The diversity along our shorelands: a primer

Wisconsin Lakes Convention
Wednesday, April 13, 2011
Native Plant/Animal stream

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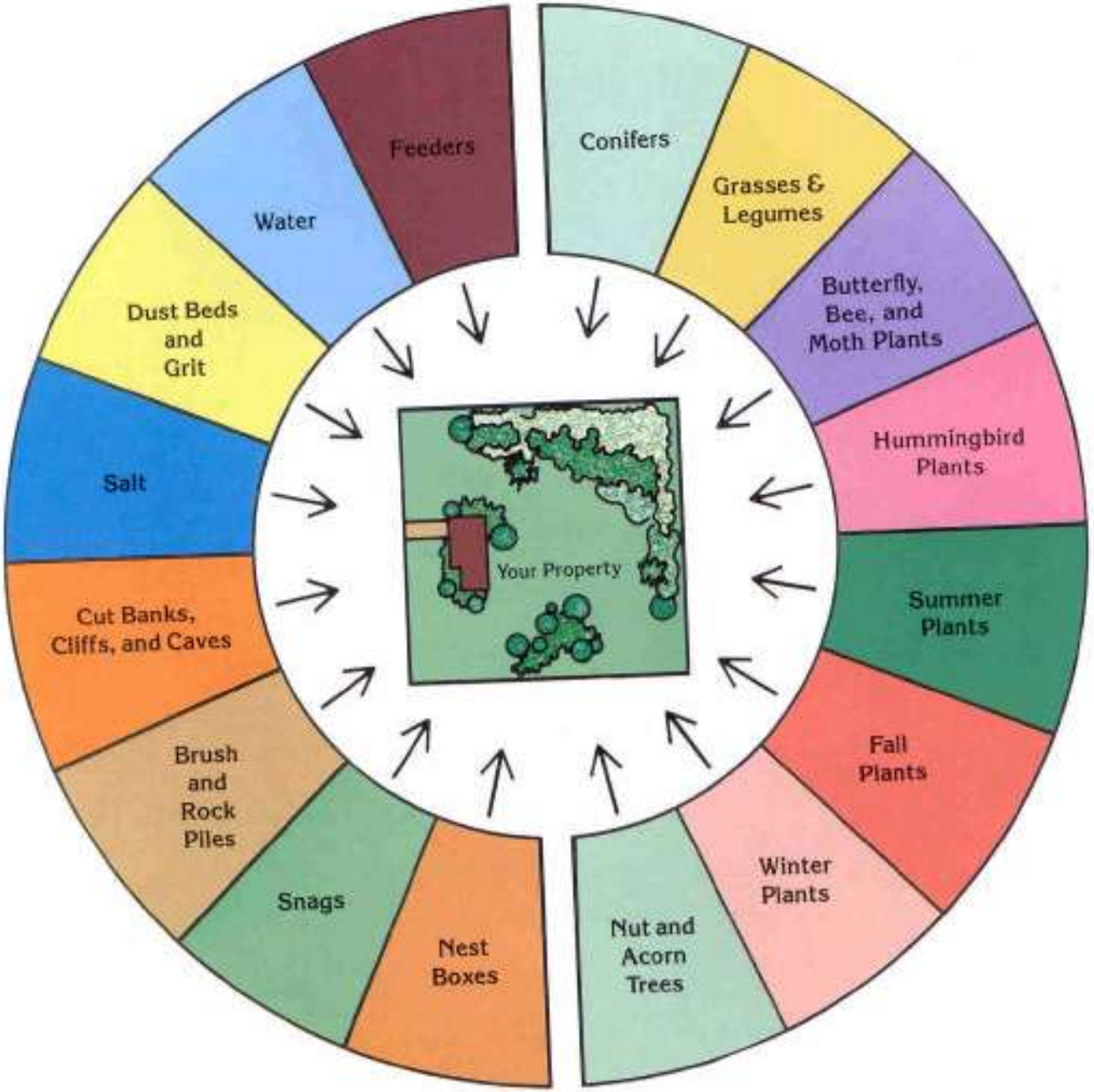

Feeders
Water
Dust Beds and Grit
Salt
Cut Banks, Cliffs, and Caves
Brush and Rock Piles
Snags
Nest Boxes
Conifers
Grasses & Legumes
Butterfly, Bee, and Moth Plants
Hummingbird Plants
Summer Plants
Fall Plants
Winter Plants
Nut and Acorn Trees
Your Property
Structural Components
Plant Components

Sponge Diversity - Wisconsin

- **14 species reported**

(Smith 1921, Jewell 1935, Neidhoefer 1938)

