

# Belostomatidae

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**Belostomatidae** is a family of insects in the order Hemiptera, known as **giant water bugs** or colloquially as **toe-biters**, **Indian toe-biters**, **electric-light bugs**, **alligator ticks** or **fleas** (in Florida). They are the largest insects in the order Hemiptera, and occur worldwide, with most of the species in North America, South America, Northern Australia and East Asia. They are typically encountered in freshwater streams and ponds. Most species are relatively large, typically at least 0.75 in (2 cm) long, although smaller species also exist. The largest are members of the genus *Lethocerus*, which can exceed 4.75 in (12 cm) and nearly reach the length of some of the larger beetles in the world. Giant water bugs are a popular food in southeast Asia.

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## Habits



*Lethocerus americanus* in Montana, USA

### Feeding and defense

Belostomatidae are fierce predators which stalk, capture and feed on aquatic invertebrates, snails, crustaceans, fish and amphibians. The largest species have also been found to

capture and feed on baby turtles and water snakes.<sup>[1]</sup> They often lie motionless at the bottom of a body of water, attached to various objects, where they wait for prey to come near. They then strike, injecting a powerful digestive saliva with their rostrum, and sucking out the liquefied remains. Their bite is considered one of the most painful that can be inflicted by any insect; however, though excruciatingly painful, it is of no medical significance. Adults cannot breathe under water, and must

### Belostomatidae



*Abedus indentatus* male with eggs on its back

### Scientific classification

Kingdom:	Animalia
Phylum:	Arthropoda
Class:	Insecta
Order:	Hemiptera
Infraorder:	Nepomorpha
Family:	<b>Belostomatidae</b>
	Leach, 1815

### Subfamilies and genera

#### Belostomatinae

*Abedus*  
*Appasus*  
*Belostoma*  
*Diplonychus*  
*Hydrocyrius*  
*Limnogeton*  
*Poissonia*  
*Sphaerodema*  
*Weberiellia*

#### Lethocerinae

*Lethocerus*  
*Benacus*  
*Kirkaldyia*

surface periodically for air.<sup>[2]</sup> Occasionally when encountered by a larger predator, such as a human, they have been known to "play dead" and emit a fluid from their anus.<sup>[2]</sup> Due to this they are assumed dead by humans only to later "come alive" with painful results.<sup>[2]</sup>

Horvathiniinae

*Horvathinia*

## Breeding



Male (red tag) and female (blue tag) copulating

Belostomatids show paternal care and these aspects have been studied extensively, among others involving the North American *Belostoma flumineum* and the East Asian *Lethocerus (Kirkaldyia) deyrollei*. In species of the subfamily Belostomatinae, the eggs are typically laid on the male's wings and carried until they hatch. The male cannot mate during this period. The males invest considerable time and energy in reproduction and females take the role of actively finding males to mate. This role reversal matches the predictions of R. L. Trivers' parental investment theory. In the subfamily Lethocerinae, the eggs are laid on emergent vegetation and guarded by the male.

## In Asian cuisine

In some areas belostomatids are considered a delicacy, and can be found for sale in markets. This is mainly in southeast Asia involving the species *Lethocerus indicus*. They are often collected for this purpose using large floating traps on ponds, set with black lights to attract the bugs. Adults fly at night, like many aquatic insects, and are attracted to lights during the breeding season.



Fried giant water bugs at a market in Thailand

## Notes

1. "BBC Nature - Giant water bug photographed devouring baby turtle" (<http://www.bbc.co.uk/nature/13500857>). *BBC Nature*.
2. A. C. Huntley (1998). "*Lethocerus americanus*, the "toe biter" " (<http://dermatology.cdlib.org/DOJvol4num1/lethocerus/letho.html>). *Dermatology Online Journal* **4** (2): 6.

## References

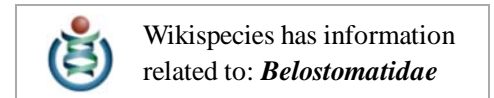
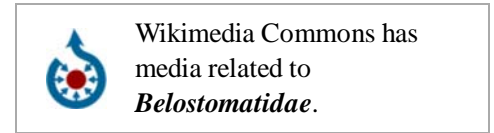
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- R. T. Schuh & J. A. Slater (1995). "True Bugs of the World (Hemiptera:Heteroptera): Classification and Natural History". Cornell University Press.

## External links

- Factsheet from zoo.org ([http://www.zoo.org/factsheets/giant\\_waterbug/giantWaterbug.html](http://www.zoo.org/factsheets/giant_waterbug/giantWaterbug.html))
- Sex role reversal ([http://www.colostate.edu/Depts/Entomology/courses/en507/papers\\_1995/cito.html](http://www.colostate.edu/Depts/Entomology/courses/en507/papers_1995/cito.html))
- Toebiters (<http://www.dbc.uci.edu/~pjbryant/biodiv/hemipt/Toebiter.htm>)
- Pictures of a Giant Water bug from whatsthatbug.com ([http://whatsthatbug.com/toe\\_biter.html](http://whatsthatbug.com/toe_biter.html))
- *Lethocerus*, *Abedus*, *Belostoma* spp. ([http://entomology.ifas.ufl.edu/creatures/misc/bugs/giant\\_water\\_bugs.htm](http://entomology.ifas.ufl.edu/creatures/misc/bugs/giant_water_bugs.htm)) on the University of Florida / Institute of Food and Agricultural Sciences Featured Creatures Web site
- Giant Water Bug Feeding on Frog ([http://www.mister-toad.com/photos/inverts/Lethocerus\\_eating\\_frog\\_01.html](http://www.mister-toad.com/photos/inverts/Lethocerus_eating_frog_01.html))



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