

# Aquatic Insects - 101



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# What is a Macroinvertebrate?



MACRO: large enough to be seen with the unaided eye

IN: no VERTEBRATE: backbone

# What makes an insect aquatic?



# Taxonomy

- Kingdom: Animalia (animals)
  - Phylum: Arthropoda (arthropods)
    - Class: Hexapoda (hexapods)
      - » Subclass: Insecta (insects)
        - **Order:** Odonata
          - Family: Corduliidae
            - Genus: Somatochlora
              - Species: Hineana

“Hine’s Emerald Dragonfly”

# Aquatic Orders & Common Names

## Order

Ephemeroptera

Plecoptera

Trichoptera

Odonata

Megaloptera

Coleoptera

Diptera

Hemiptera

## Common Name

Mayfly

Stonefly

Caddisfly

Damselfly & Dragonfly

Dobsonfly

Aquatic Beetles

True Flies

True Bugs

# Why Are They Important?

- Water Quality Indicators

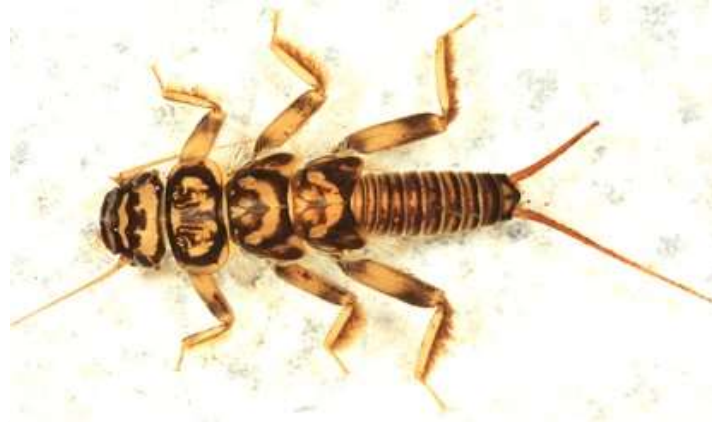
- Intolerant vs Tolerant
- Life History
- Habitat