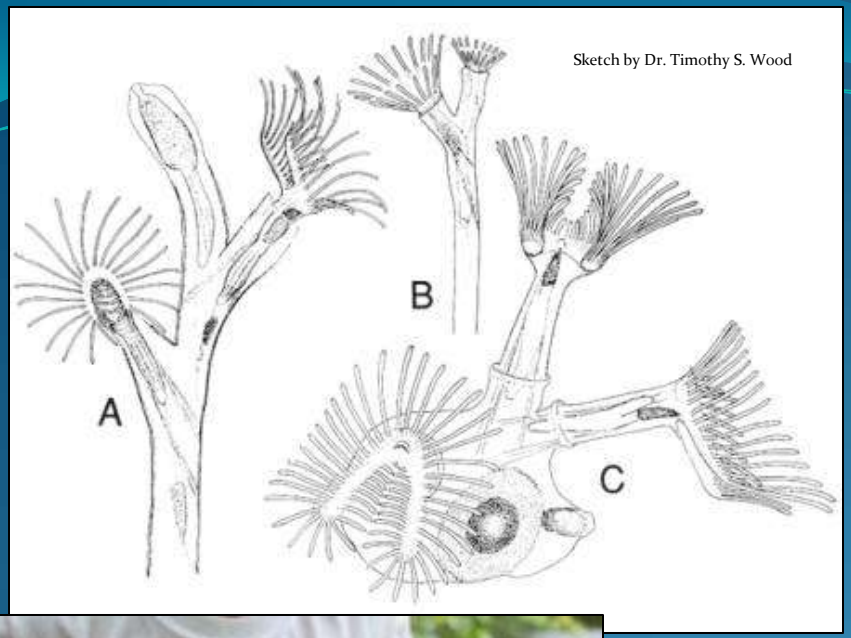
- **12 species documented**

(Annesley, et al. 2008)

An unidentified Wisconsin sponge, probably the widespread *Spongilla lacustris*.

Bryozoa – moss animals (*Pectinatella magnifica*)

Bryozoans


Sketch by Dr. Timothy S. Wood
A
B
C

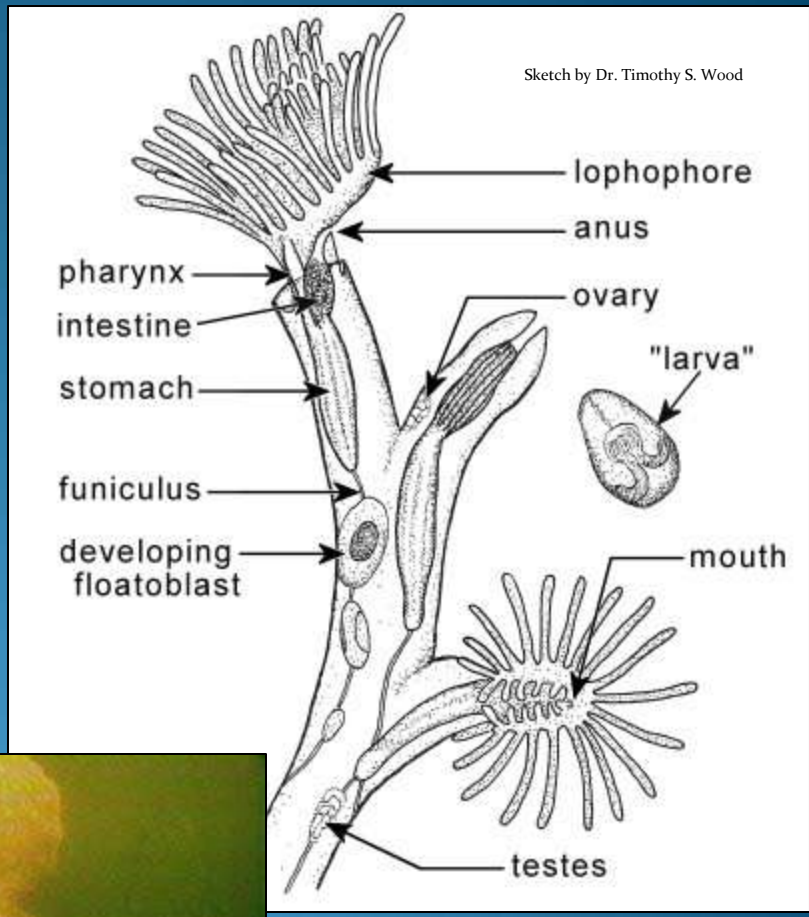

Sketch by Dr. Timothy S. Wood
lophophore
anus
pharynx
ovary
intestine
"larva"
stomach
funiculus
developing floatoblast
mouth
testes


Photo by The Woodward family


Photo by UMass

Jellyfish (*Craspedacusta sowerbyi*)

