Beaver Creek Reserve Meets Success In 6-County AIS Prevention Effort

Anna Mares

Beaver Creek Reserve

April 13th, 2011

Outline

- Beaver Creek Reserve
- Five-county AIS Survey of Lakes With Public Access in Barron, Chippewa, Dunn, Eau Claire and Rusk Counties
  - Lakes included
  - Species surveyed for
  - Findings
  - Partnerships
- A Regional Approach to Watercraft Inspection in Chippewa, Dunn, Eau Claire, and St. Croix Counties
  - Lakes included
  - Scheduling
  - Watercraft inspection data
  - Partnerships
- The future

Beaver Creek Reserve – Citizen Science Center

- Located in Fall Creek, WI, close to Eau Claire

- Projects aimed at getting citizens involved with science, collecting real data, and enjoying the outdoors
  - Stream monitoring
  - Bat monitoring
  - BioBlitzes
  - AIS

- Non-profit organization

- Good working relationship with the County, University, and the WDNR

Five-county AIS survey of lakes with public access in Barron, Chippewa, Dunn, Eau Claire and Rusk counties

- Three year project (2007-2009)
- $145,000 grant
  - $45,000 Xcel Energy
  - $72,000 WDNR
  - $5,000 WI Environmental Education Board
  - $25,500 additional match and volunteer time
  - Working under 50:50 cost/share ratio, $8/hr match
- Project request of WDNR,
- Survey of 114 lakes for eight AIS
- Education of public and start CBCW program in area

Counties and lakes to be included in the survey

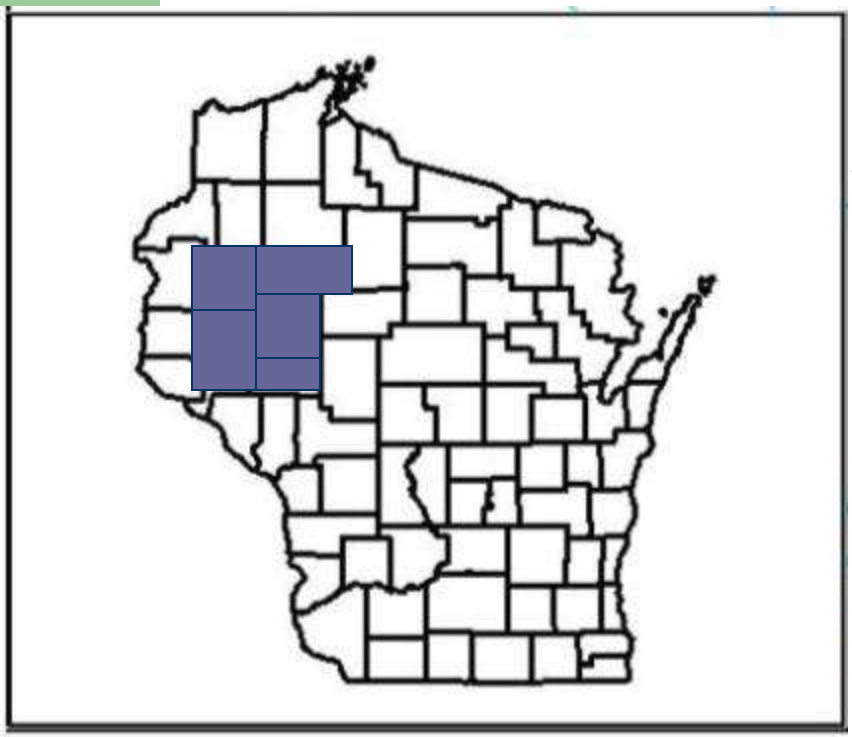


Table 1. Total number of lakes in five counties in West Central Wisconsin and number of those lakes that have boat launches and lake associations or districts (WDNR, 2005, and UWEX, 2009).

County	Number of Lakes	Lakes with Public Boat Launches	Lakes with Associations or Districts
Eau Claire	20	8 (40%)	4 (20%)
Chippewa	449	40 (9%)	13 (3%)
Dunn	20	4 (20%)	2 (10%)
Barron	369	50 (14%)	18 (5%)
Rusk	250	24 (10%)	8 (3%)
Total	1,108	126	45

Aquatic Invasive Species Surveyed for

- Curly-leaf pondweed
- Eurasian water milfoil
- Purple loosestrife
- Rusty crayfish
- Spiny waterflea
- Zebra Mussels
- Chinese mystery snails
- Banded mystery snails

