

More assassins on the radar: As many as 24 new species of assassin bugs described

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A male individual of the new assassin bug species *Zelus truxali*. Credit: Dr Guanyang Zhang

As many as 24 assassin bugs new to science were discovered and described by Dr. Guanyang Zhang and his colleagues. In their article, published in the open access *Biodiversity Data Journal*, they describe the new insects along with treating another 47 assassin bugs in the same genus. To do this, the scientists examined more than 10,000 specimens,

coming from both museum collections and newly undertaken field trips.

Assassin bugs are insects that prey upon other small creatures, an intriguing behavior that gives the common name of their group. There are some 7000 described [species](#) of [assassin bugs](#), but new species are still being discovered and described every year.

The new species described by scientists Drs Guanyang Zhang, University of California, Riverside, and Arizona State University, Elwood R. Hart, Iowa State University, and Christiane Weirauch, University of California, Riverside, belong to the assassin bug genus *Zelus*.

Linnaeus, the Swedish scientist, who established the universally used Linnean classification system, described the first species (*Zelus longipes*) of *Zelus* in 1767. Back then, he placed it in the genus *Cimex*, from where it was subsequently moved to *Zelus*. All of Zhang & Hart's new species are from the Americas. Mexico, Panama, Peru, Colombia and Brazil are some of the top countries harboring new species.

To conduct the research, Zhang examined more than 10,000 specimens and nearly all of them have been databased. These specimen records are now freely and permanently available to everybody. Zhang's work demonstrates the value of natural history collections. The specimens used in his work come from 26 museums in nine countries. The discovery of the new species would not have been possible without these museums actively collecting and maintaining their insect collections.



A male individual of the new assassin bug species *Z. casii*. Credit: Dr Guanyang Zhang

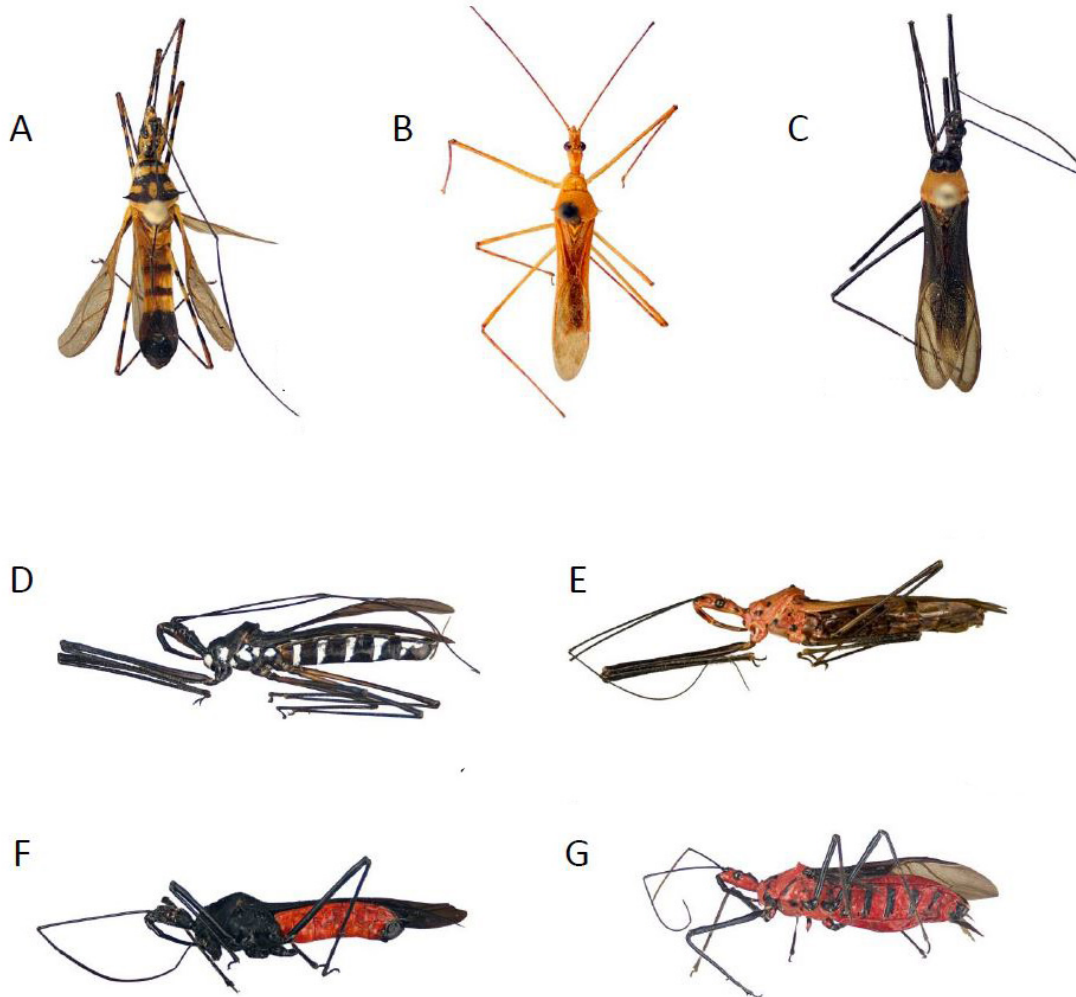
It took more than a century for some of the new species to be formally recognized and described. The first specimens of the species *Zelus panamensis* and *Zelus xouthos*, for example, had been collected in 1911 and 1915 from Panama and Guatemala. However, since then they had been waiting quietly in the collection of the Smithsonian National Museum of Natural History, USA. Now, over 100 years later, they are finally discovered and given scientific names.

Meanwhile, more recently collected specimens also turned out to be new species. Specimens of *Zelus lewisi* and *Zelus rosulentus* were collected in 1995 and 1996 from Costa Rica and Ecuador, about two decades ago, a timeframe considered relatively short for taxonomic research. These interesting patterns of time lapse between specimen collecting and scientific description suggest that it is equally important to examine both long deposited in museums specimens and those newly collected from the field.

The kind of research performed by Zhang and his colleagues is called revisionary taxonomy. In revisionary taxonomy a researcher examines a large number of [specimens](#) of a group of organisms of his or her interest. This can be either a monophyletic lineage or organisms from a particular region. The scientist's goal is to discover and describe new species, but also examine and revise previously published species.

Besides describing [new species](#), the present taxonomic monograph treats

another 47 previously described species. Nearly all species now have images of both males and females and illustrations of male genitalia. Some of these insects are strikingly brightly colored and some mimic wasps.



Zelus assassin bugs (Hemiptera: Reduviidae)

Species of *Zelus* assassin bugs (Hemiptera: Reduviidae). *Zelus nigromaculatus* Champion, 1899 (author, year); B - *Zelus xouthos* Zhang & Hart, 2016; C - *Zelus gracilipes* Zhang & Hart, 2016; D - *Zelus lewisi* Zhang & Hart, 2016, male; E - *Zelus lewisi*, female; F - *Zelus championi* Zhang & Hart, 2016; G - *Zelus*

chamaeleon Stål, 1872. Credit: Dr Guanyang Zhang

More information: Guanyang Zhang et al, A taxonomic monograph of the assassin bug genus *Zelus* Fabricius (Hemiptera: Reduviidae): 71 species based on 10,000 specimens, *Biodiversity Data Journal* (2016).

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