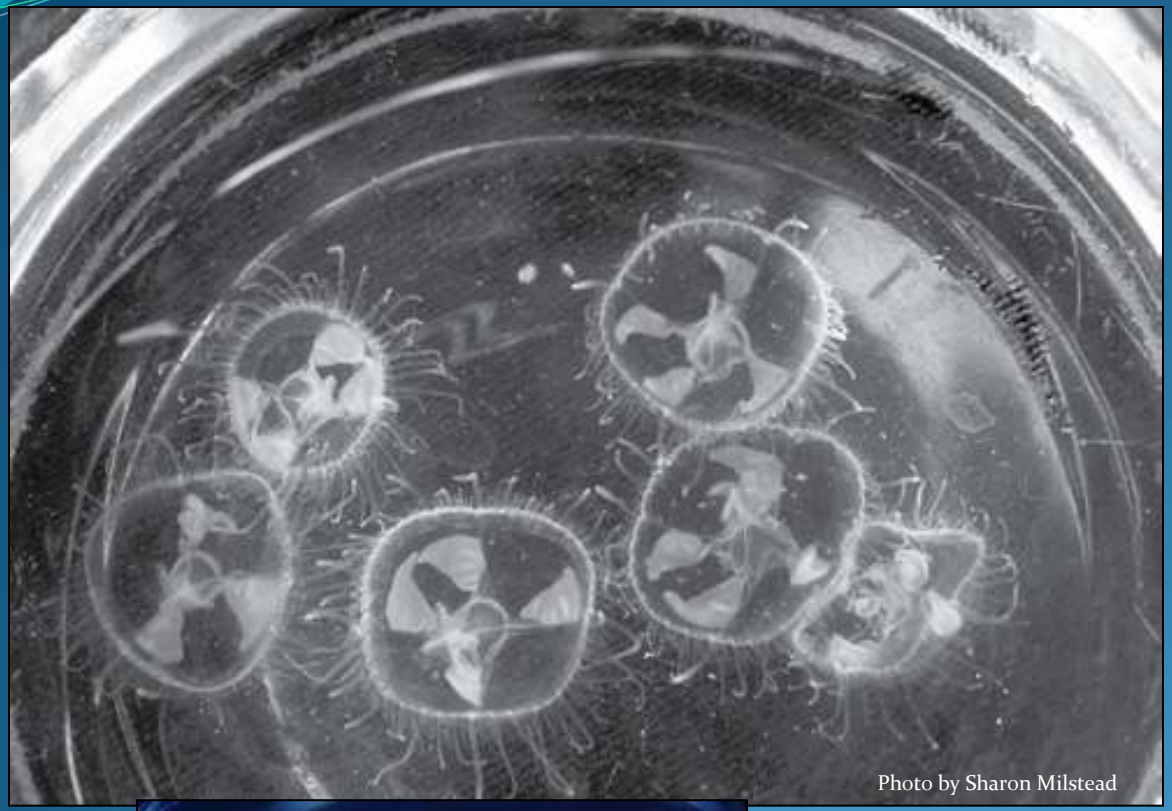
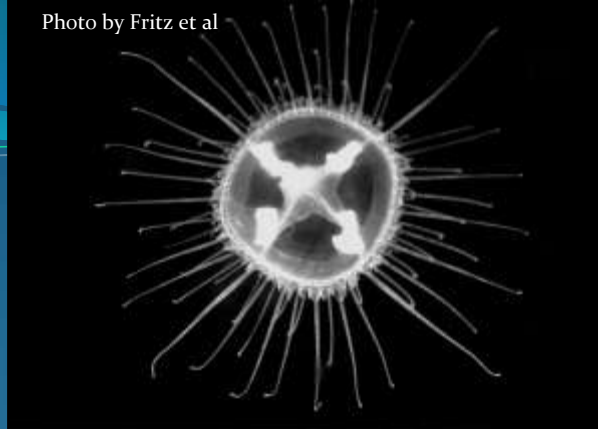
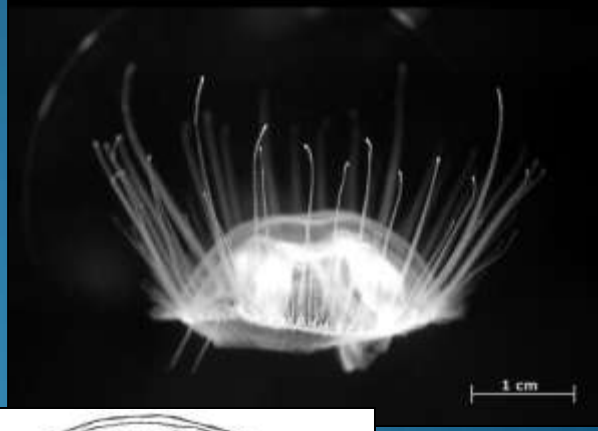


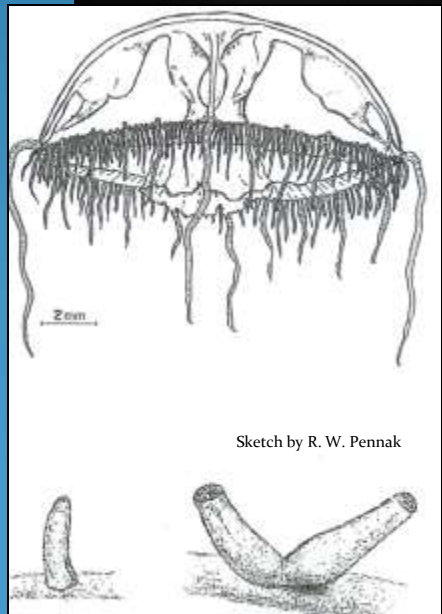
Photo by Sharon Milstead

Photo by USGS

Photo by Fritz et al







Sketch by R. W. Pennak

Freshwater opossum shrimp (*Mysis relicta*)