Sea Grant

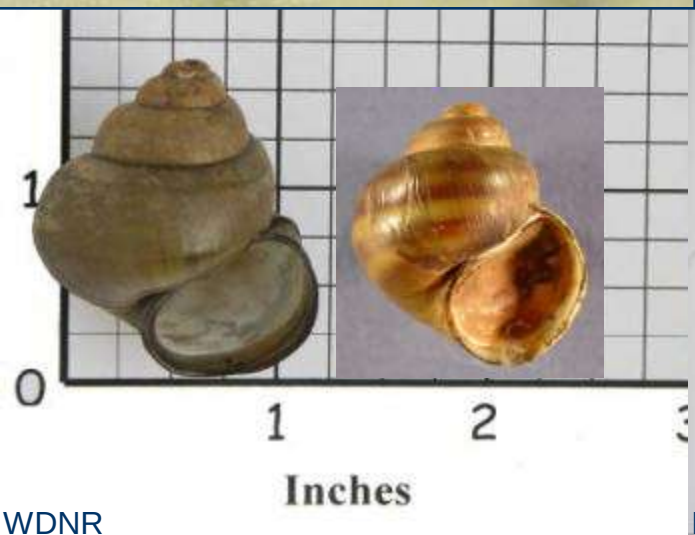
S. Gilbert

Sea Grant

WDNR

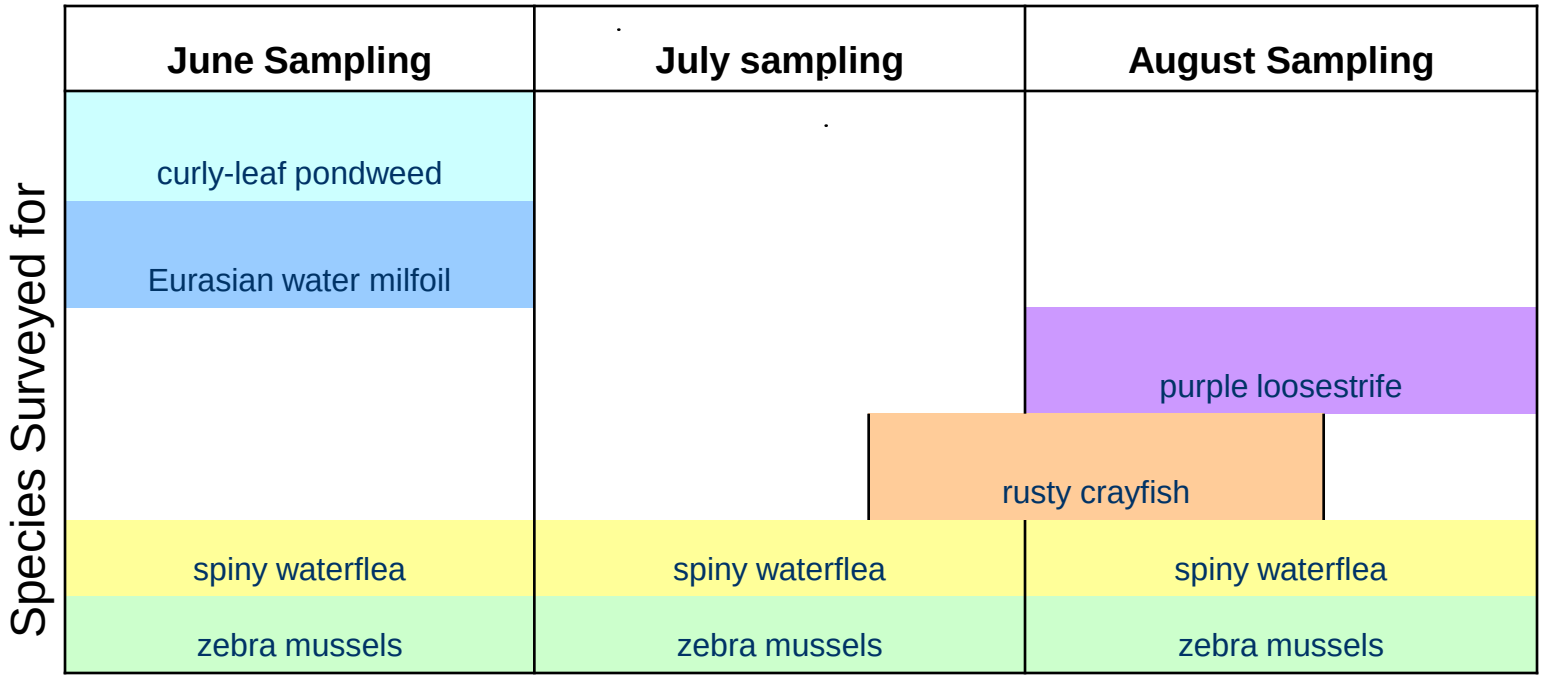
D. Heuschele

WDNR



WDNR

Survey Timing



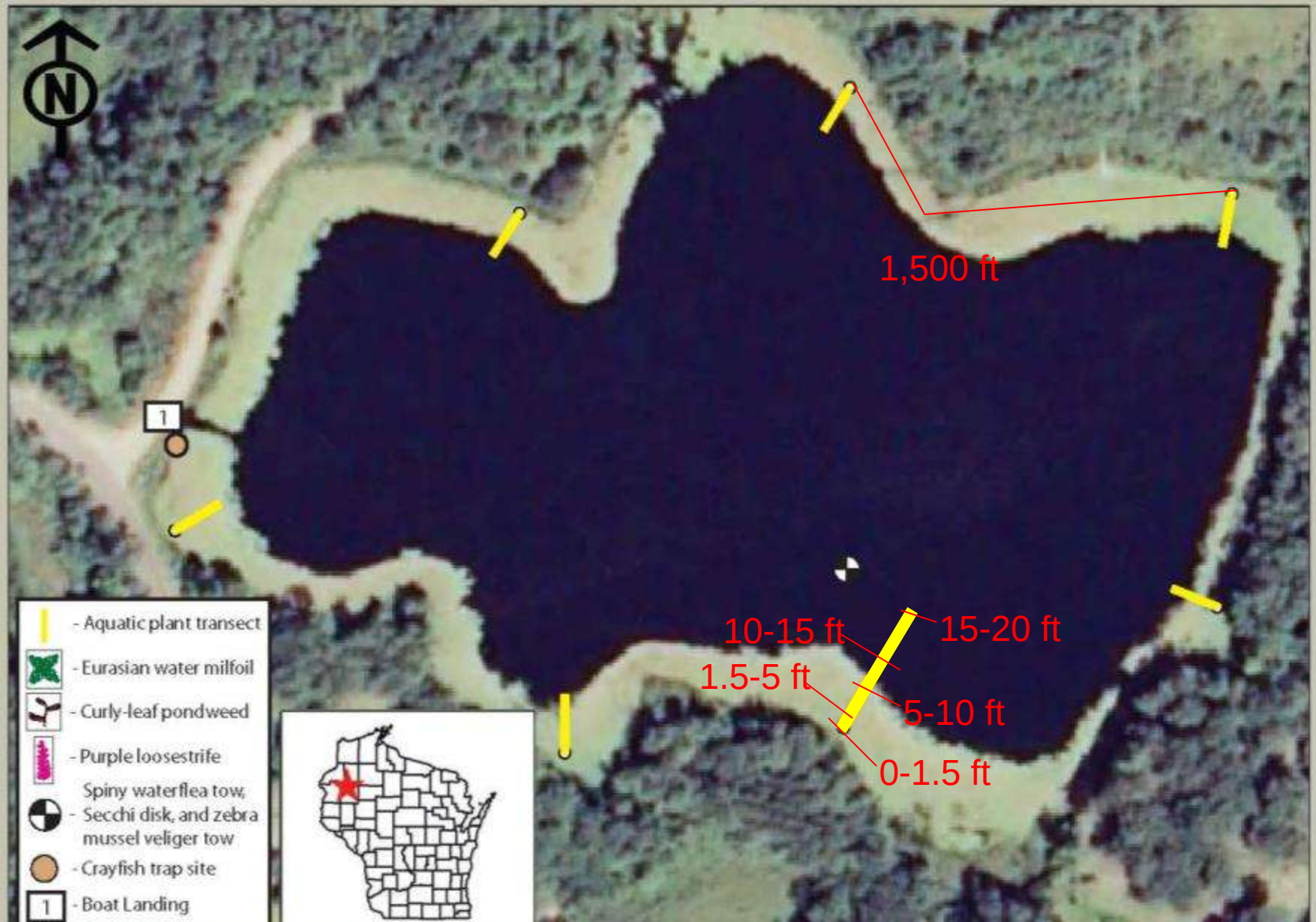
Survey Methods – Aquatic Plants

- Raking for curly-leaf and Eurasian water milfoil
- Transects radiating out from shore every 1,500 ft
- Rake samples at 0-1.5, 1.5-5, 5-10, 10-15, and 15-20 ft, if plants were growing that deep
- Noted native plants as well as invasive species

Aquatic Invasive Species Survey of

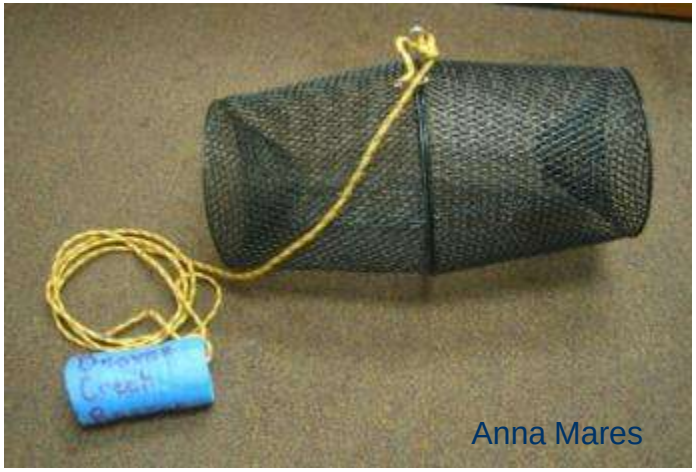
Anderson Lake, Barron County

Data collected by Anna Mares, Ted Ludwig, Christine Preist, Jenny Pomeroy, and Judy Schwarzmeier on June 22, July 15, and August 11, 2009



Survey Methods – Rusty Crayfish

- Beef liver as bait
- 5 modified minnow traps with 2 inch opening
- Left in the water for 24 hours
- At the boat landing for easy access
- Preserved in alcohol



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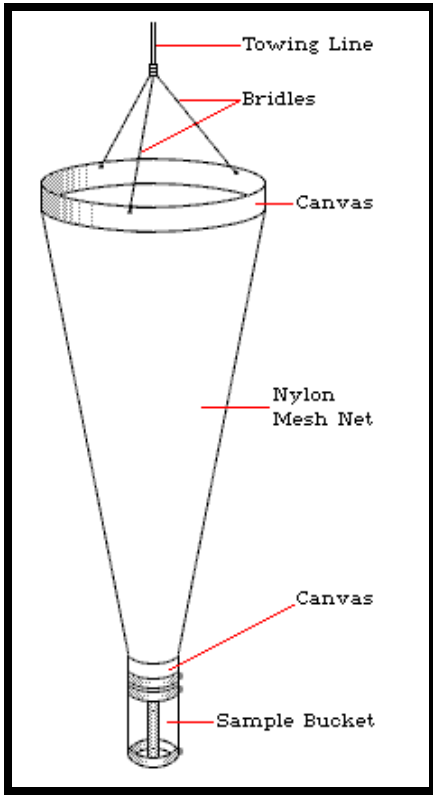
Survey Methods

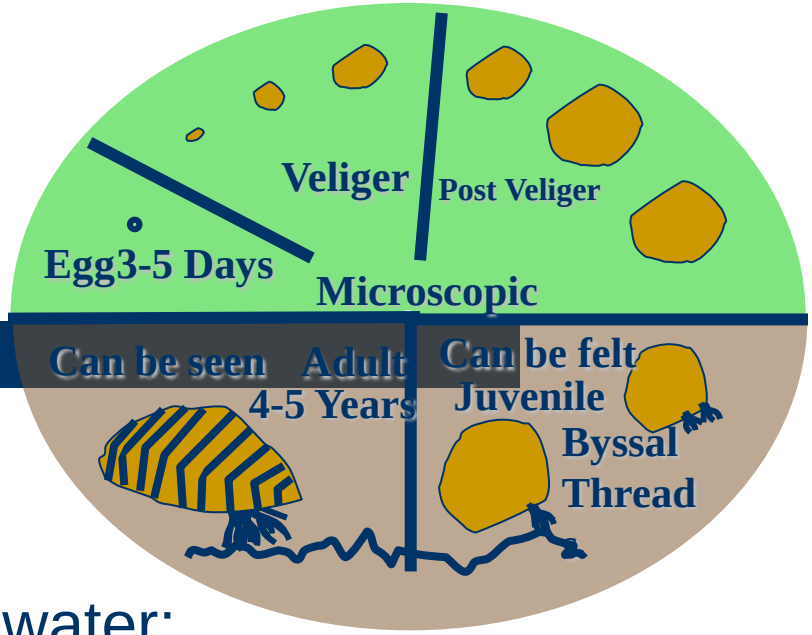
- Purple loosestrife
  - Shoreline scan from the boat
  - Looked in the end of July and early August
  - Plant bed size estimates
- Chinese and Banded Mystery Snails
  - Looked near boat landings and on shores
  - Collected any snails found while looking for other species
  - No specific protocol for surveying for mystery snails

Survey Methods

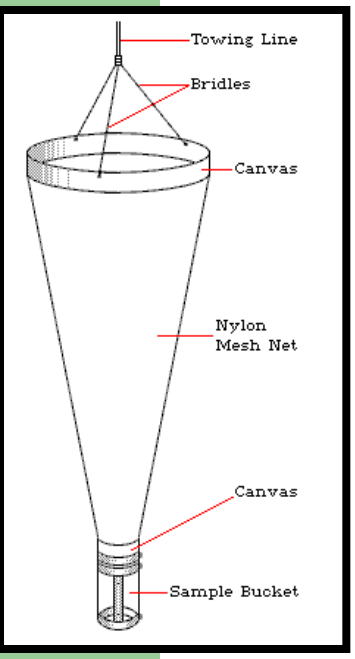
- Spiny waterflea
  - 250 micron mesh net
  - Tow net behind the boat at trolling speed for 100m
  - Analyze contents of net for spiny waterflea with a a hand lense and naked eye while on the boat

