

# Mussel Monitoring in Eau Claire County

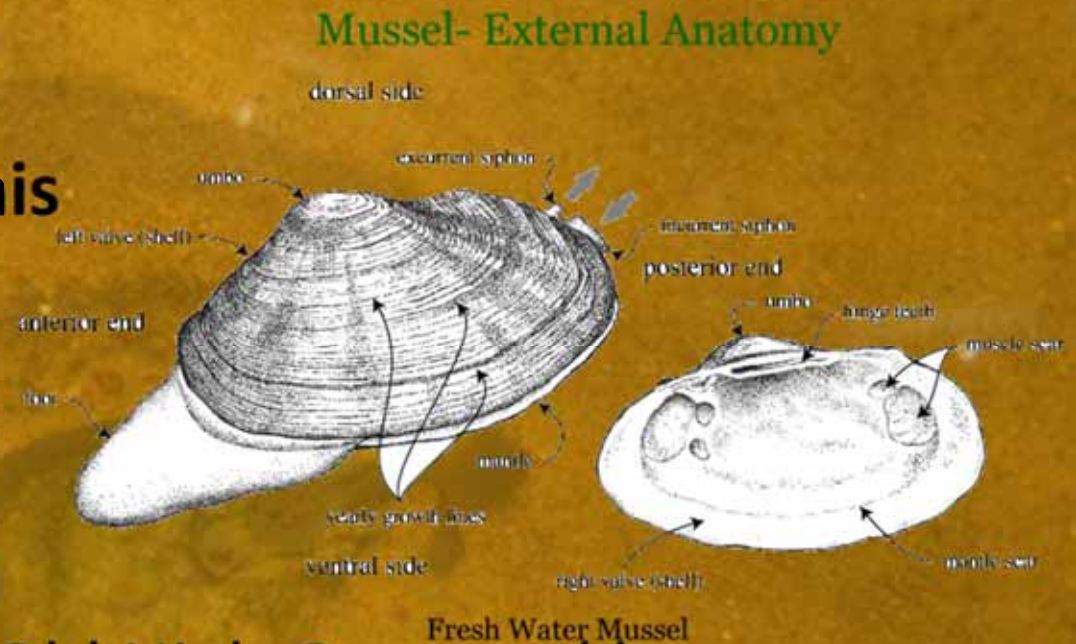
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April 10, 2013

# Mussels/clams/fresh water bivalves

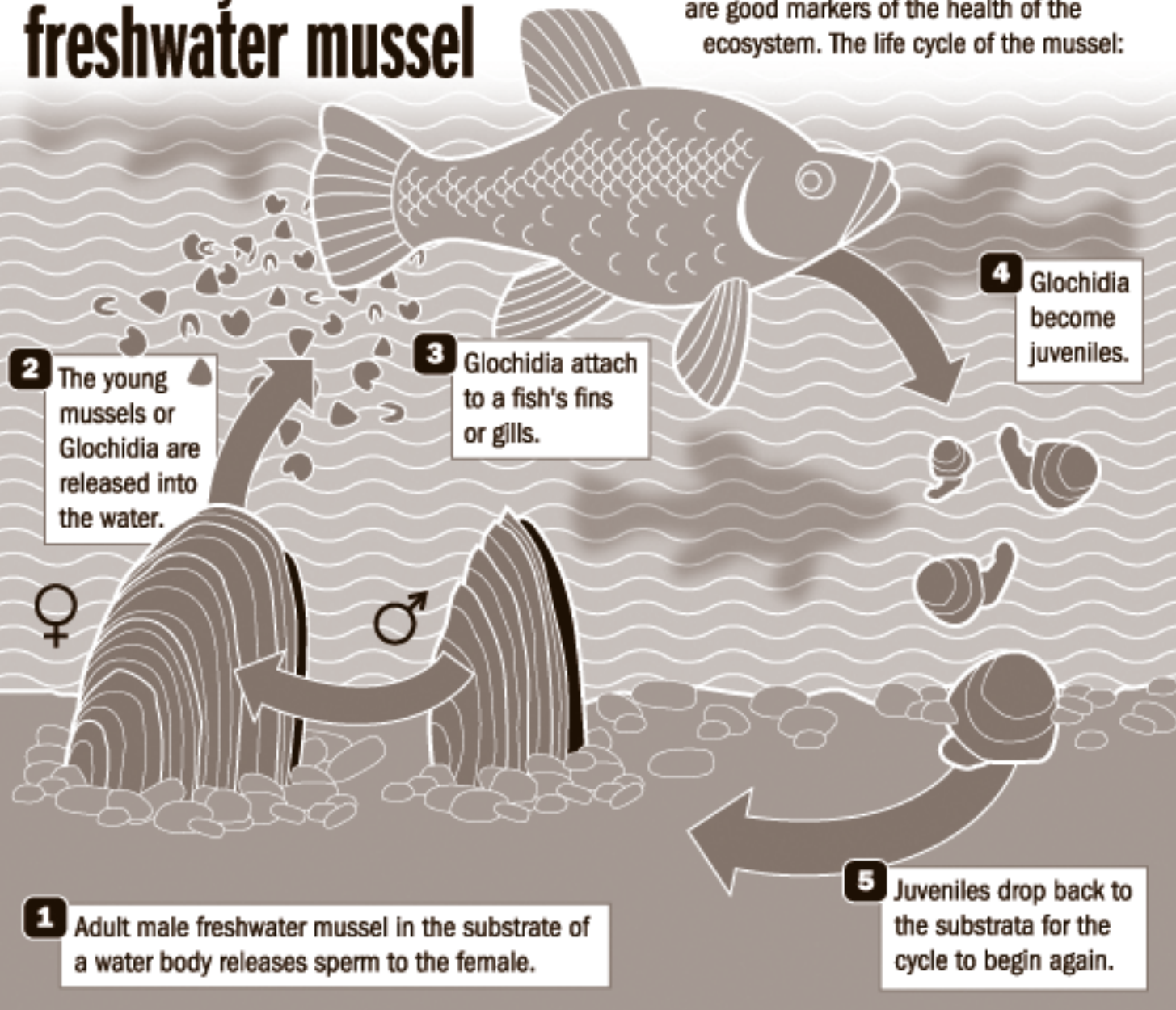
- What are the defining features of this group of animals?