- Food Web

- Food Source
- Organic Matter Breakdown



# Water Quality Indicators - Intolerant



# Water Quality Indicators - Tolerant

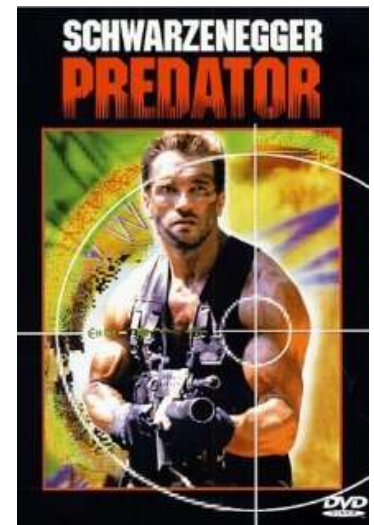




# Water Quality Indicators



# Functional Feeding Groups



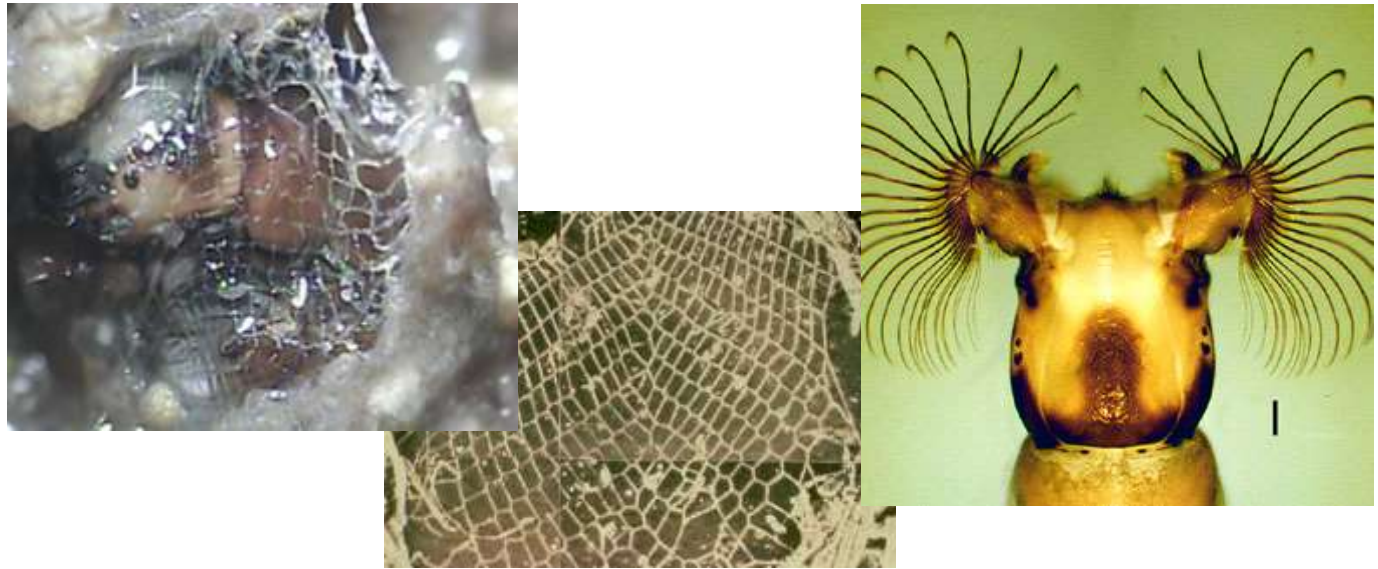
# Functional Feeding Groups

Shredders



# Functional Feeding Groups

Collector-  
Filter

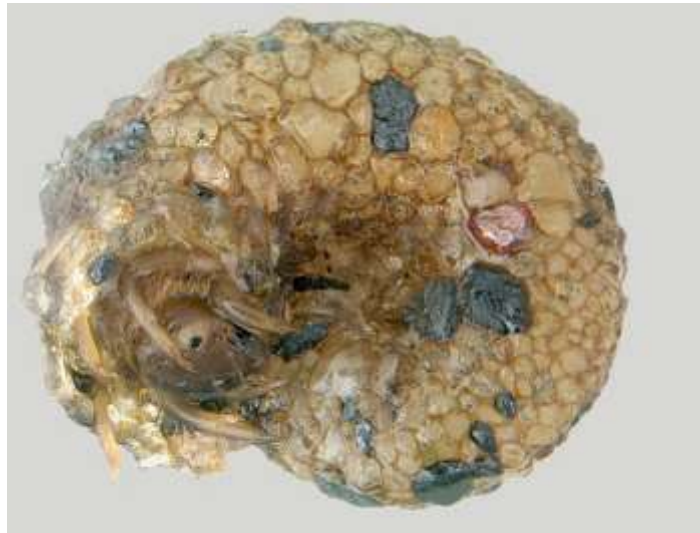


Collector-  
Gather



# Functional Feeding Groups

Scrapers

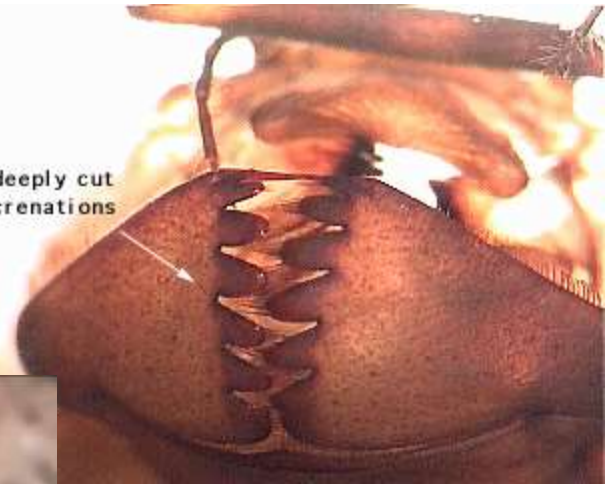


# Functional Feeding Groups

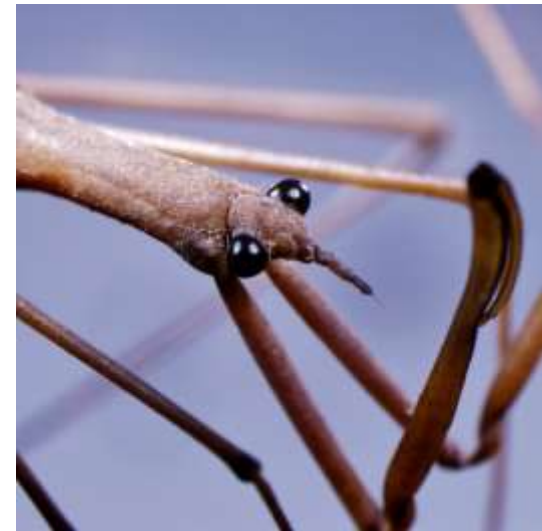
## Predators



deeply cut  
crenations



Common Green Darner (*Anax junius*)  
eating fish. John C. Abbott photo.