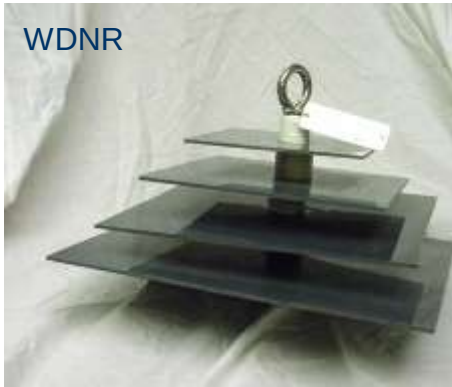


Survey Methods



- Zebra mussels
  - 64 micron mesh net
  - Towed vertically in the water:
    - Sechhi disk reading of 0-7 ft
      - 1m tow in water
    - Secchi disk reading of 7-12 ft
      - 2m tow in water
    - Secchi disk reading of greater than 12 ft
      - 4m tow in water
  - Collect sample in net and preserve in alcohol and view under a microscope





Decontamination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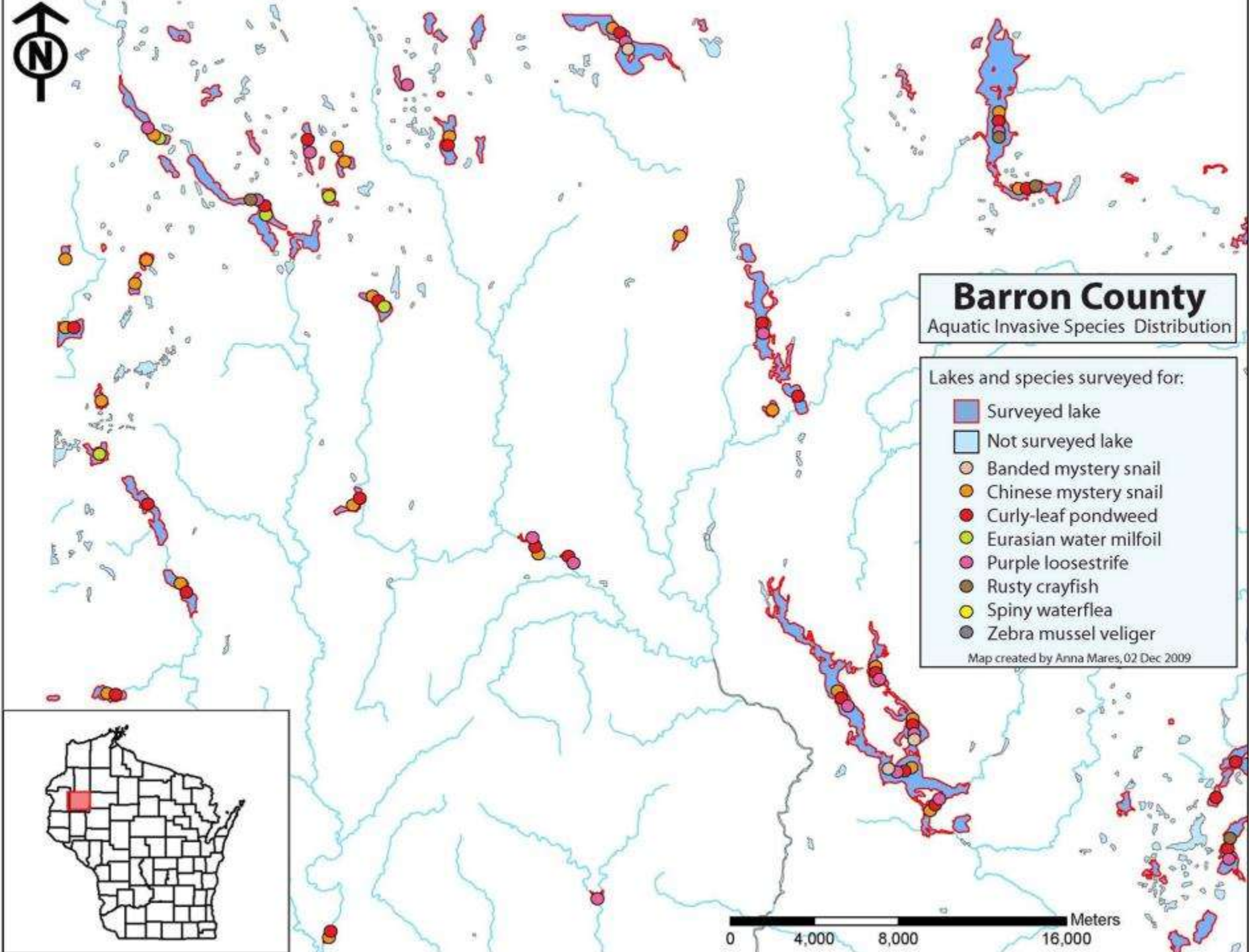
- Removed all aquatic plants and animals from the trailer before entering the water or leaving the landing
- Drained all water from live wells, bilges and pulled the drain plug
- Rinsed all equipment that touched the water with a 5% bleach/water solution to kill microscopic organisms