- **Clam** – comes from Old High German *klamma* meaning constriction
- **Mussel** – Latin word for muscle, *musculus*
- **Bivalve** – *bi* word for two, and *valva* from *volvere* meaning to roll or wrap
- **Malacologist** – mussel expert

# Life cycle of the freshwater mussel

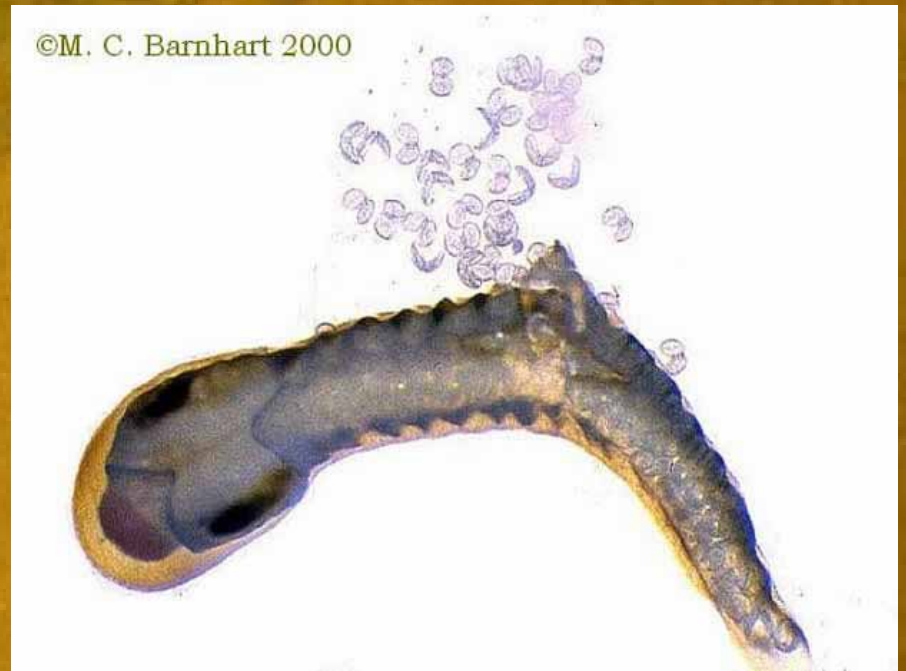
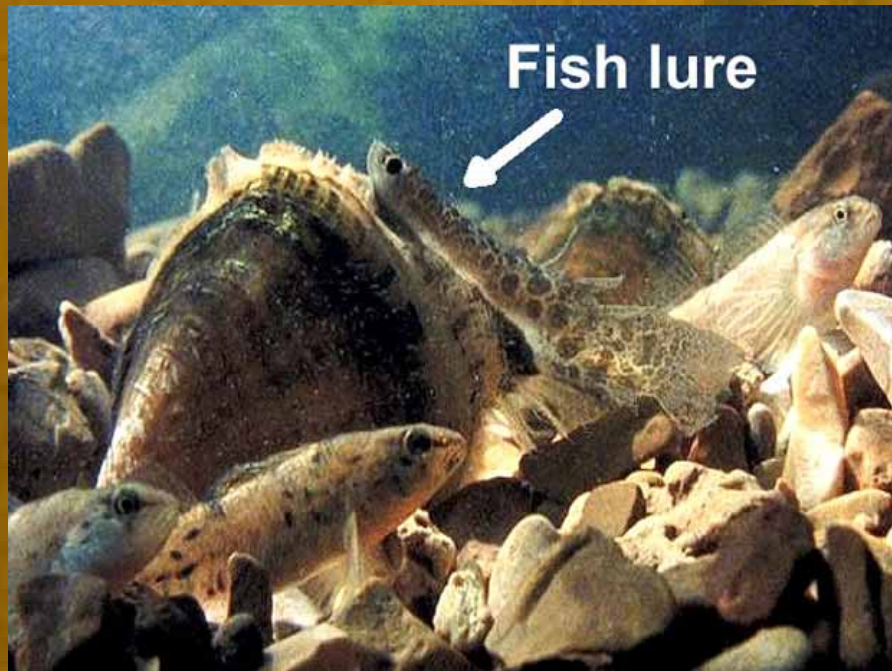
Water quality and flow are essential requirements for freshwater mussels, which are good markers of the health of the ecosystem. The life cycle of the mussel:





# Glochidia and hosts

- **Need** a host to reproduce
- Cool adaptations for attracting host
- Each species has **one, several, or many** hosts
- Shaped as: flatworms, leeches, aquatic earthworms, insect larvae or small fish





# How many mussel species can be found in Wisconsin?



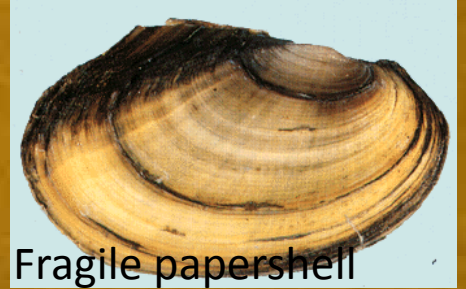
Giant Floater



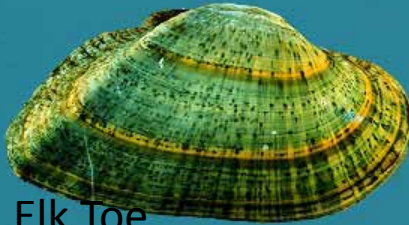
Pistol Grip



Creek heelsplitter



Fragile papershell



Elk Toe



Hickorynut



Butterfly



Threehorn wartyback



Ebony Shell



Fat mucket



Threeridge



Elephant ear



Fawnsfoot



Purple Wartyback



Ellipse



Wabash pigtoe



Salamander



Pimpleback



# Diversity of mussels

- Smooth/warts



Ebony Shell



Pimpleback

- Striped (rays)/plain



Fat mucket



Giant Floater

- Big (6 inches)/Small (2 inches)



Elephant ear



Salamander

- Inflated/normal/compressed



Elk Toe

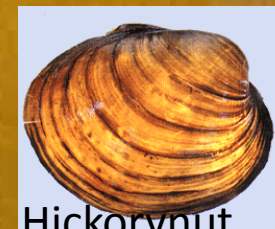


Fragile papershell

- Round/oval/quadrangle



Pistol Grip



Hickorynut

# Statewide Population Health

- Approximately 65% have certain or questionable population health
  - **12** are endangered
  - **7** are threatened
  - **14** are species of special concern
  - **18** appear to have healthy populations

