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EDITORIAL

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Editorial

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The following special issue presents papers that implement an integrated approach in the systematics of platygastroid wasps. These papers were produced during the post-doctoral research fellowship of EJT at the Systematic Entomology Laboratory (USDA/ARS), with a directive to identify biological control agents of the brown marmorated stink bug (*Halyomorpha halys* (Stål)). Thus, taxonomic treatment of egg parasitoids in the genus *Trissolcus* (Ashmead) (Scelionidae) formed the bulk of the work. However, operating from within the National Museum of Natural History afforded opportunities to explore related interests, including functional morphology, paleontology, bioinformatics, anatomical analysis, and molecular phylogenetics. All but the last of these topics are contained in the papers presented here, and employ an array of modern tools for data acquisition (photography, SEM, CLSM) and dissemination (Hymenoptera Anatomy Ontology, vSysLab, Specimage).

A significant challenge in revisionary taxonomy is the matter of accessing primary types distributed throughout the world. For institutions in which loans of these types are not possible, travel is required to examine the specimens or taxonomic decisions must be made on descriptions and illustrations. In some cases, descriptions have been insufficient to diagnose species that differ by subtle characters, or characters that were previously overlooked. Our revision of Palearctic *Trissolcus* required international travel and significant loans of material from collections in Asia, Europe, and North America to match species concepts with available names as definitively as possible. In the pro-

cess of examining types from such a broad area we determined that most of the species names are synonyms, illustrating a detrimental consequence of taxonomy conducted in isolation. We recognize that some of this isolation stems from political and financial barriers, which we seek to overcome with photographic catalogs of Platygastroidea for two institutions with important collections of primary types: The National Museum of Natural History (USNM), Washington, DC, and The Institute of Ecology and Biological Resources (IEBR), Hanoi, Vietnam. We do not expect these catalogs to completely obviate direct examination of types, but we do expect that the accessibility provided will be of use to taxonomists worldwide.

Another form of taxonomic isolation can exist when studies of fossil and extant faunas are conducted independently. We have sought to bridge this separation by exposing the platygastroid fossils of the USNM with a photographic catalog (Talamas and Buffington 2015), and by making the effort to examine 14 of the 16 described species of *Archaeoteleia* Masner before treating a specimen in Cretaceous amber. Certainly not all fossil taxa will contain extant species as does *Archaeoteleia*, but this cannot be ascertained without examination of the extant fauna. Reliance on morphology for phylogenetic placement of fossil taxa emphasizes the need for a broad and detailed morphological context when analyzing fossil specimens. A survey of platygastroid morphology with SEM, conducted by EJT and interns at the USNM, provided the comparative context needed to determine which new characters had diagnostic power at the generic level for *Archaeoteleia*, and the results of this survey will undoubtedly be of continual use in future studies.

One component of this morphological exploration focused on ovipositor systems in Platygastrinae that were not fully documented. The ovipositor system in Platygastroidea has been a useful source of characters for delimitation of genera and producing hypotheses of relationship. It will continue to be of significance as more fossil specimens become known, particularly because the ovipositor is often extended and visible in amber inclusions. Our analysis of ovipositor systems in Platygastrinae highlights the renewed attention that must be given to morphological characters to discover synapomorphies and convergences that illuminate the evolution of Platygastroidea.

We believe that the papers presented here provide examples of research that are useful for both the dedicated taxonomist and for those who rely on taxonomy for identification tools, such as the biological control community. Lastly, we hope that this special issue will serve as a testament to the productivity that can emerge from collaborative efforts between numerous institutions, countries, and contributors with a wide spectrum of experience.