

Biting Bugs Encountered in the Aquatic Environment

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Introduction

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Research Area: Biological Control of Aquatic & Terrestrial Weeds

Reference:

Merritt, R. W. and K. W. Cummins (eds.). 1996. An Introduction to the Aquatic Insects of North America, 3rd edition. Kendall / Hunt, Dubuque, IA



Topics

- Overview of Aquatic Insect Community Ecology
 - Basic Concepts and Terminology
- Examples of Biting Insects Likely to be Encountered
- Questions? Comments?



Topics

- Overview of Aquatic Insect Community Ecology
 - Basic Concepts and Terminology



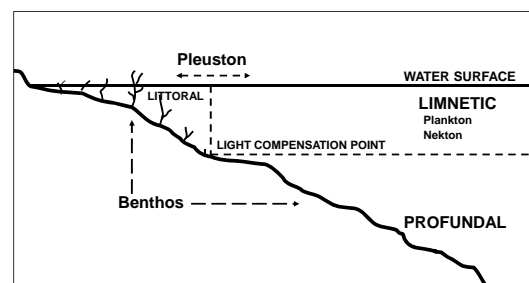
Aquatic Habitat Classification System

<u>Category</u>	<u>Description</u>
Rivers	
• Lotic-erosional	-running-water riffles
• Lotic-depositional	-running-water pools
Lakes	
• Lentic-limnetic	-open water (shallow)
• Lentic-littoral	-shallow shore area
• Lentic-profundal	-open water (deep)
• Benthos	-sediments

Merritt & Cummins (1996)



Lentic Communities & Zones Diagram



Lentic (Lake) Communities & Zones

- Surface Film
 - Pleuston- Surface Dwelling Organisms
- Limnetic Zone- Open Water to Light Penetration Limit
 - Nekton- Free Swimming Organisms
 - Plankton- Free Floating Organisms
- Littoral Zone- Shallow Region Where Plants Grow
 - Diverse Assemblage of Insects
- Profundal Zone- Low Light; No Plant Growth
- Benthos- Sediment



Aquatic Insect Feeding Groups

Category

Food Type

- | | |
|---------------|---------------------------------|
| • Shredders | - Living plant tissue |
| • Collectors | - Decomposing FPOM |
| • Scrapers | - Algae and CPOM |
| • Piercers | - Algae and plant cell fluids |
| • Predators | - Animal tissue (multiple prey) |
| • Parasitoids | - Animal tissue (single prey) |

Merritt & Cummins (1996)



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Biting Insect Characteristics

- | | |
|---|--|
| • Mouthparts- Piercing, Beak-like | • Mouthparts-Biting, Jaw-like |
| • Adults Soft Bodied | • Adults Hard Bodied |
| • Simple Development <ul style="list-style-type: none"> - Juveniles (Nymphs) Resemble Adults | • Complex Development <ul style="list-style-type: none"> - Juveniles (Larvae) Don't Resemble Adults |
| • Example- True Bugs <ul style="list-style-type: none"> - Order Hemiptera | • Example- Beetles <ul style="list-style-type: none"> - Order Coleoptera |



Order Hemiptera- True Bugs

- Fam. Belostomatidae
- Large Oval Body
- Raptorial Front Legs
 - Adapted for Catching Prey
- Some Males Carry Eggs on Back
- Short, Stout Beak



Giant Water Bug, *Belostoma* sp.



Giant Water Bug Outbreak

St. Petersburg Times ONLINE TAMPA BAY

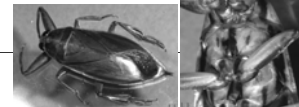
The invasion of the giant water bug

Customers stomp and cringe as swarms cover a Pasco shopping plaza.

They're huge, creepy - and crunchy in sauce.

By ALEX LEARY, Times Staff Writer

© St. Petersburg Times
published June 21, 2003



Electric Light Bug, *Lethocerus* sp.



Order Hemiptera- True Bugs

- Family Gerridae
- Slender Body
- Four Long Slender Legs
- Short Front Raptorial Legs for Capturing Prey
- Skate on Water Surface

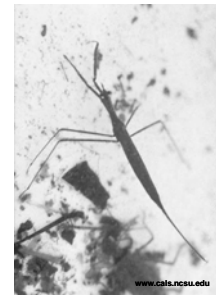


Water Striders, *Gerris* sp.



Order Hemiptera- True Bugs

- Family Nepidae
- Long Slender Body
- Snorkel-Like Abdominal Tube for Breathing
- Raptorial Front Legs for Catching Prey



Water Scorpion, *Ranatra* sp.

Order Hemiptera- True Bugs

- Fam. Notonectidae
- Boat-shaped Body; - Swim Upside Down
- Legs Paddle-like; Hind Longer Than Others
- Able to Breathe via Air Bubble
- Contain Hemoglobin
- Very Painful Bite



Backswimmer, *Notonecta* sp.

Order Hemiptera- True Bugs

- Fam. Corixidae
- Similar Body Shape - Swim Upright
- Legs Paddle-like; Hind Longer Than Others
- Scavengers
- Unlike Backswimmers Do Not Bite When Handled



Water Boatman, *Hesperocorixa* sp.

Order Hemiptera- True Bugs

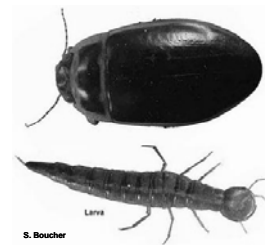
- Body Oval, Flattened
- Raptorial Front Legs for Grasping Prey
- Hold Air Bubble Beneath Wings
- Beak-like Mouthparts
- Bite Painful as Hornet Sting or Worse!



Creeping Water Bug, *Pelocoris* sp.

Order Coleoptera- Beetles

- Family Dytiscidae
- Adults Have Strong Jaws; Readily Bite
- Larvae Often Called "Water Tigers"
- Hollow Mandibles Inflict Painful Bite
- Very Active; Attack Larger Animals



Predaceous Diving Beetle, Adult and Larva, *Dytiscus* sp.

Order Neuroptera- Dobsonflies

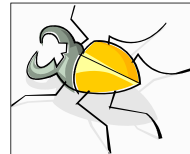
- Family Corydalidae
- Over 3 inches Long
- Common in Lotic Habitats
- Hunt Down & Capture Aquatic Invertebrates with Strong Mandibles
- Bite When Handled



Hellgrammite, *Corydalus* sp.

Summary

- Most Biting Aquatic Insects Associated with Littoral Zone of Water Bodies
 - Prey on Organisms In or Near Aquatic Vegetation
 - Focus of Aquatic Plant Management Activity
- Possess Formidable Mouthparts (Beaks or Jaws) for Subduing Prey
- Capable of Inflicting Painful Bite
- Handle with Care!



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Acknowledgements

Author: J. P. Cuda, Associate Professor

Detailed Information on Giant Water Bugs is Available on the Featured Creatures Web Site

<http://creatures.ifas.ufl.edu>

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