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Perspective

Hemiptera: Morphology and Phylogeny

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DESCRIPTION

The *Hemiptera* are called 'true' bugs comprising over 80,000 species within groups such as the cicadas, aphids, plant hoppers, leafhoppers, bed bugs, and shield bugs. They range in size from 1 mm (0.04 in) to around 15 cm (6 in), and share a common arrangement of sucking mouthparts. The name "true bugs" is often limited to the suborder Heteroptera. Many insects commonly known as "bugs", especially in American English, belong to other orders. Many of them are dissimilar to one another, but they all have piercing mouthparts that allow them to suck the juices from plants or animals primarily plants. When not in use, their mouthparts are housed in a beak (or rostrum), which is normally carried beneath the body. Some bugs, such as aphids, are important agricultural pests as plant feeders, not only because they destroy crops but also because they can spread viral illnesses. Most bugs, on the other hand, are not pests. Long antennae separated into a small number of segments are common in bugs and the front wings can be relatively toughened. Some bugs resemble beetles, however unlike the bugs; beetles have wing cove -rs that do not overlap.

Morphology and phylogeny

Due of recent developments, the orders Homoptera and *Hemiptera* have been combined into one order known as Hemiptera. Most entomologists have recognized two closely related orders, Hemipte -ra and Homoptera, for over a century. It was discovered that they all belonged to the same major group, and Homoptera is divided into three smaller groups. "*Hemiptera* (true bugs)" is what modern sources name "Heteroptera (true bugs)" if you have an older book that recognizes two orders (Hemiptera and Homoptera).In ancient literature, "Homoptera" is divided into three groups: Sternorrhyn -cha (aphids, whiteflies, scales), Auchenorrhyncha (cicadas, hoppe -rs), and Coleorrhyncha (cicadas, hoppers). In technical literature, the name Homoptera is no longer used. Historically, the Hemipte -ra Order was divided into two suborders: Heteroptera (meaning "various wings") and Homoptera (meaning "uniform wings"). The structure of the wings was used to make this differentiation. Any type of the insect order Heteroptera, which includes the so-called true bugs, is referred to as a heteropteran. An X-shaped design on the back, the back produced by the wings at rest, distinguishes this group of insects,which includes over 40,000 species. The heteropterans are distinguished from all other insect orders by a combination of characteristics, including sucking mouthparts specialised to puncture plant or animal tissues and a hardened gula. The majority of Heteroptera species are terrestrial, however a few are aquatic. Some species that feed on plant liquids can be harmful to cultivated crops. Other predatory creatures aid people by eliminating certain pests. Heteropterans can also operate as disease carriers. Hemiptera include species that are clearly insects, such as assassin bugs, as well as organisms that are so reduced that it is impossible to identify they are animals, such as scale insects. The arrangement of the mouthparts into an extended beak is the only common feature. Two stylets (maxillae) at the centre of the beak have two groves on their inner surface, thus when both stylets are positioned together, two channels are formed. The one channel is used to suck food into the body, while the other is utilised to expel saliva or venom. The mandibles are two additional stylets on either side of the maxillae. To aid penetrate the food item, they can glide back and forth along the beak independently of the inner maxillae. A thin sheath made of labium surrounds each of the four stylets. The following is an example of a generalized feeding nature: The mandibular stylets emerge at the tip of the beak and cut into the food item; then, as the mandibular stylets continue to cut into the food item and the beak is inserted further, the inner most maxillary stylets begin ejecting saliva (or venom) through the salivary channel; finally, fluid is drawn up through the food channel of the maxilla.

CONCLUSION

Many hemipterans show major disease vectors due to the presence of the salivary channel and saliva injection. Most *Dictyopharinae* genera suitable at their own tribal association, but some suggested changes are that *Pharodictyon*, *Paramisia*, *Dictyopharoides s.s.*, *Chondrophana*, *Sicoris*, *Chondrodire*, and *Tupala* are temporarily located in Hastini; *Pukuakanga* is progressed into Nersiini; *Sinodictya* and *Raphiophora* are moved into Orthopagini; and *Chiltana*, *Litocras*, and *Viridophara* are placed in Dictyopharini.

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