Photo by NOAA

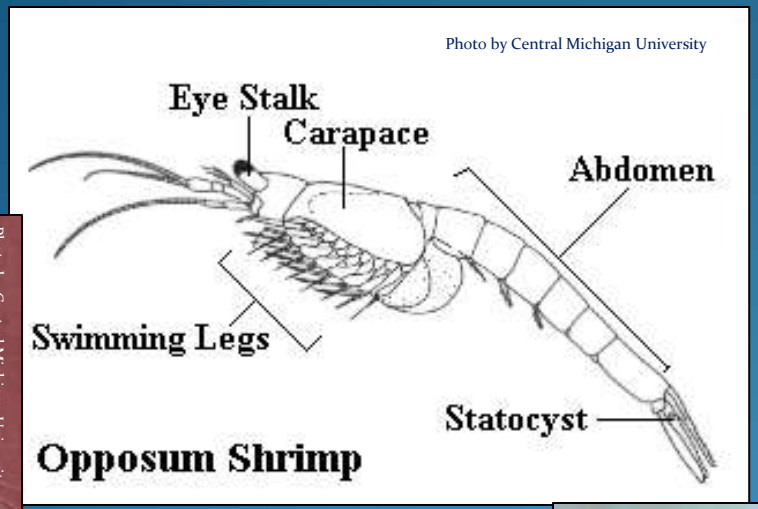



Photo by Central Michigan University


Photo from Super Stock


Photo by Andrew Muir

Frogs, treefrogs and toads

Treefrogs – live in forests around lakes/ponds

Northern Cricket Frog (*Acris crepitans*)
METALLIC 'GICK-GICK-GICK' NOISES (mid-May)

Spring Peeper (*Pseudacris crucifer*)
RISING PEEP (late-March)

Cope's Gray Treefrog (*Hyla chrysoscelis*)
FAST, HARSH, BUZZING TRILL (early May)

Toads – live in forests around lakes/ponds

Eastern American Toad (*Bufo americanus*)
TRILLING (April)

Eastern Gray Treefrog (*Hyla versicolor*)
BLAAT

Boreal Chorus Frog (*Pseudacris maculata*)
RISING "CREE-EE-EEK"/COMB (mid-March)

Frogs, treefrogs and toads [continued]

True frogs – live in forests around lakes/ponds

American Bullfrog (*Lithobates catesbeianus*)
DEEP "BUR-RUM"/FOG HORN -GUIN(mid-May)

Green Frog (*Lithobates clamitans*)
"CLUNG-CLUNG-CLUNG"/BANJO TWANG (mid-May)

Pickerel Frog (*Lithobates palustris*)
LOW-PITCHED, SNORE-LIKE CROAK (April)

Northern Leopard Frog (*Lithobates pipiens*)
LOUD, BROKEN SNORE/BALLOOON RUB (late March)

Mink Frog (*Lithobates septentrionalis*)
LOW-PITCHED CROAKS/DISTANT HAMMERING-
"TOK"-"TOK"-"TOK"-"TOK"

Wood Frog (*Lithobates sylvaticus*)
CLUCKING CROAKS/QUACKING DUCK (late-March)

Salamanders

Redback Salamander (*Plethodon cinereus*)

Four-toed salamanders (*Hemidactylium scutatum*)

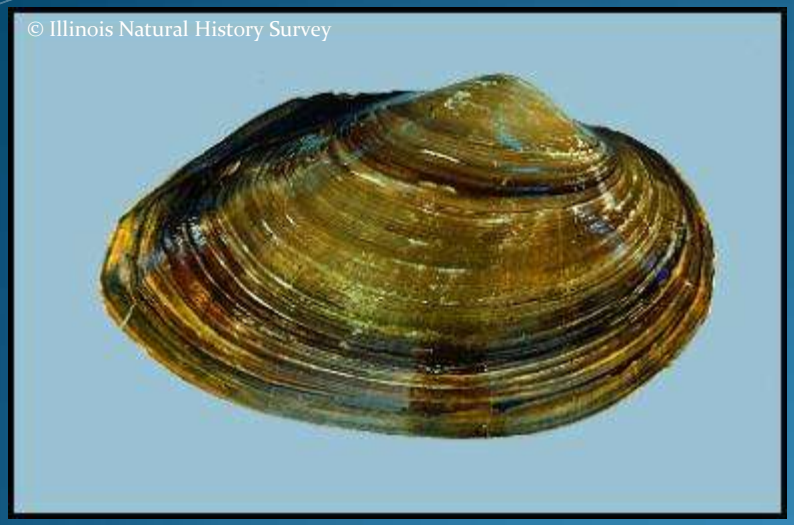
Tiger Salamander (*Ambystoma tigrinum*)

Spotted Salamander (*Ambystoma maculatum*)

Central Newt (*Notophthalmus viridescens*)

Mudpuppy (*Necturus maculosus*)

