

A Review of *Toya* (Hemiptera: Delphacidae) from the New World

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The genus *Toya* is currently represented in the New World by five species: *Toya argentinensis* (Muir 1929) from Argentina, *T. boxi* (Muir 1929) from Brazil; *T. venilia* (Fennah 1959) from the West Indies (Leeward Islands); *T. iaxartes* (Fennah 1959) from St. Lucia; and *T. propinqua* (Fieber 1866) from throughout the region. Specimens were collected during the Great Smoky Mountains All Taxon Biotic Inventory (ATBI) (Sharkey 2001) that were either undescribed North American species of *Toya*, or species belonging to *Toya* currently assigned to the wrong genus. This led to this review of New World *Toya*. In this review, all available New World *Toya* specimens were examined along with specimens of the type species, *Toya attenuata* Distant, 1906, from Sri Lanka. The definition of the genus is examined with reference to the New World species, and the generic placement of each New World species is reconsidered. In addition, some species from the polyphyletic genus *Delphacodes* appear to belong in, or are related to, *Toya* and were compared to *Toya* for possible placement, including *D. wetmorei* (Muir & Giffard 1924), *D. fallax* Muir 1926, *D. dolosa* Muir 1926, *D. idonea* Beamer 1947, *D. axonopi* (Crawford 1914), and *D. nigra* (Crawford 1914).

The genus *Toya* is best defined through a series of genitalic features, particularly a pygofer greatly expanded on the dorsocaudal angles and a produced and apically bifurcate or lobed genital diaphragm. Using this definition, it appears that *Toya venilia*, *T. argentinensis*, and *T. iaxartes* (the latter species based on illustrations, pending the examination of the holotype requested from the Bernice P. Bishop Museum, Hawaii) do not belong within the genus. While they exhibit the expanded pygofer similar to *Toya*, they do not possess a bifurcated armature of the diaphragm. Rather, the former two species have an elongated armature which narrows at the apex, thereby more closely fitting the definition of the genus *Syndelphax* Fennah 1963. *Toya iaxartes* will not be placed until the holotype is examined. Descriptions of *T. boxi* suggest that it is not properly placed as well. *Toya boxi* fits neither the definition for *Toya* nor *Syndelphax*. Instead, this species more closely resembles certain species currently in *Delphacodes*, in particular *Delphacodes idonea*.

Several species of *Delphacodes* were examined with structural similarities to *Toya*. One species, *D. wetmorei*, belongs to *Toya* and is hereby transferred to the genus. Other species studied, *Delphacodes axonopi*, *D. nigra*, and *D. idonea*, while externally similar to *Toya*, exhibited genitalic differences, particularly with the genital diaphragm. The diaphragm in these species is a concave shape, sometimes with a pair of small projections. It appears that *Delphacodes axonopi*, *D. nigra*, and *D. idonea* represent a distinct grouping and should be segregated from *Delphacodes*, with *Toya boxi*, into their own genus. *Delphacodes fallax* and *D. dolosa* also appear very similar to *Toya*. While the armature of the diaphragm is very well-developed and produced caudally, it lacks a bifurcated apex, and forms a support structure extending along the basal third of the aedeagus in both species suggesting their possible placement in *Syndelphax*.

During the progress of this study, the specimens from the ATBI that motivated this study were found to be *T. propinqua* and *D. idonea*. The specimen of *T. propinqua* was within the range of variation found among specimens of this species. *Delphacodes idonea* is a species which was not expected to range into the Park. Although neither specimen was found to be a new species, the identification of *D. idonea* provided a new record for the GSMNP ATBI project.

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