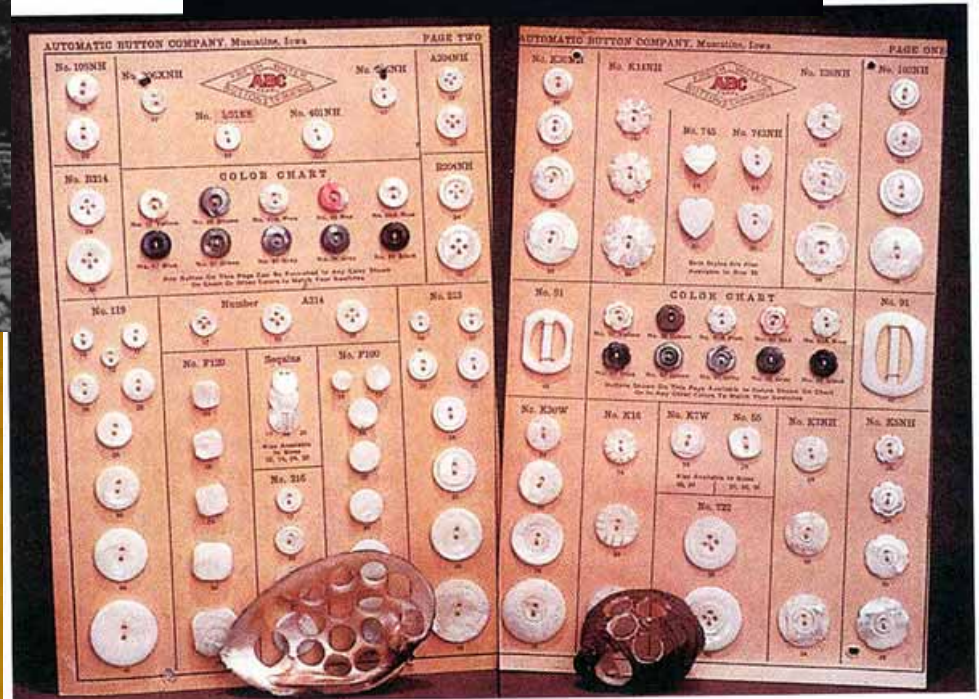
# Causes of decline

- Freshwater mussels are one of the most endangered groups of animals in North America.
  - Siltation of their habitat from agriculture
  - Poor land management
  - Channelization, and impoundments
  - Competition from exotic species -- zebra mussels
  - Pollution by herbicides, pesticides, and other chemicals





# Overharvest button making & cultured pearls



# Why do we care about Mussels?

- Important food source
  - Muskrats, minks, otters, fishes, and some birds
- Filter water as they siphon it through their bodies
  - Accumulate nutrients from plankton and bacteria to turn into protein
  - Up to several gallons in a day
- Sensitive to environmental changes
  - bio-indicator
- Shells (dead) provide spawning and hiding habitat



# Sampling efforts will:

- provide much needed up-to-date information on mussel distribution and status on a statewide level
  - Last statewide survey took place in 1979
- yield insight into water quality
- Shape conservation efforts across Wisconsin