Common mussels and clams



Floater (*Pyganodon grandis*)

Fatmucket (*Lampsilis siliquoidea*)

Fingernailclams and Peaclams
(*Musculium*, *Pisidium*, and *Sphaerium*-Family *Sphaeriidae*)

Threeridge *(Amblema plicata)*

Threehorn wartyback (*Obliquaria reflexa*)

Rarer mussels and clams

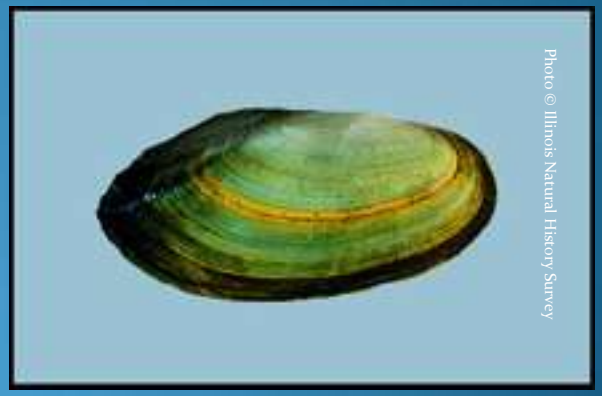
Eastern or Atlantic elliptio (*Elliptio complanata*)

Black Sandshell (*Ligumia recta*)

Ornamented Peaclam (*Pisidium cruciatum*)

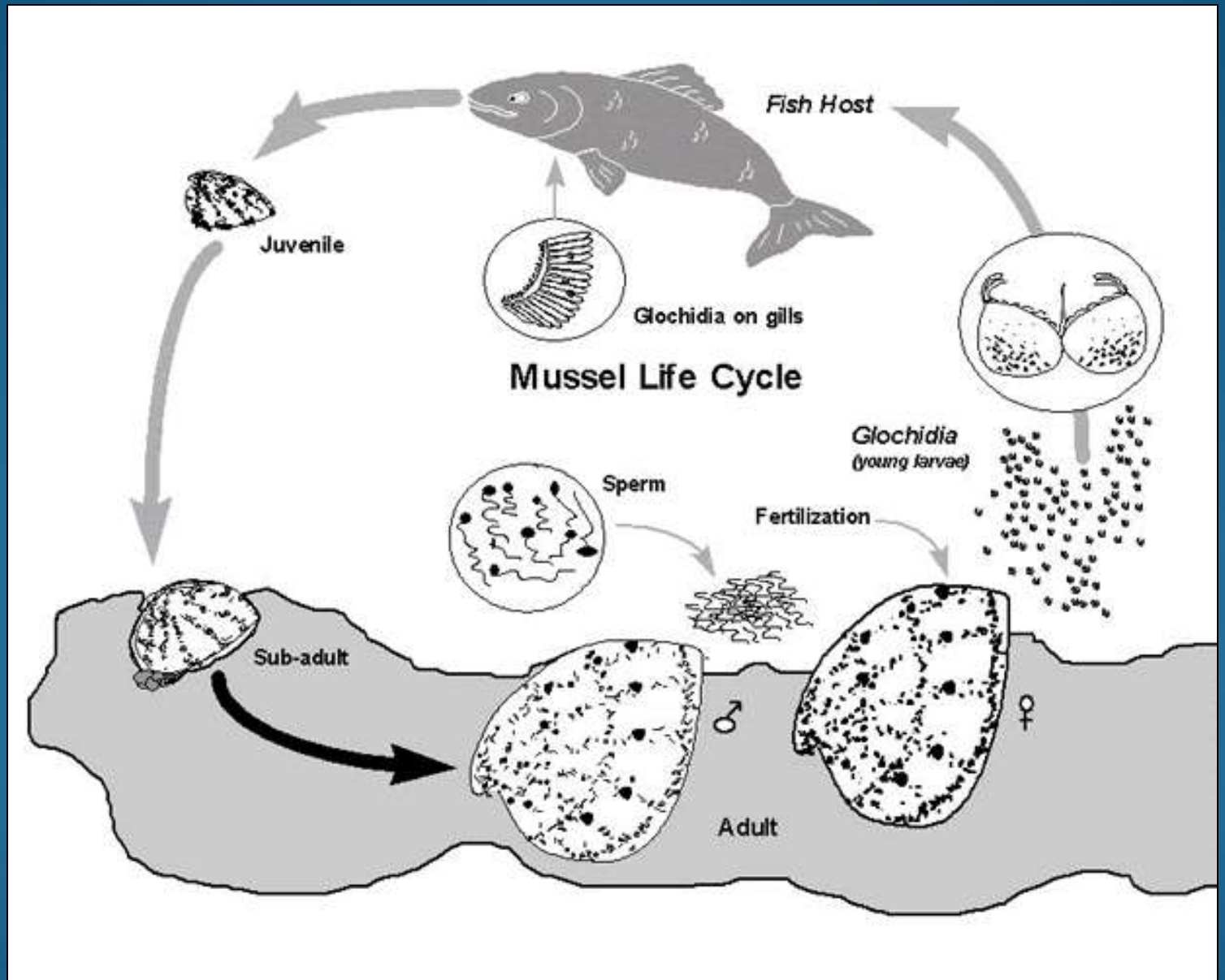
Lake floater (*Pyganodon lacustris*)

Spike (*Elliptio dilatata*)



Paper pondshell (*Utterbackia imbecillis*)

Mussel life cycle



Dragonflies

Lake emerald (*Somatochlora cingulata*)

Lake darner (*Aeshna eremita*)

Twelve-spotted Skimmer (*Libellula pulchell*a)

Widow skimmer
(*Libellula luctuosa)*

Common green darner
(*Anax junius)*

Common pondhawk (*Erythemis simplicicollis)* eating a pearl crescent

Common whitetail (*Plathemis lydia)*

Common baskettail (*Epitheca cynosura*)

Damselflies

Powdered dancer (*Argia moesta*)

Violet dancer (*Argia fumipennis violacea*)

Alkali Bluet (*Enallagma clausum*)

Amber-winged spreadwing (*Lestes eurinus*)

Boreal bluet (*Enallagma boreale*)

Marsh bluet (*Enallagma ebrium*)

Turtles

Eastern Spiny Soft shell (*Apalone spinifera*)

Painted Turtle (*Chrysemys picta)*

Common Snapping Turtle (*Chelydra serpentina*)

Snakes

Common garter snake (*Thamnophis sirtalis)*

Smooth greensnake (*Opheodrys vernalis)*

Western foxsnake (*Elaphe vulpina)*

Red-bellied snake (*Storeria occipitomaculata)*

Northern watersnake (*Nerodia sipedon)*

Butterflies

White admiral (*Limenitis arthemis*)

Canadian tiger swallowtail (*Papilo canadensis)*

Bronze copper (*Lycaena hyllus)*

Viceroy (*Limentitis archippus)*

Mourning cloak (*Nymphalis antiopa)*

Dorcas copper (*Lycaena dorcas*)

Aquatic plants-very soft water

Brown-fruited rush
(*Juncus pelocarpus)*

Least waterwort (*Elatine minima)*

Pipewort (*Eriocaulon aquaticum*)

Ribbon-leaved pondweed (*Potamogeton epihydrus*)

Aquatic plants-soft water

Fern pondweed (*Potamogeton robbinsii)*

Large-leaved pondweed (*Potamogeton amplifolius*)

Quillwort (*Isoetes sp.)*

Water lobelia (*Lobelia dortmanna*)

White-stemmed pondweed (*Potamogeton praelongus*)

Aquatic plants-hard water

Slender pondweed (Pot*amogeton pusillus*)

Photographer: Robert W. Freckmann

Waterweed (*Elodea canadensis)*

Northern water-nymph (*Najas flexilis)*

Water beggar's-tick (*Megalodonta beckii*)

American eel grass (*Vallisneria americana*)

Aquatic plants-very hard water

Coontail (*Ceratophyllum demersum)*

Flat-stemmed pondweed (*Potemogeton zosteriformis*)

Comb pondweed (*Stuckenia pectinata*)

White water crowfoot (*Ranunculus aquatilis*)

Illinois pondweed (*Apalone spinifera*)

Fries' pondweed (*Potamogeton friesii)*

Upland plants-emergents/shorelands

Photo by Merel Black

Joe-pye weed (*Eupatorium maculatum*)

Photo by Merel Black

Blue flag iris (*Iris versicolor*)

Photo by Merel Black

Turtle head (*Chelone glabra)*

Photographer: Michael Clayton

Pickerel weed (*Pontederia cordata*)

Photographer: Kenneth J. Sytsma

American bur-reed (*Sparganium americanum*.)

Photographer: Derek Anderson

Broad-leaved arrow-head (*Sagittaria latifolia*)

Floating plants

Photographer: Scott A. Milburn

White pond liliy (***Nymphaea odorata* Aiton subsp. *tuberosa***)

Photo by Scott Crave, UWEX

Yellow pond lily (*Nuphar variegata*)

Water shield (*Brasenia schreberi*)

Photographer: Michael Clayton

Duckweed (*Lemna minor)*

Water smartweed (*Polygonum amphibium)*

Common pondweed (*Potamogeton natans)*

Sedges

Photographer: Theodore S. Cochrane

Lake sedge (*Carex lacustris*)

Photographer: Stephen L. Solheim

Bristly sedge(*Carex comosa)*

Photographer: Kitty Kohout

Fringed sedge (*Carex crinita*)

Photographer: Robert W. Freckmann

Brown fox sedge,(*Carex vulpinoidea*)

Photographer: Emmet J. Judziewicz

Common tussock sedge (*Carex stricta*)

Photographer: Robert W. Freckmann

lance-fruited oval sedge (*Carex scoparia)*

Grasses/rushes

Photographer: Matthew L. Wagner

Rattlesnake manna grass(*Glyceria canadensis*)

Photo by Christopher Noll

Fowl manna grass (*Glyceria striata)*

Photographer: Kenneth J. Sytsma

Blue-joint grass (*Calamagrostis canadensis*)