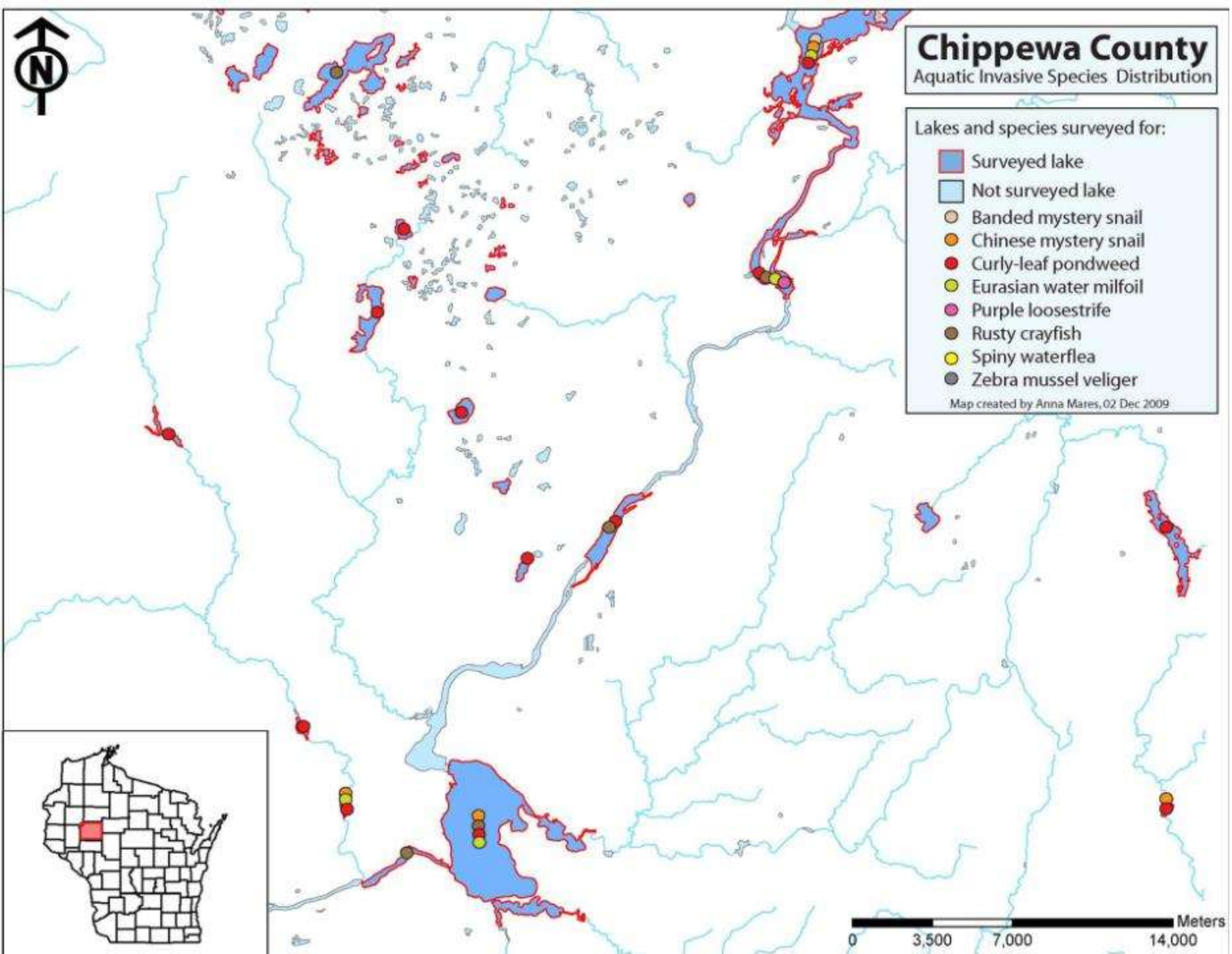

Anna Mares

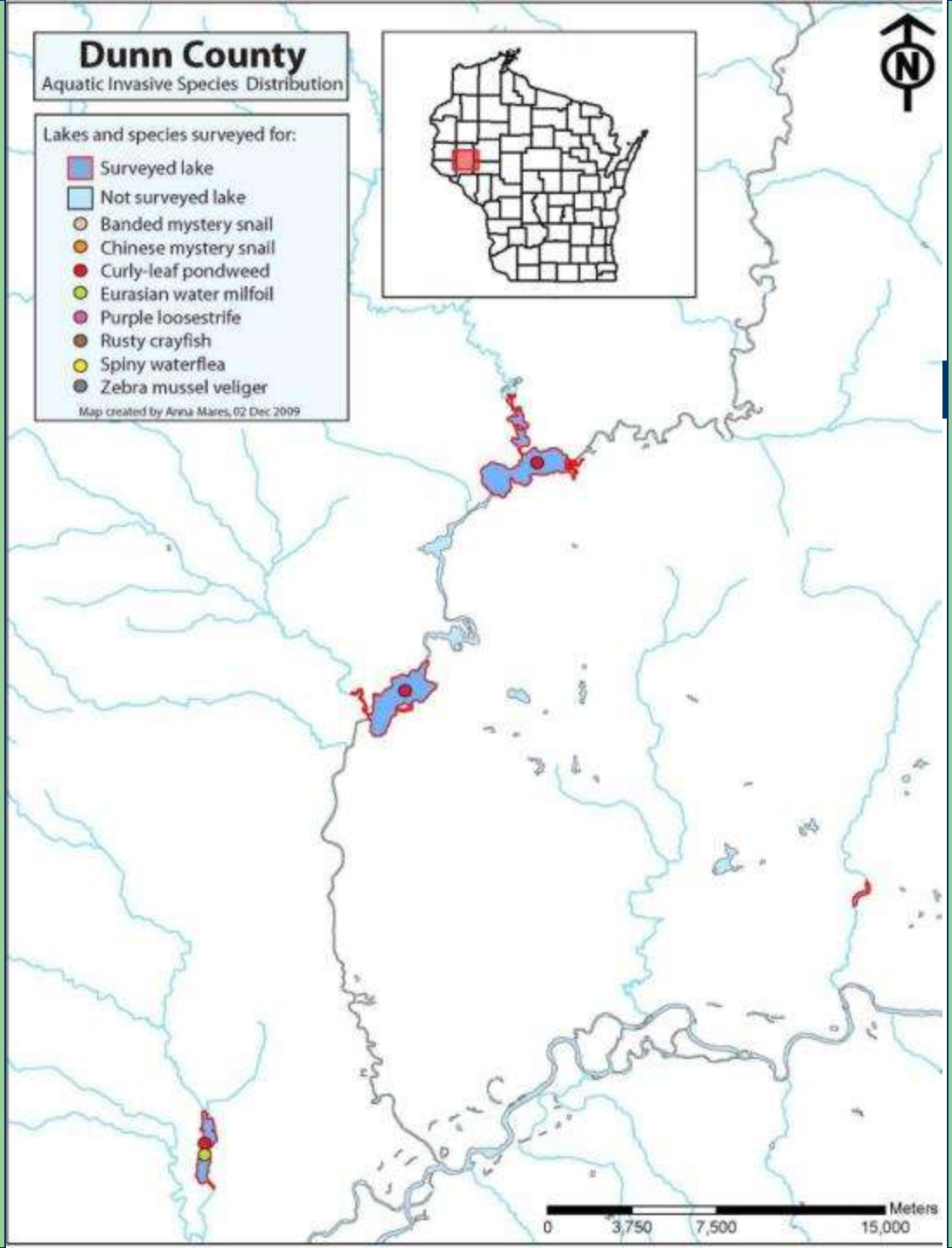
Results

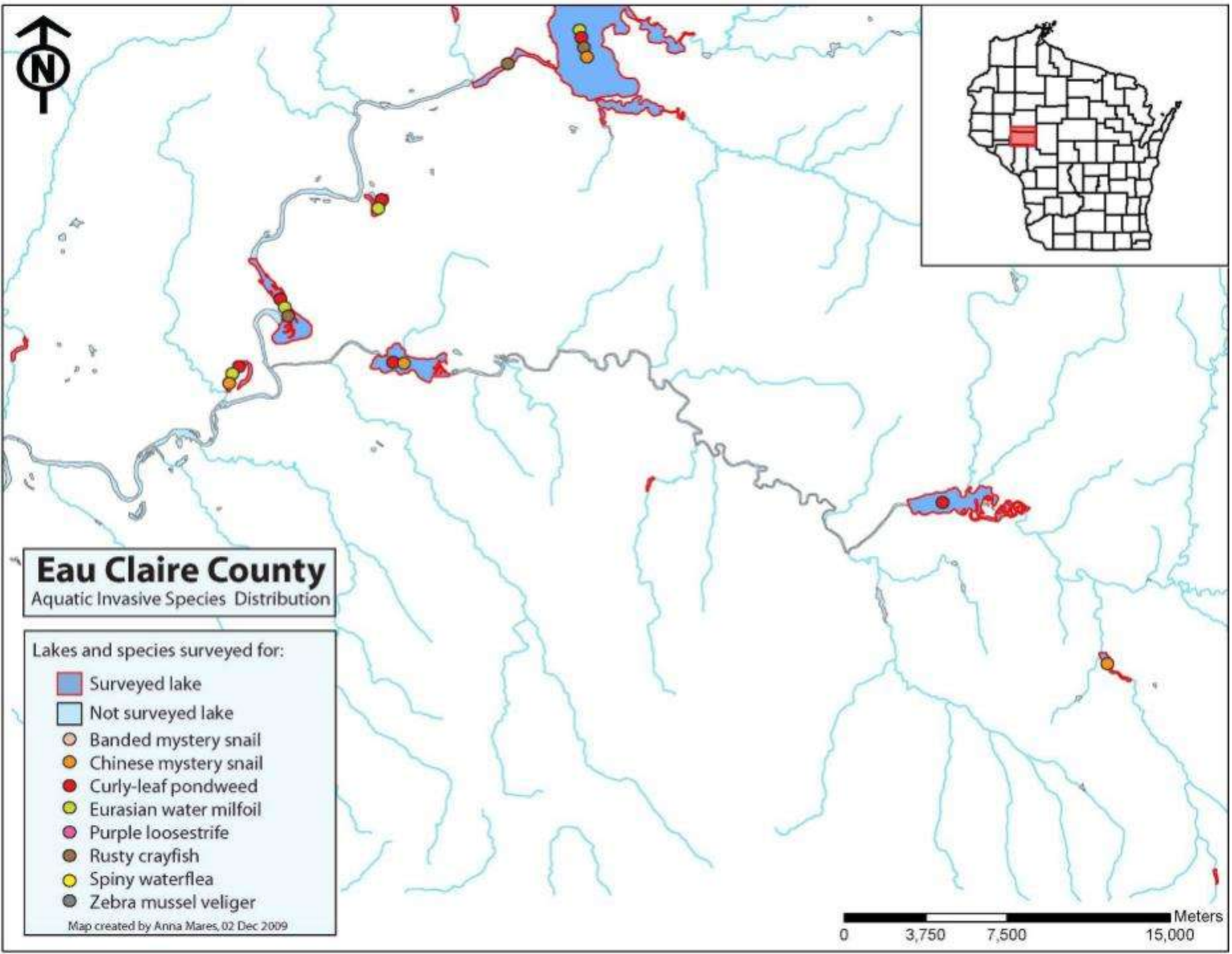
County	Spiny Waterflea	Zebra Mussel	Purple Loosestrife	Curly-leaf Pondweed	Eurasian Water-milfoil	Rusty Crayfish	Chinese Mystery Snail	Banded Mystery Snail
Barron	0	0	11	22	5	4	25	3
Chippewa	0	0	2	15	5	8	4	1
Dunn	0	0	0	2	1	0	0	0
Eau Claire	0	0	0	5	2	1	3	0
Rusk	0	0	0	9	2	4	3	0
Total	0	0	13	53	15	17	35	4
New	0	0	6	37	5	8	24	3