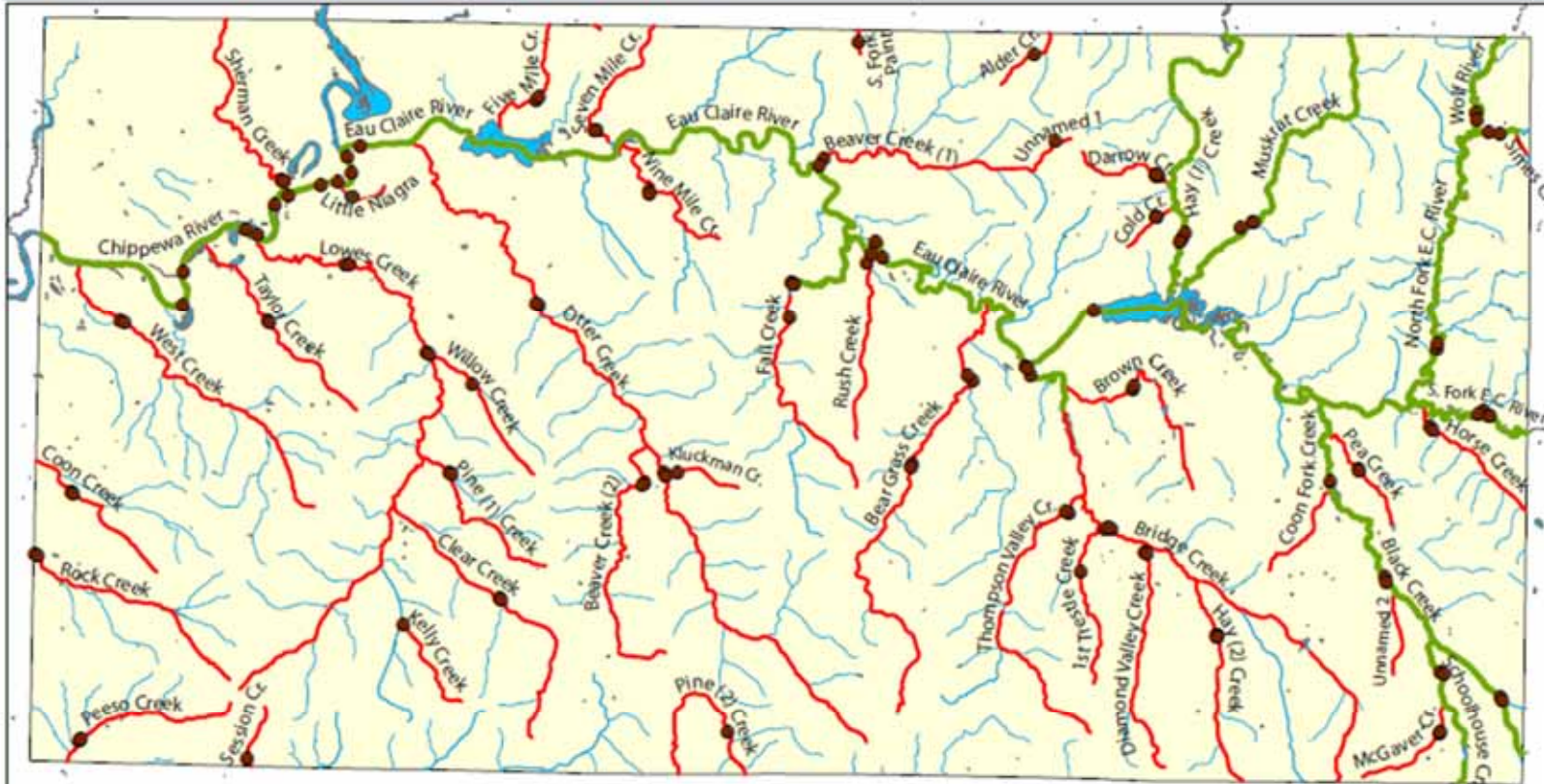


# Mussel Monitoring of Eau Claire County Streams Grant

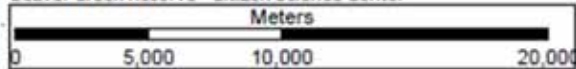
- Came up with this grant to look at the streams in Eau Claire County
- 72 streams in the County
  - Only 7 streams have been sampled in the past
  - Good cross-section (49 sites)
    - 28 Warm water streams
    - 11 warm/cool streams (Class III trout stream)
    - 5 cool streams (Class II trout stream)
    - 5 cold streams (Class I trout stream)

# Site locations

## Mussel Monitoring of Eau Claire County Streams Survey Sites



Created by Anna Mares  
December 2012  
Mussel Monitoring of Eau Claire County Streams  
Beaver Creek Reserve - Citizen Science Center



- Stream sampled - mussels present
- Stream sampled - no mussels present
- Stream not sampled
- Sample location start or end point

# Parameters we looked at:

- Species of mussel (native and non-native)
- Numbers of each species
- D.O.
- pH
- Stream flow
- Temperature of water and air
- Turbidity
- Stream bed substrate
- Water depth
- GPS location of each sample site



# Timetable

- Start at 8 or 9 in the morning, end at 4pm
- Needed to be a nice sunny day
  - Not rainy or really overcast days
- Not all streams received the same amount of time
  - Warm water streams up to 8 search hours
  - Cool and cold get up to 4 search hours
- Up to three streams in one day
- Sampled in June, July and August

# Water quality parameters





# Wade and collect









Sort the shells into like piles



Identify, count and photograph





# Return to the stream



# What we found

Table 2. Mussel monitoring survey results for streams with mussels present.

