1–2 mm in size) are numerically abundant and ubiquitous in almost every habitat. The economic importance of Chalcidoidea in pest management is unparalleled and they are widely used in biological control programs against major pests throughout the world. Examples include the use of chalcidoid natural enemies to successfully control two serious mealybug pests that in the last century threatened cassava production in Africa and cattle production in the US. Only recently have we begun to develop an understanding of their phylogenetic relationships, but this is still very incomplete. We propose to develop a comprehensive phylogeny of Chalcidoidea based on genomic, morphological, and fossil evidence, develop a new higher classification, and develop novel means of data dissemination to make available the taxonomic and biological information for the superfamily. The training and products resulting from this study will be essential as we transition to a vigorous new generation of researchers.