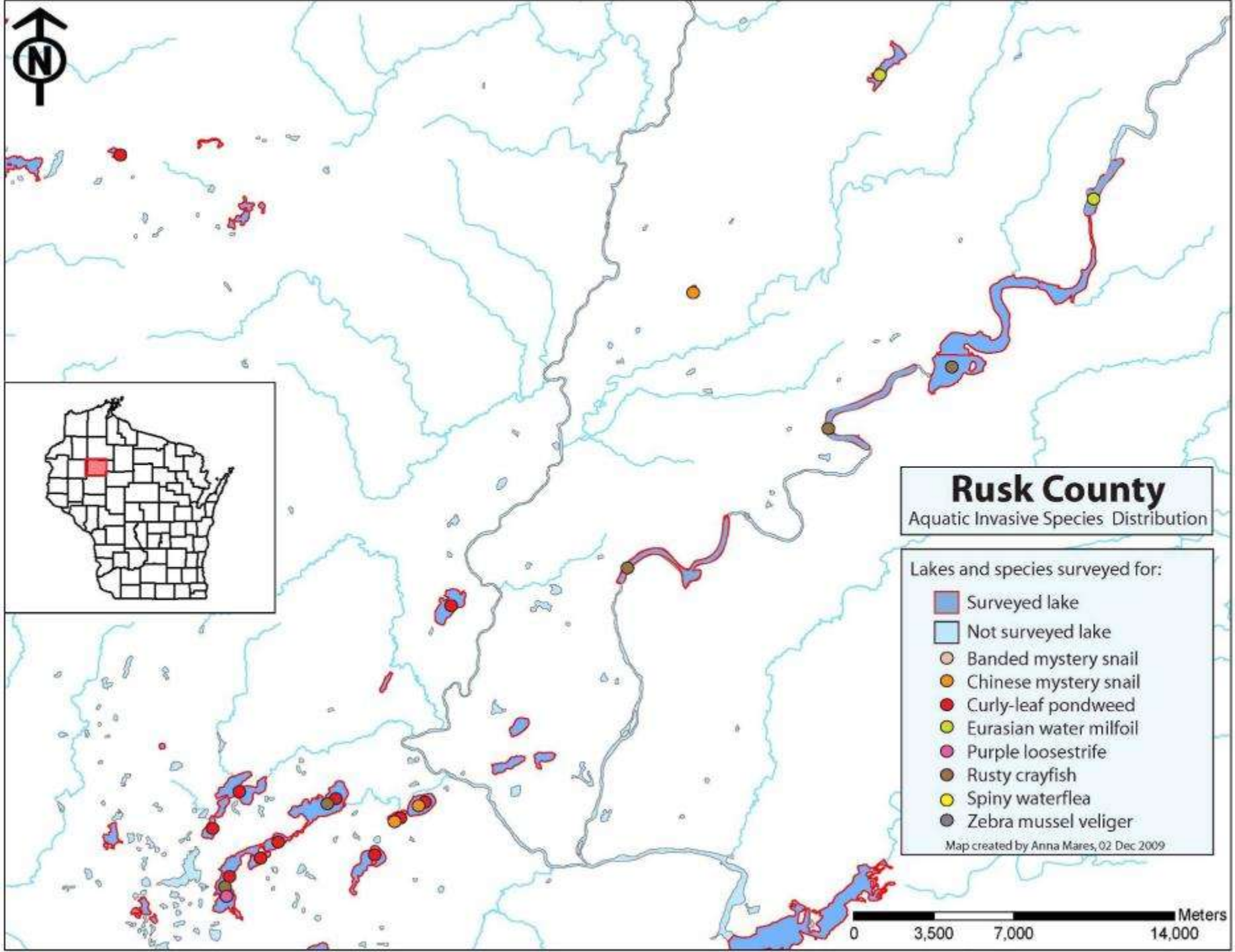
There were **137** occurrences of AIS in the lakes with **83** of them never having been documented before.


N
Barron County
Aquatic Invasive Species Distribution
Lakes and species surveyed for:
Surveyed lake
Not surveyed lake
Banded mystery snail
Chinese mystery snail
Curly-leaf pondweed
Eurasian water milfoil
Purple loosestrife
Rusty crayfish
Spiny waterflea
Zebra mussel veliger
Map created by Anna Mares, 02 Dec 2009
0
4,000
8,000
16,000
Meters


Chippewa County
Aquatic Invasive Species Distribution
Lakes and species surveyed for:
Surveyed lake
Not surveyed lake
Banded mystery snail
Chinese mystery snail
Curly-leaf pondweed
Eurasian water milfoil
Purple loosestrife
Rusty crayfish
Spiny waterflea
Zebra mussel veliger
Map created by Anna Mares, 02 Dec 2009
Meters
0
3,500
7,000
14,000


Dunn County
Aquatic Invasive Species Distribution
Lakes and species surveyed for:
Surveyed lake
Not surveyed lake
Banded mystery snail
Chinese mystery snail
Curly-leaf pondweed
Eurasian water milfoil
Purple loosestrife
Rusty crayfish
Spiny waterflea
Zebra mussel veliger
Map created by Anna Mares, 02 Dec 2009
N
0
3,750
7,500
15,000
Meters


N
Eau Claire County
Aquatic Invasive Species Distribution
Lakes and species surveyed for:
Surveyed lake
Not surveyed lake
Banded mystery snail
Chinese mystery snail
Curly-leaf pondweed
Eurasian water milfoil
Purple loosestrife
Rusty crayfish
Spiny waterflea
Zebra mussel veliger
Map created by Anna Mares, 02 Dec 2009
0
3,750
7,500
15,000
Meters


N
Rusk County
Aquatic Invasive Species Distribution
Lakes and species surveyed for:
Surveyed lake
Not surveyed lake
Banded mystery snail
Chinese mystery snail
Curly-leaf pondweed
Eurasian water milfoil
Purple loosestrife
Rusty crayfish
Spiny waterflea
Zebra mussel veliger
Map created by Anna Mares, 02 Dec 2009
Meters
0
3,500
7,000
14,000

Floristic Quality Index

- The plants present in a lake can reflect the water quality and level of disturbance in a lake which can be measured using the **Floristic Quality Index (FQI)** of Wisconsin.

- The state average **FQI** is 22.2, but it can range from 3.0 to 44.6

Lake Name (county if duplicate)	FQI
HORSESHOE LAKE (Barron)	36.66
NORTH LAKE	35.6
BEAR LAKE	34.64
HEMLOCK LAKE (Barron)	33.77
TRIPLE LAKE, WEST	33.7
SPIDER LAKE	33.47
KIRBY LAKE	32.52
LOON LAKE (Barron)	31.42
LAKE THIRTY	31.2

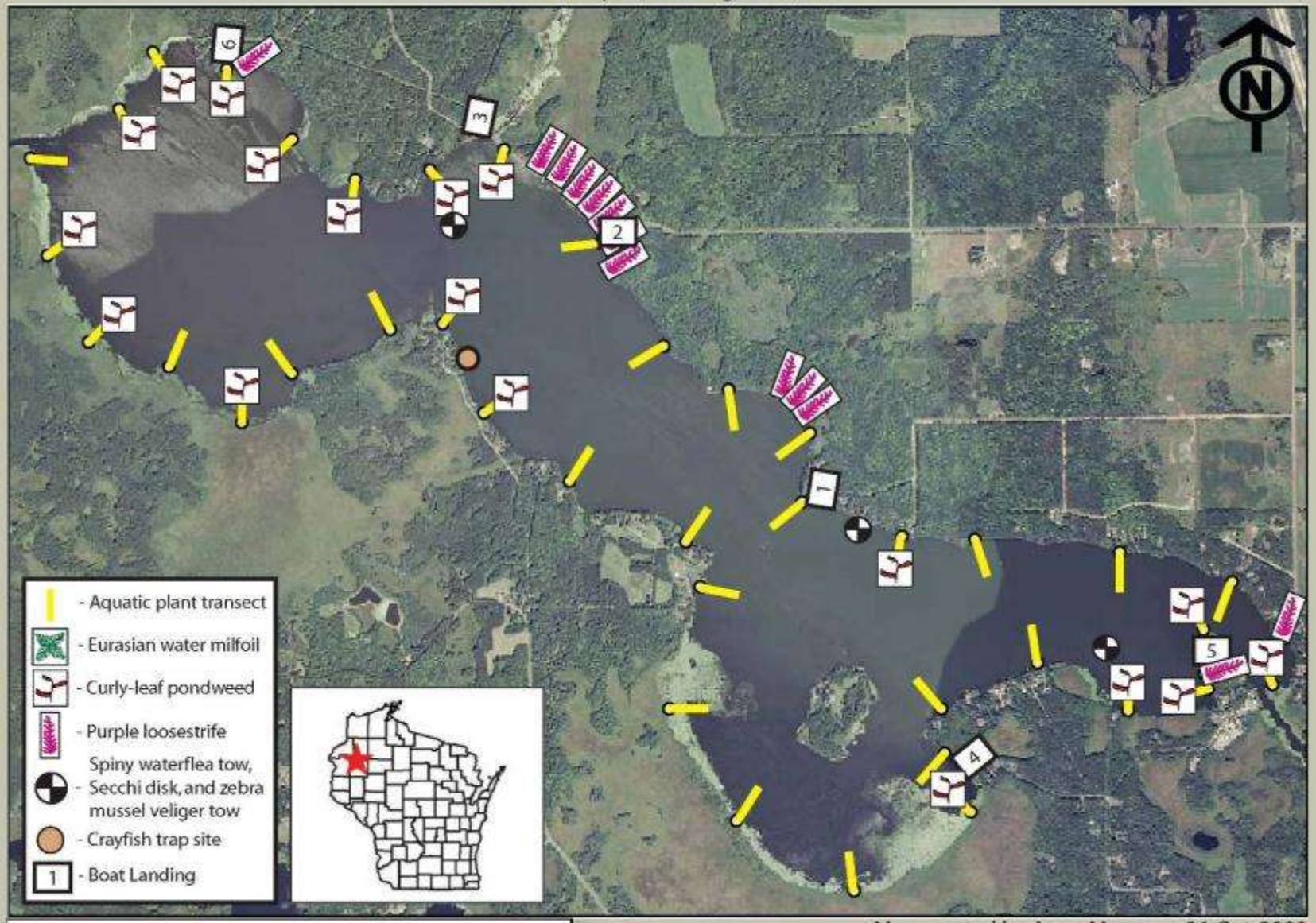
Lake Name (county if duplicate)	FQI
TENMILE LAKE	25.04
AXHANDLE LAKE	25.02
ISLAND LAKE	24.98
CORNELL LAKE	24.52
BUCKS LAKE	24.27
LITTLE GRANITE LAKE	24.24
SHATTUCK LAKE, SOUTH	24.12
TOWN LINE LAKE	24.12
PERCH LAKE	24.12

Lake Name (county if duplicate)	FQI
RUSK LAKE	20.49
MARSH-MILLER LAKE	19.96
DAIRYLAND RESERVOIR	19.96
BASS LAKE #2	19.79
PLUMMER LAKE	19.62
GLEN LOCH FLOWAGE	19.41
LAKE HALLIE	19.34
BARRON FLOWAGE # 3	19.24
CORNELL FLOWAGE	18.99