Monitoring Location	Mussel Species		Native Mussel Species																							
		Number of live mussel found	Black sandshell ( <i>Aligaria recta</i> )	Cresper ( <i>Sorophilus undulatus</i> )	Cylindrical papershell ( <i>Academoides tenasacanus</i> )	Deertoes ( <i>Truncata truncata</i> )	Elk toe ( <i>Alamobata marginata</i> )	Fat mucket ( <i>Lempeleis stigeus</i> )	Fawnsfoot ( <i>Truncata dinascoformis</i> )	Fluted shell ( <i>Lamigona costata</i> )	Fragile papershell ( <i>Lepidodes fragilis</i> )	Giant floater ( <i>Pygostolus grandis</i> )	Hickory nut ( <i>Chonesta olivaria</i> )	Paper pondshell ( <i>Luzerbonia trabealis</i> )	Pimpleback ( <i>Quarulus putulabo</i> )	Pink heelsplitter ( <i>Proanemia alata</i> )	Pistolrip ( <i>Trigonotis venucosa</i> )	Plain pocketbook ( <i>Lampylis carolinum</i> )	Round pigtoe ( <i>Petucorbis shufeldti</i> )	Sheepnose ( <i>Pleurobema oxybute</i> )	Spike ( <i>Margarita avareata</i> )	Threehorn wartyback ( <i>Poliquania reflexa</i> )	Threeridge ( <i>Anodonta picta</i> )	Wabash pigtoe ( <i>Proanemia fraxi</i> )	White heelsplitter ( <i>Lamigona complanata</i> )	
Black Creek	1	6			6																					
Bridge Creek	3	17					3				2		1				1									10
Chippewa River	20	929	233	10		30	7	39	3	1	40	3	135		7	96	2	256		1	1	5	2	12	46	
Coon Fork	8	49		1	4		1		1		2							3						3	34	
Eau Claire River	9	266	1	3			2	24		2	60				1			72								101
Fall Creek	1	23									23															
Hwy Creek 1	3	30			12			4										1							13	shell only
Muskrat Creek	6	91			2			25			4							1							47	12
North Fork of Eau Claire River	8	21		1			shell only	1			1							6	1					9	shell only	
Schoolhouse	3	14			1																				11	2
South Fork of Eau Claire River	3	3		1							shell only							2							shell only	shell only
Wolf River	6	122		9				39			39							10							17	8

## Individual and Summary Statistics

Total number of individuals	23	1569	234	25	25	30	10	135	3	4	40	134	135	1	7	97	2	352	1	1	1	5	2	112	213
Number of sites where species was found			2	6	5	1	4	7	1	3	1	9	1	1	1	2	1	9	1	1	1	1	1	8	10
Relative abundance			15%	1.6%	1.6%	2%	.6%	8.6%	2%	.3%	2.5%	8.5%	8.6%	.1%	.4%	6.2%	.1%	22%	.1%	.1%	.1%	.3%	.1%	7.1%	14%
Frequency of occurrence within mussel populated streams			17%	50%	42%	8%	33%	58%	8%	25%	8%	75%	8%	8%	8%	17%	8%	75%	8%	8%	8%	8%	8%	67%	83%
Relative frequency of species occurrence			3%	8%	6%	1%	5%	9%	1%	4%	1%	12%	1%	1%	1%	3%	1%	12%	1%	1%	1%	1%	1%	10%	13%
Endangered species	text = species previously found in stream																								
Threatened species	text = new species documentation for stream																								
Species of special concern																									
Healthy species																									

- One Endangered species - Sheepnose



- One Threatened species – Pistol grip





# Five species of Special Concern

Cylindrical papershell



Round pigtoe



Fawnsfoot



Black sandshell



Elktoe



# Locations of mussels

- Five more streams are known to contain mussels
  - Coonfork, Bridge, Schoolhouse, Muskrat, Fall Creek
- All four classifications of streams
  - Class I, class II, class III, no classification
- New record for location of the:
  - sheepnose

# How can you become involved?

- Join the Mussel Monitoring Program of WI
  - Wade in your local lakes and streams
  - Take photographs of what you find
  - Learn what you have



Home

Select County: Chippewa ▾

## Chippewa County

(Click on waterbody name for list of mussels)  
Common Name - Scientific name (Last observed date)

Big Drywood Creek

Chippewa River

Drywood Creek

Duncan Creek

Fisher River

Jump River

Little Drywood Creek

McCann Creek

N. Fork Bob Creek

O'Neil Creek

Wolf River

Yellow River

Back to Statewide



(Click on highlighted stream to see its name or zoom in to see more labels.)





Questions