Photographer: Robert W. Freckmann

Needle spike-rush (*Eleocharis acicularis*)

Photographer: John M. Schoeneker

Dark green bulrush (*Scirpus atrovirens)*

Photographer: Robert W. Freckmann

Rice cutgrass (*Leersia oryzoides*)

Upland plants-trees

Amelanchier arborea – downy Juneberry

Prunus serotina - wild cherry

Abies balsamea – balsam fir

Acer rubrum - red maple

Tilia americana - basswood)

Betula alleghaniensis – yellow birch

Quercus rubra – red oak

Upland plants-shrubs

Aronia melanocarpa – black chokeberry

Diervilla lonicera – northern bush honeysuckle

Vaccinium angustifolium – early low blueberry

Sweet fern (*Comptonia peregrina*)

Hazelnuts (*Corylus sp.*)

Prunus virginiana --chokeberry

Aquatic insects

Giant water bug (*Lethocerus americanus)*

Water boatman (*Sigara sp.)*

Water strider (*Aquarius remigis*)

Water scorpion (*Ranatra fusca)*

Northern casemaker caddisfly (*Nemotaulis hostililis)*

Backswimmer (*Notonecta sp.)*

Beetles

Giant water scavenger beetle *(Hydrophilus triangularis)*

Photo by Tom Murray

Predaceous diving beetle (*Dytiscus sp.*)

Water lily beetle (*Galerucella nymphaeae*)

Photo by © David Liebman

Large whirligig (*Dineutus sp.*)

Water birds

Common loon (*Gavia immer*)

Osprey (*Pandion haliaetus*)

Belted kingfisher (*Ceryle alcyon*)

Wood duck (*Aix sponsa*)

Great blue heron (*Ardea herodias*)

Bald eagle (*Haliaeetus leucocephalus*)

Fishes-small

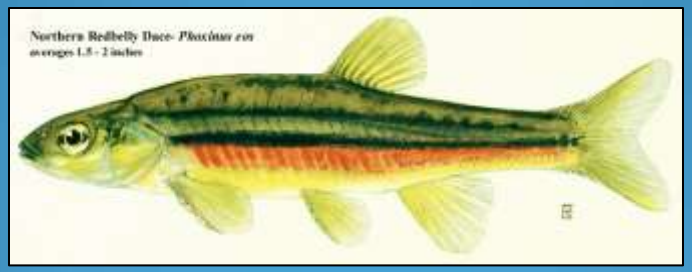
Pumpkinseed sunfish (*Lepomis gibbosus*)

Bluegill (*Lepomis macrochirus*)

Fathead minnow (*Pimephales promelas*)

Black bullhead (*Ameiurus melas*)

Common shiner (*Notropis cornutus*)



Northern redbelly dace (*Phoxinus eos*)

Small mammals

Beaver (*Castor canadensis*)

River otter ((*Lontra canadensis*)

Star-nosed mole (*Condylura cristata*)

Long-tailed weasel (*Mustela frenata)*

Mink (*Neovison vison*)

Short-tailed weasel (*Mustela erminea)*

Snowshoe hare (*Lepus americanus*)

Muskrat (*Ondatra zibethicus*)

Eastern Cottontail (*Sylvilagus floridanus*)

Fisher (*Martes pennanti*)

Large mammals

White-tailed deer (*Odocoileus virginianus*)

Bobcat (*Lynx rufus*)

Moose (*Alces alces*)

Black bear (*Ursus americanus*)

Grey fox (*Urocyon cinereoargenteus*)

Red fox (*Vulpes vulpes*)

Citizen Monitoring Opportunity

Help Us Find Wisconsin's FRESHWATER SPONGES

Freshwater sponges are aquatic animals that grow in lakes, rivers, bogs, and streams attached to submerged rocks, sticks, logs, or aquatic vegetation. They feed by filtering small particles from the water, and so are thought to be sensitive indicators of pollution. Wisconsin's freshwater sponges were studied extensively in the 1930s and found to be growing in many lakes and major river systems. Since then, extensive studies have not been done, though some limited research seems to indicate that the range of some species is more restricted than in the 1930s. This Citizen-based Monitoring study will try to shed more light on how abundant and widely distributed Wisconsin's sponges are today.

Unfortunately, helpful in iden the species lev biologists rely o spicules, which a diverse in their siz shape, and numbe prongs. Some have hooks or are dumb-bell-shaped. They can be smooth or spined. Much of this variability is species-specific (i.e. each species has its own sizes and shapes).

Can we find them in our lake or nearby river?

Sponges grow in relatively shallow water and so can be found by wading and observing the surfaces where they might grow. You might find a rake useful for turning over debris. The sponges may be colored green by algae that live inside their cells or they may be beige to brown or pinkish in color. Sponges can be delicate to very firm feeling but are not slimy or filmy. Some sponges prefer the underside of logs and sticks; these are usually not green in color.