Aquatic Invasive Species Survey of

Bear Lake, Barron County

Data collected by Anna Mares, Ted Ludwig, Jenny Pomeroy, Zoe Hastings, Christine Preist, Bob Moe and Dorothy Moe
on June 6, July 15, and August 10, 2009



Map created by Anna Mares on 06-Oct-2009
Beaver Creek Reserve

Partnerships

- **WDNR** – funding, protocols, guidance
- **Xcel Energy** - funding
- **University of Wisconsin-Eau Claire** – service learning students helping on the boat
- **Lake groups** – help surveying, volunteer hours
- **Citizens at large** – help surveying, CBCW, spreading the CBCW message

Challenges

- Getting used to the requirements of a WDNR grant
  - The paperwork
  - Correct submissions and documentations
- Getting enough volunteer hours as match
- Having enough time to survey for everything (3 times) and on all of the lakes

Accomplishments

- Amazing volunteers (187)
  - CBCW – 152.5 hours
  - Trainings – 205 hours
  - Out on the boat surveying – 1,313 hours
- Contacted over 5,500 people about AIS issues
- 83 New (undocumented) AIS findings
  - Groups looking for AIS after the project
  - 3 Started to manage the AIS found
- Strengthened relationships
  - Proved we could handle large scale project
  - More groups became familiar with Beaver Creek

A regional approach to watercraft inspection in Chippewa, Dunn, Eau Claire and St. Croix counties

- Three year grant (2009-2011):
  - $199,000 WDNR grant
  - $66,000 in matching funds (volunteer hours & money)
- Focus on watercraft inspection at high use, highly infested area lakes
- AIS surveying of lakes having watercraft inspections done at them
- Work closely with the lake groups in the project