# Food Web

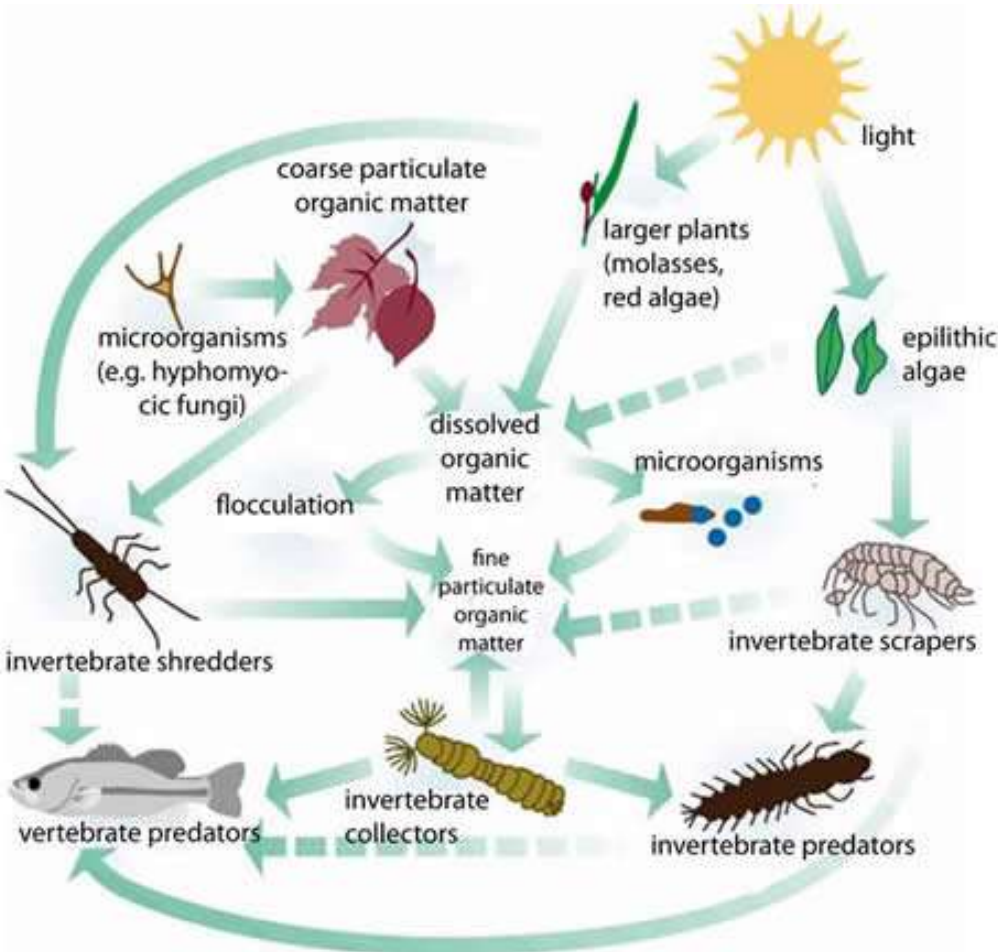


Image Courtesy of USDA



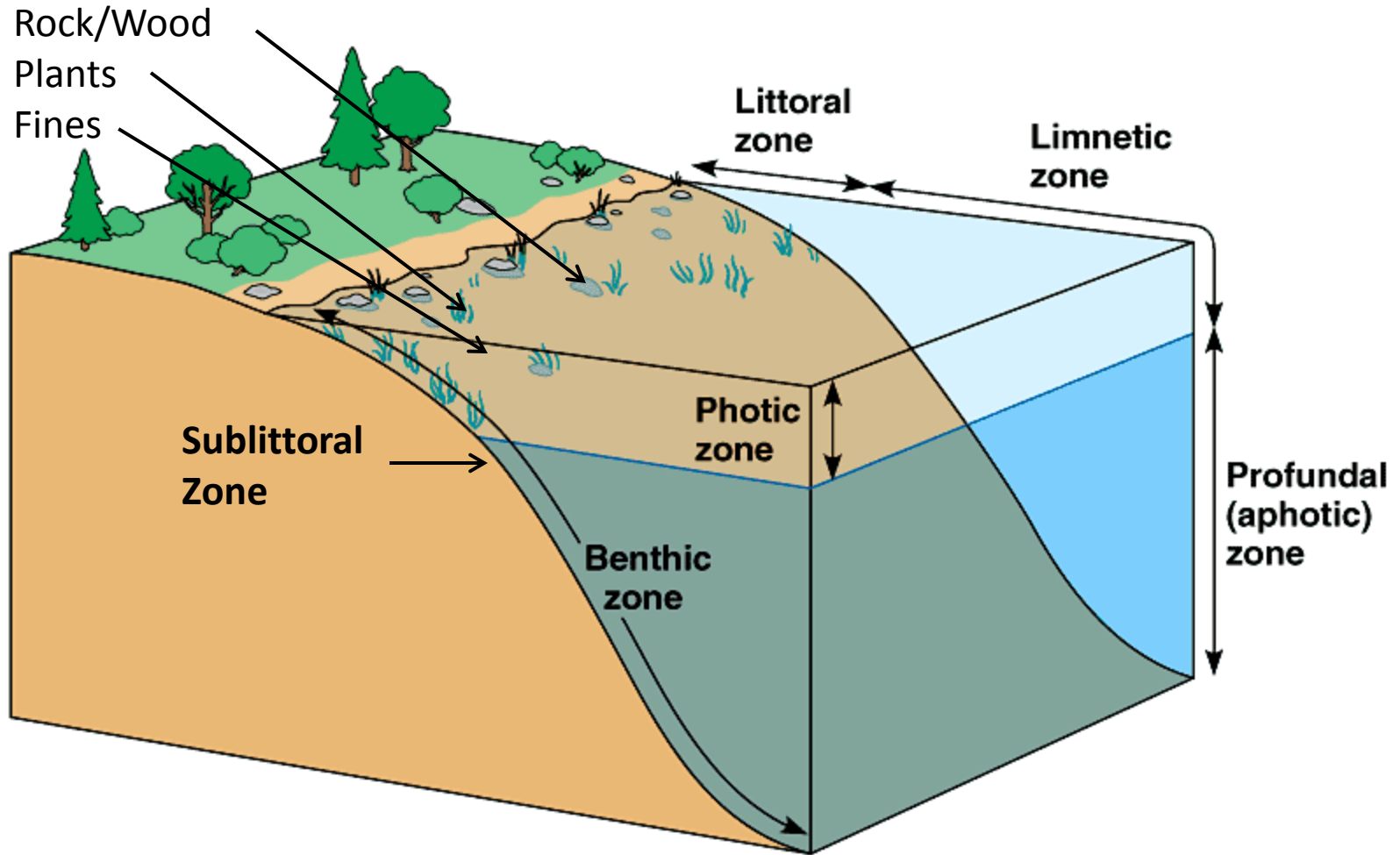




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Wenonah

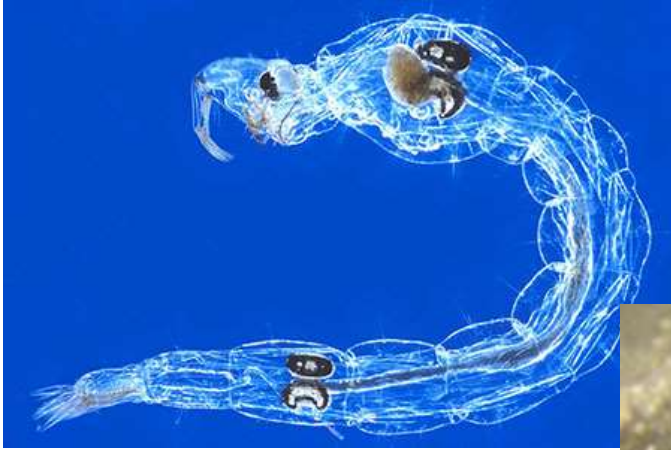
# Lake Zones



# Littoral Zone Habitats: Rock/Wood, Plants, & Fines



# Sublittoral and Profundal Zone



# Collection Methods



Ponar Dredge

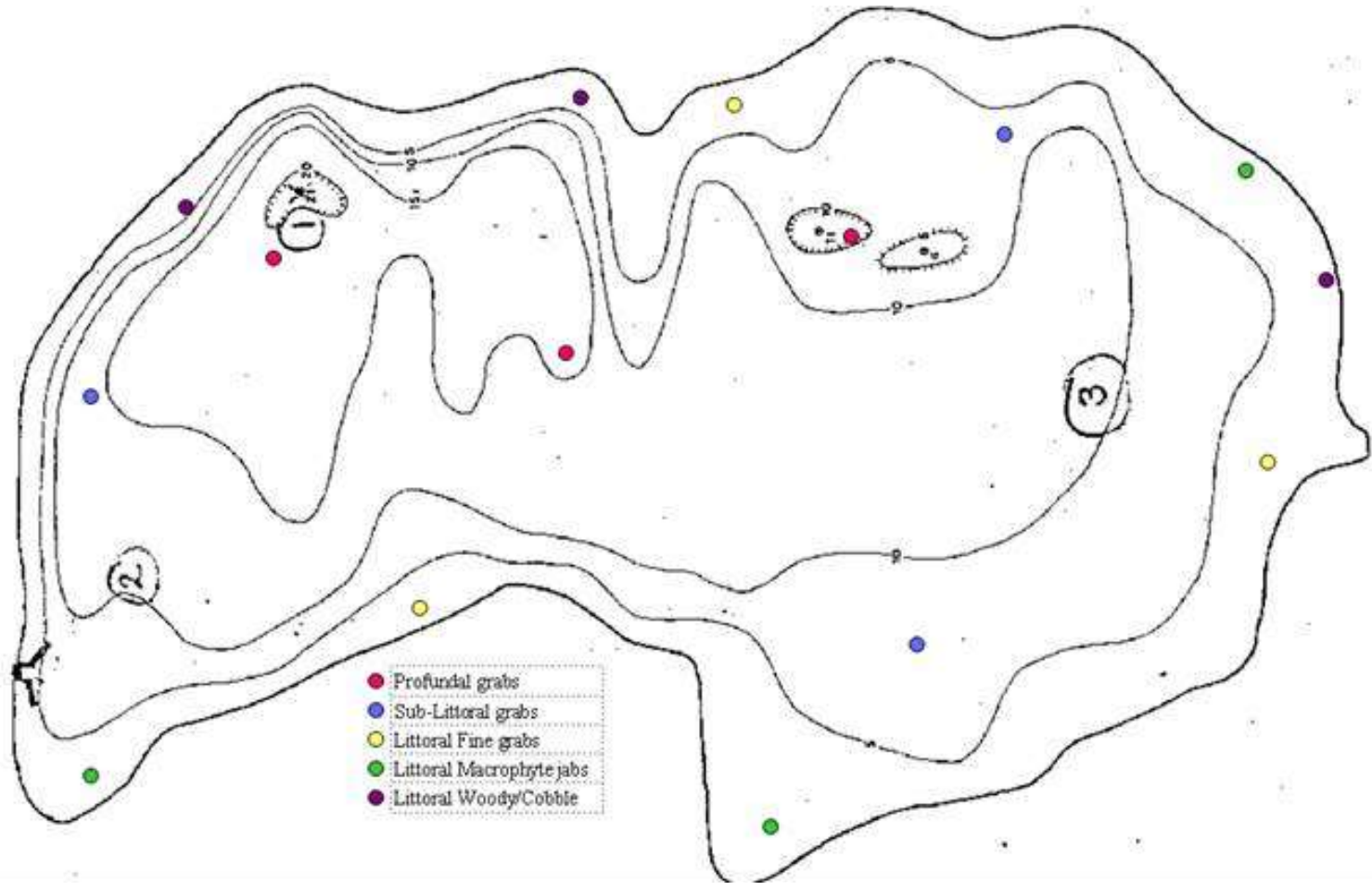
Deep Bottom sediment samples



Dip Net

Macrophyte sweeps, Rock/Wood  
& Fine Substrate samples

# Lake Sample Sites







FLAMMABLE  
KEEP FIRE  
AWAY















# Web Sites

- <http://www.dep.wv.gov/WWE/getinvolved/sos/Pages/Benthics.aspx>
- [https://www.teachengineering.org/view\\_activity.php?url=collection/wsu\\_/activities/wsu\\_penny/wsu\\_penny\\_activity1.xml](https://www.teachengineering.org/view_activity.php?url=collection/wsu_/activities/wsu_penny/wsu_penny_activity1.xml)
- <http://aquaticinsect.net/portfolio/top-rated-pictures-2/>
- [http://www.fws.gov/midwest/endangered/insects/hed/hins\\_fct.html](http://www.fws.gov/midwest/endangered/insects/hed/hins_fct.html)
- <http://iberianature.com/lucyblog/tag/frog-eating-damselfly/>
- <http://fliesnlies.blogspot.com/2012/04/identifying-hatch-fish-are-eating.html>
- <http://www.healthyfoodhouse.com/healthy-facts-about-fish/>
- <http://www.hookandbullet.com/fishing/>
- <http://www.troutnut.com/hatch/31/Mayfly-Ephemera/index.php>
- <http://npic.orst.edu/pest/mosquito/diseases.html>
- <http://www.telegraph.co.uk/comment/telegraph-view/8531726/The-leech-feeding-rota.html>
- [http://www.cals.ncsu.edu/course/ent525/water/aquatic/pages/20\\_jpg.htm](http://www.cals.ncsu.edu/course/ent525/water/aquatic/pages/20_jpg.htm)
- [http://raven.islandwood.org/kids/stream\\_health/macros/Mayfly\\_nymph.htm](http://raven.islandwood.org/kids/stream_health/macros/Mayfly_nymph.htm)
- [http://www.fcps.edu/islandcreekes/ecology/aquatic\\_worm.htm](http://www.fcps.edu/islandcreekes/ecology/aquatic_worm.htm)
- <http://bugguide.net/node/view/13165>
- <http://www.clipartbest.com/scales-of-balance>
- <http://chrismopher.deviantart.com/art/cookie-monster-normal-15453584>
- <http://thenewagemovement.com/main/page/10/>
- <http://apps.ohiohistory.org/ohioarchaeology/dragon-spring-a-green-st-patricks-day-ode/>
- <http://animal-kid.com/dragonfly-nymph.html>
- <http://atpadres.blogspot.com/2013/04/oh-hellgrammite.html>
- <http://kentschools.net/cooltechred/no-filaments-extending-from-the-sides-of-the-abdomen/>
- <http://www.flyfishinginsidernewsletter.com/022110/>
- <http://www.troutnut.com/specimen/445>
- <http://www.uk-wildlife.co.uk>
- <http://www.psdgraphics.com/psd-icons/green-recycling-symbols/>
- <http://www.bio.utexas.edu/faculty/sjasper/Bio213/aquahab.html>
- <http://blog.delawarenaturesociety.org/tag/aquatic-macro-invertebrates/>
- <http://www.fourwheeler.com/how-to/body-chassis/129-0703-toyota-assembly-factory/>
- <http://iberianature.com/lucyblog/tag/frog-eating-damselfly/>
- <http://www.naturebob.com/zenphoto/index.php?album=Insects/dragonflies/mosaic-darners-family-aeshnidae-&image=lake-darner-dragonfly-eating-yellow-jacket.jpg>