

Summary

Drepanaphis Del Guercio, 1909 is the most numerous aphid (Hemiptera, Aphididae) genus within the subfamily Drepanosiphinae, comprising 18 species and 44 known morphs. It occurs in North America, with one species, *Drepanaphis acerifoliae*, also found in Europe and Asia. Its host plants are trees of the genus *Acer*, and in the case of *D. monelli*, *Aesculus glabra*. A characteristic feature of representatives of this taxon are the dorsal tubercles on the abdomen, which constitute a unique diagnostic characteristic of the group.

Until now, the genus *Drepanaphis* has been verified solely on the basis of morphological characters, without considering relationships based on molecular data.

The main objectives of the work included: determining the distribution range of *D. acerifoliae* and modeling its ecological niche; taxonomic revision of the entire genus, taking into account biogeographic and trophic analyses; and conducting phylogenetic analyses with characterization of the endosymbiont consortia.

The study material included microscopic slides of aphids from museum collections and fresh material obtained during fieldwork in the United States.

A range of research methods was used, including light microscopy, scanning electron microscopy (SEM), and sequencing of genetic material. The study was supported by statistical analyses as well as broadly defined bioinformatic analyses.

During the course of the study, misidentified specimens of seven species were corrected, and a new species, *Drepanaphis robinsoni* Malik, 2024, was described. Comparative analysis of oviparous females resolved taxonomic ambiguities among morphologically similar species. Molecular analyses confirmed that the genus *Drepanaphis* is monophyletic. Based on host specificity and geographic distribution, three trophic groups were distinguished (*grandidentatum*, *saccharum*, *rubrum*), the result supported by molecular data. *Sodalis* bacteria were detected in all representatives of the genus *Drepanaphis*, indicating that they may serve as a second obligate endosymbiont.

The obtained results significantly expand the molecular and microbiological data for the Drepanosiphinae subfamily. It is suggested that future phylogenetic studies of this group should consider, among other things, the trophic relationships of aphids, including both the host plant and the composition of endosymbionts.