Lakes (17) in the WCI project

Invasive species

•BMS
banded mystery snail

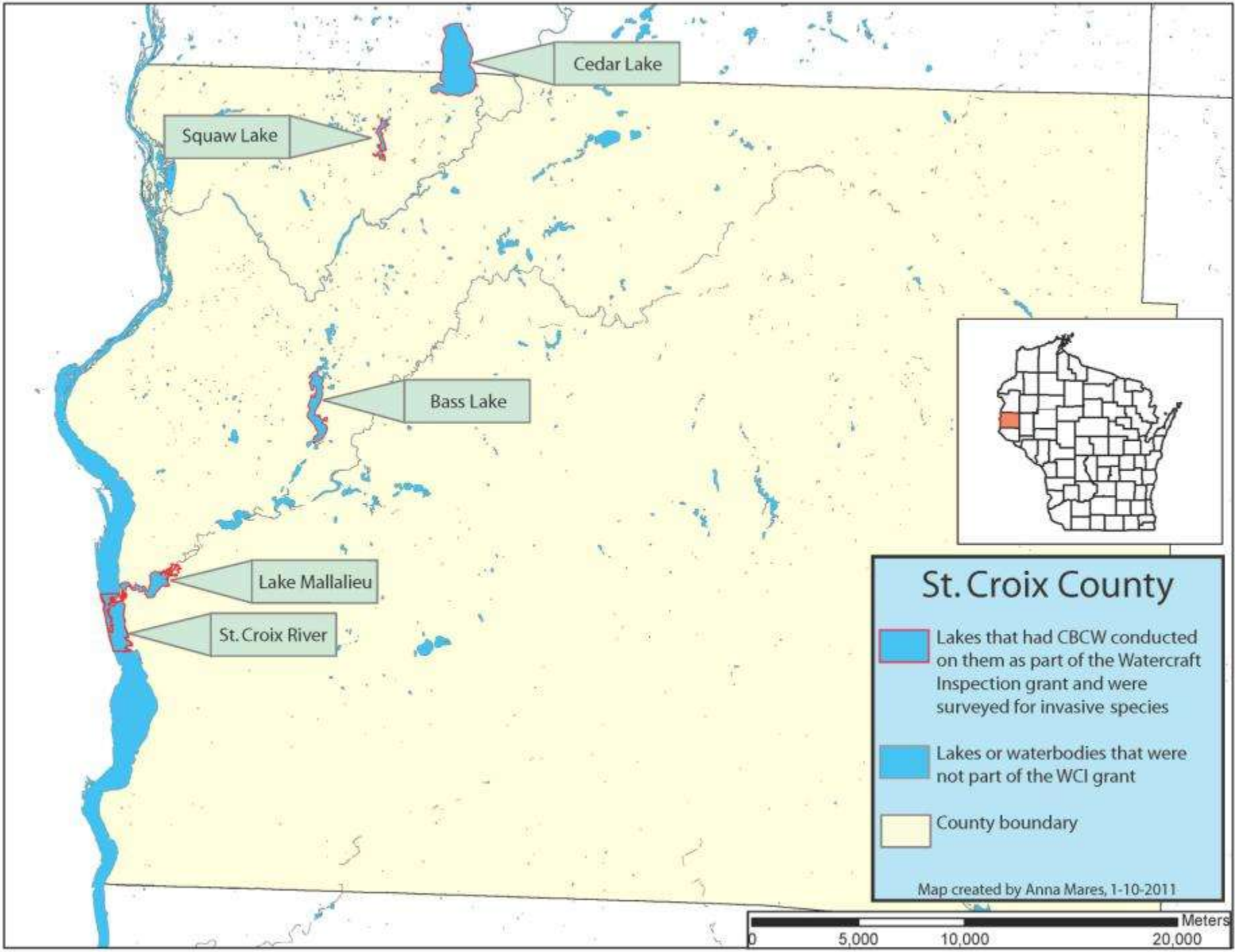
•CLP
curly-leaf pondweed

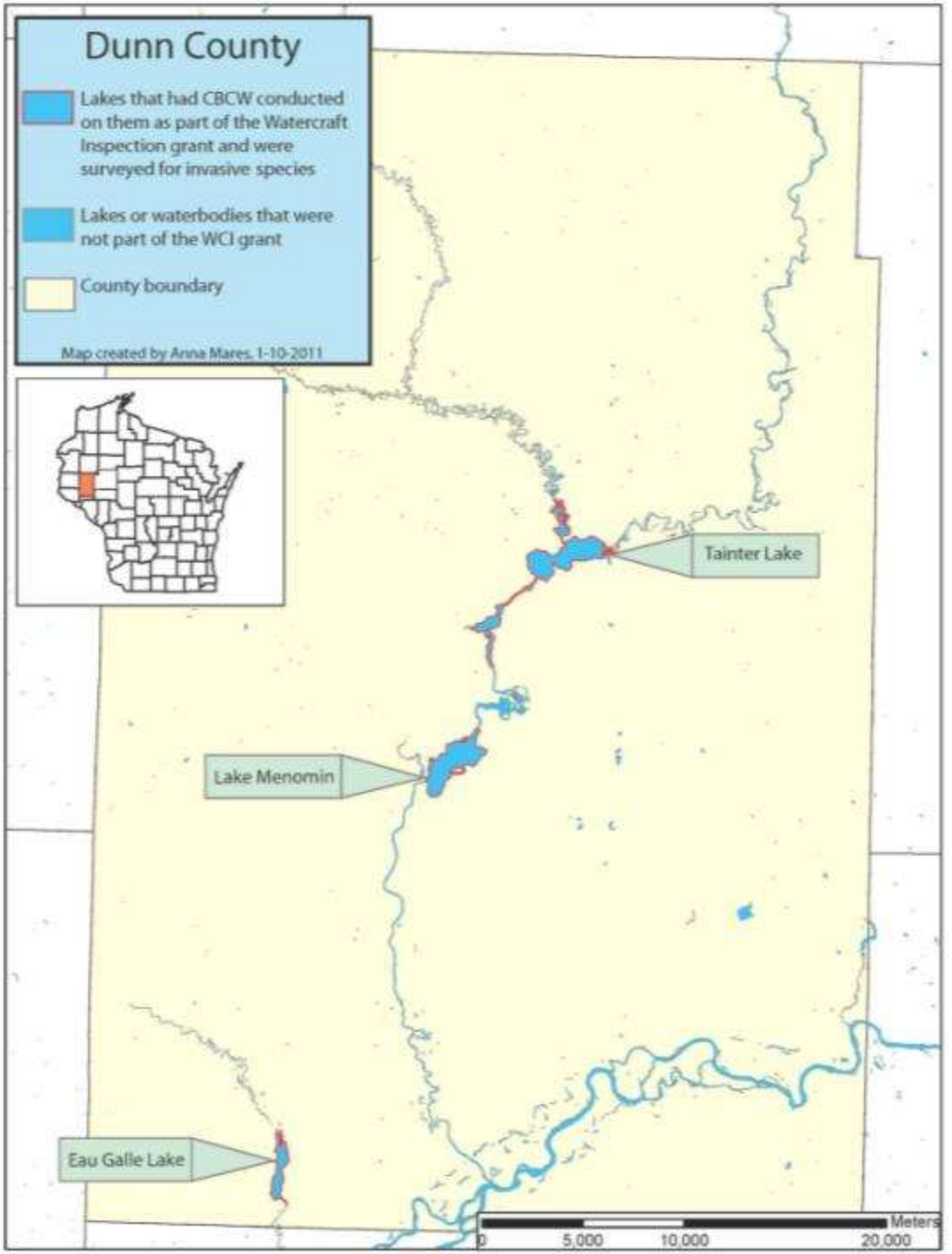
•CMS
Chinese mystery snail

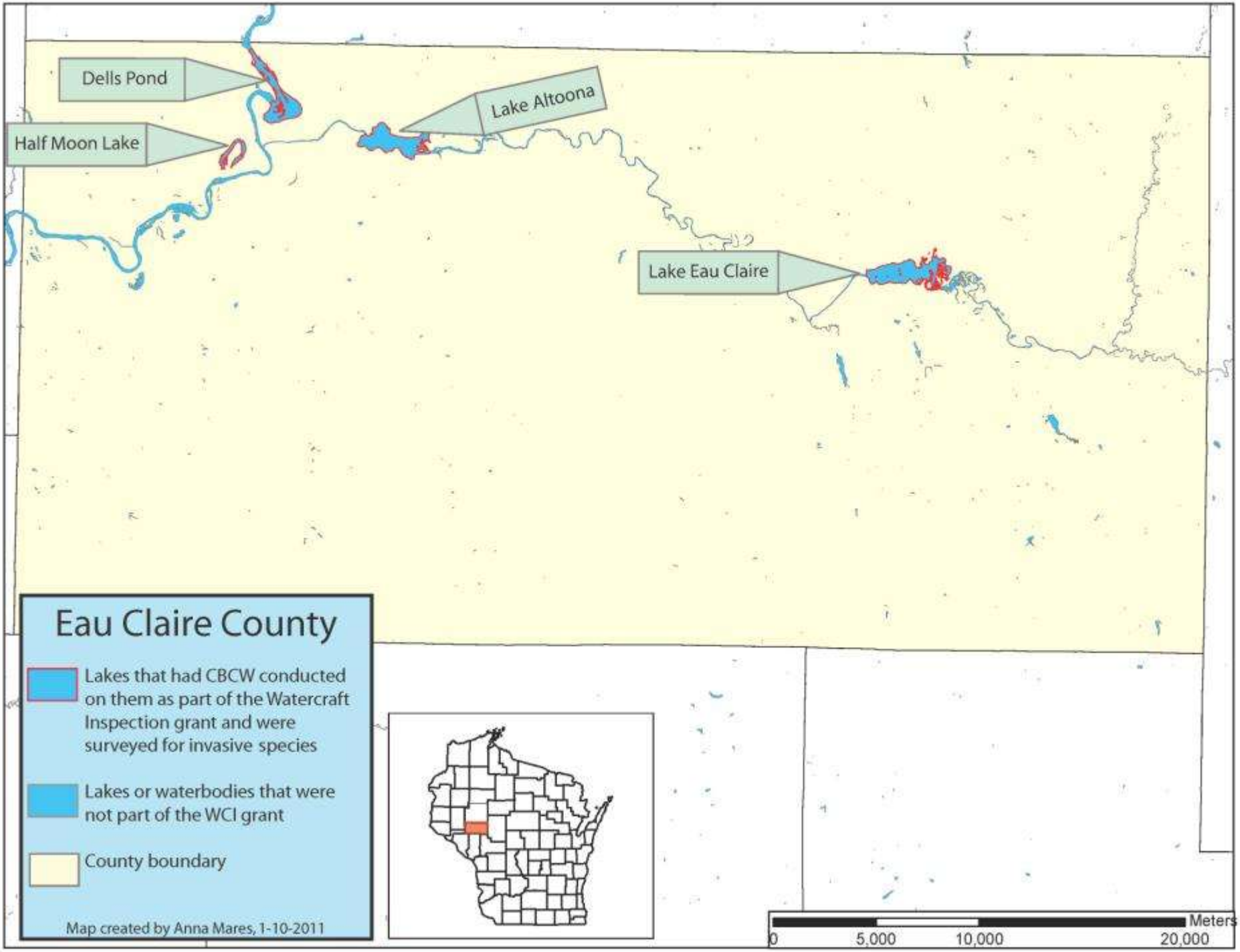
•EWM
Eurasian watermilfoil

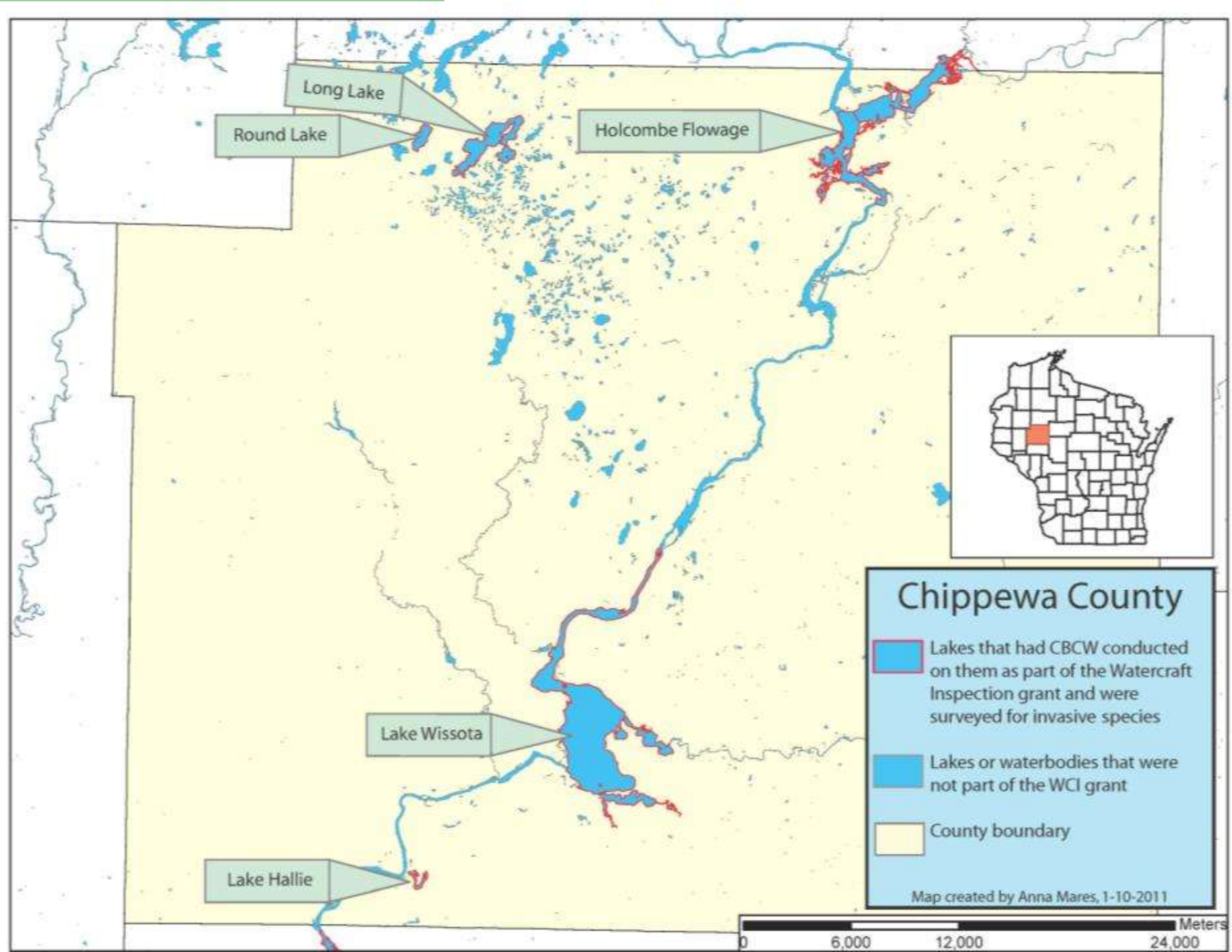
•ZM
zebra mussels

County	Lake Name	Number of Boat Launches	Invasive Species Present in Lakes	Active Lake Association or District Present
Chippewa	Lake Hallie	1	CLP, EWM	Yes
Chippewa	Lake Holcombe	4	BMS, CLP, CMS, EWM & R	Yes
Chippewa	Lake Wissota	4	CLP, CMS, EWM & R	Yes
Chippewa	Long Lake	1	R	Yes
Chippewa	Round Lake	1		Yes
Dunn	Eau Galle Lake	2	CLP & EWM	No
Dunn	Lake Menomin	4	CLP	Yes
Dunn	Tainter Lake	3	CLP	Yes
Eau Claire	Dells Pond	2	CLP, EWM & R	No
Eau Claire	Half Moon Lake	2	CLP, CMS & EWM	Yes
Eau Claire	Lake Altoona	2	CLP & CMS	Yes
Eau Claire	Lake Eau Claire	3	CLP	Yes
St. Croix	Bass Lake	1	EWM	Yes
St. Croix	Cedar Lake	1	CLP	Yes
St. Croix	Lake Mallalieu	1	CLP & EWM	Yes
St. Croix	Squaw Lake	1		Yes
St. Croix	St. Croix River	2	EWM & ZM	No


Cedar Lake
Squaw Lake
Bass Lake
Lake Mallalieu
St. Croix River
St. Croix County
Lakes that had CBCW conducted on them as part of the Watercraft Inspection grant and were surveyed for invasive species
Lakes or waterbodies that were not part of the WCI grant
County boundary
Map created by Anna Mares, 1-10-2011
0
5,000
10,000
20,000
Meters


Dunn County
Lakes that had CBCW conducted on them as part of the Watercraft Inspection grant and were surveyed for invasive species
Lakes or waterbodies that were not part of the WCI grant
County boundary
Map created by Anna Mares, 1-10-2011
Tainter Lake
Lake Menomin
Eau Galle Lake
0
5,000
10,000
20,000
Meters