Wisconsin's sponges exhibit an annual life history in which they grow through the summer, die back in the winter, and begin a new growth cycle in spring. So, it's best to look for them in late summer and early fall. In late summer, sponges form gemmules, small spherical protective structures that contain cells from which new sponges will grow in spring. The gemmules will appear about the size of poppy seeds, but are tan in color. They can be clustered or scattered in the sponge.

mmon are TER SPONGES?

little modern survey research has conservation status remains ve found sponges in fewer than nties. So there are many gaps in

Help us learn more about WISCONSIN SPONGES.

Have you seen sponges in your area? Use this questionnaire to submit observations of sponges in your local waterways to help biologists prioritize future survey efforts.

Where did you observe sponges?

County: _____

Waterbody: _____

Substrate where you observed sponges:

- ❑ Sand
- ❑ Gravel
- ❑ Logs
- ❑ Other: _____

When did you observe sponges?

Date: _____

How many kinds of sponges did you observe?

- ❑ All sponges appeared to be the same kind.
- ❑ Sponges appeared to be more than one kind.

How can we contact you?

Name: _____

Address: _____

_____

_____

Telephone: _____

E-mail: _____

Mail this completed questionnaire to:

Dreux Watermolen, SS/7
Wisconsin Department of Natural Resources
P.O. Box 7921
Madison, WI 53707-7921

Or send all of the requested information by e-mail to: dreux.watermolen@wisconsin.gov.

Citizen Monitoring Opportunity

www.dnr.state.wi.us/org/es/science/citizen/

AIS watch

- Rusty and red swamp crayfish

Photo by Paul Skawinski

- Zebra / quagga mussels

Photo by Robert Korth

- Spiny and fishhook water fleas

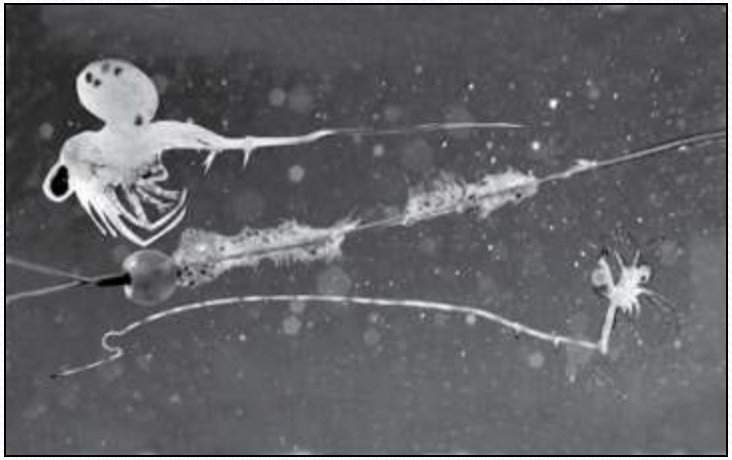


Photo provided by U. of MN Sea Grant

- Banded, brown, and Chinese mystery snails

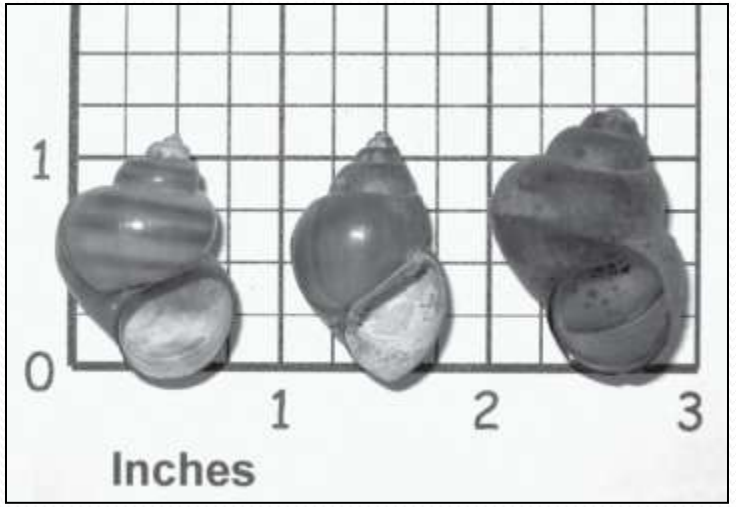


Photo by Laura Herman

Filamentous Green Algae

Photo by Clayton Antieau

Photo by Herrera Environmental Consulting

Blue-Green Algae/Cyanobacteria

http://www.dnr.state.wi.us/lakes/bluegreenalgae/

“our tools… do not suffice for the oldest task in human history – to live on a piece of land (water) without spoiling it” ..... Aldo Leopold

Acknowledgements

Dreux J. Watermolen, WDNR; Paul Garrison, WDNR; University of Wisconsin Sea Grant Institute; Illinois Natural History Survey biological collections; "*Amphibians and reptiles of the Great Lakes Region*" by James H. Harding; CLMN program training manual; Fritz et al J. Limnol., 66(1): 54-59, 2007; US Geological Survey fact sheets; Dr. Timothy S. Wood, Wright State University; Dept. of Ecology, University of Washington; Scott Craven, UWEX;