Dells Pond
Half Moon Lake
Lake Altoona
Lake Eau Claire
Eau Claire County
Lakes that had CBCW conducted on them as part of the Watercraft Inspection grant and were surveyed for invasive species
Lakes or waterbodies that were not part of the WCI grant
County boundary
Map created by Anna Mares, 1-10-2011
0
5,000
10,000
20,000
Meters


Long Lake
Round Lake
Holcombe Flowage
Lake Wissota
Lake Hallie
Chippewa County
Lakes that had CBCW conducted on them as part of the Watercraft Inspection grant and were surveyed for invasive species
Lakes or waterbodies that were not part of the WCI grant
County boundary
Map created by Anna Mares, 1-10-2011
Meters
0
6,000
12,000
24,000

Watercraft Inspectors

- Four inspectors per summer
- 40 hours per week, 14 week, May-August
- Rotate between lakes in their respective counties
- Work three out of four weekends
- Each lake gets at least one weekend day
- Survey for invasives at least two weeks during the summer

anna@beavercreekreserve.org, Chippewa Co. Watercraft inspector intern, Dunn C. Watercraft inspector, **Jun 2011 (Central Time)**
Eau Claire Co. Watercraft Inspection, St. Croix Co. Watercraft Inspector Intern

Sun	Mon	Tue	Wed	Thu	Fri	Sat
29 Cedar Lake, (8hr) Eau Galle (8hr) Hallie (8hr) Wissota (8hr)	30 Bass Lake (8hr) Dells Pond (8hr) Holcombe (8hr) Tainter (8hr)	31 Eau Claire (8hr) Menomin (8hr) Round (8hr) Squaw Lake (8hr)	1 Staff Staff Mtg (4hr) Staff Mtg (4hr) Staff Mtg, Survey	2	3 Bass Lake (4hr) Eau Claire (4hr) Long (4hr) Tainter (4hr)	4 Altoona (8hr) Holcombe (8hr) Squaw (8hr) Squaw Lake (8hr) Time Period Ends
5 Half Moon (8hr) Mallalieu (8hr) Menomin (8hr) Time Period Starts Wissota State Park	6 Survey Cedar/Squaw Survey Cedar/Squaw Survey Survey	7 Survey Survey Survey Dells Survey Dells	8 Survey Eau Survey Eau Survey St. Croix Survey St.Croix	9 Survey Holcombe Survey Holcombe Survey Tainter (8hr) Survey Tainter (8hr)	10 Survey Long/Round Survey Long/Round Survey Survey	11 Bass (8hr) Eau Claire (8hr) Round (8hr) Tainter (8hr)
12 Altoona (8hr) Eau Galle (8hr) Hocombe (8hr) St. Croix River (8hr)	13 Staff Mtg (8hr) Staff Mtg, Data Staff mtg, data Staff Mtg, Data	14	15	16	17	18 Cedar (8hr) Dells Pond (8hr) Long (8hr) Menomin/Tainter Time Period Ends
19 Cedar (8hr) Half Moon (8hr) Hallie (8hr) Menomin (8hr) Time Period Starts	20 Bass (8hr) Dells Pond (8hr) Long (8hr) Menomin (8hr)	21	22 Round (8hr) Squaw (8hr) Tainter (8hr)	23 Cedar (4hr), Drive to Dells Pond (4hr), Eau Galle (4hr), Hallie (4hr), Drive to	24 Lakes Cof (8hr), Lakes Conf (8hr), Lakes Conference Lakes Conference	25
26	27	28 Altoona (8hr) Bass (8hr) Eau Galle (8hr) Holcombe (8hr)	29 Staff Mtg (4hr), Staff Mtg (4hr), Staff Mtg (4hr), Staff Mtg (4hr),	30 Dells Pond (8hr) Long (8hr) Squaw (8hr) Tainter (8hr)	1 Eau Claire (8hr) Mallalieu (8hr) Round (8hr) Tainter (8hr)	2 Altoona (8hr) menomin (8hr) St. Croix River (8hr) Time Period Ends Wissota (8hr)

Volunteer Match

- $66,000
  - Donated equipment
  - Donated time
  - Money
  - Volunteer hours
- Pledge letter from participating lake groups
  - Asked groups to commit to 108 hours per year for three years
  - 8 of the 17 groups committed to the pledge

AIS Surveying

- Surveyed for plants in June and end of July/early August
- Half of a day spent on each lake
- Looking for EWM and CLP mostly
- Less effort for: ZM, CMS, BMS and R, incidental only

AIS Surveying

In 2011

- Everything the same but additionally:
  - ZM were found in Bass Lake (St. Croix Co.) in the fall of 2010
    - Wanted to look harder for ZM in 2011 in all of the lakes in this project
      - Veliger sampling with nets and looking for adults
  - Also looking for rusty crayfish in lakes by using the modified minnow traps

Holcombe Flowage
Chippewa County

Summer 2010

N

- Curly-leaf Pondweed (July 2010)
- Curly-leaf Pondweed (August 2010)
- Eurasian water-milfoil (July 2010)
- Eurasian water-milfoil (August 2010)
- CLP Areas (August 2010)
- EWM Areas (August 2010)
- Survey Routes (Summer 2010)
- Boat Launch

Survey Results (2009-2010)

- **R** - in Lake Mallalieu
- **CLP -** in Squaw
- **ZM -** in Bass Lake
- **CMS -** in Tainter and Menomin
- **EWM** - in the St. Croix River
- Also documented change in populations that were already present

Story Hours

Offered program to libraries during the summer

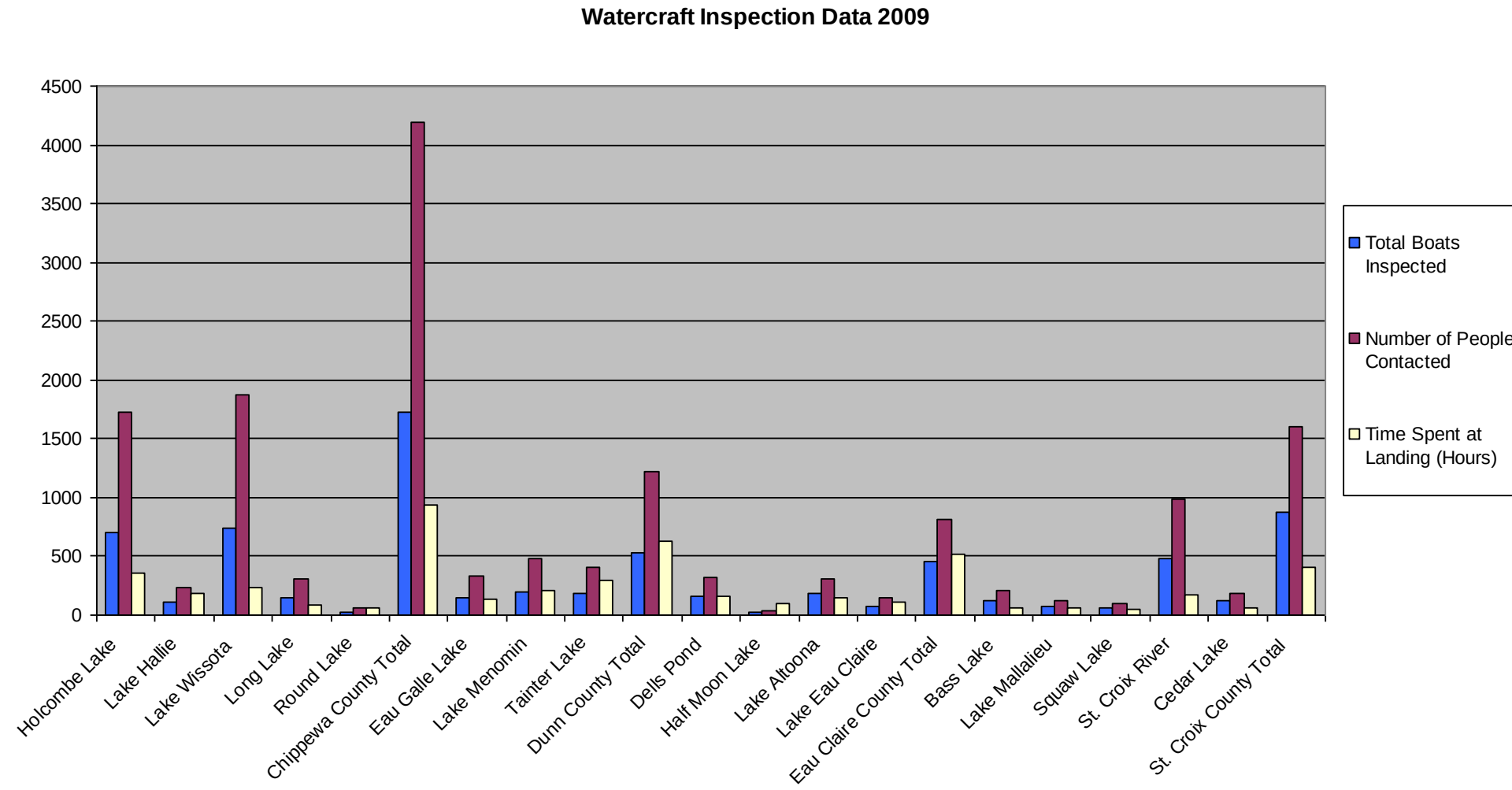
- Four libraries participated
- Taught kids about the different invasives in our area
- Sang a song
- Read a book
- Picked fake weeds off of a boat

Trainings

- How to identify:
  - different invasive species
  - native plants similar to invasive species
- How to:
  - conduct watercraft inspections
  - sample/survey for invasive species in a lake

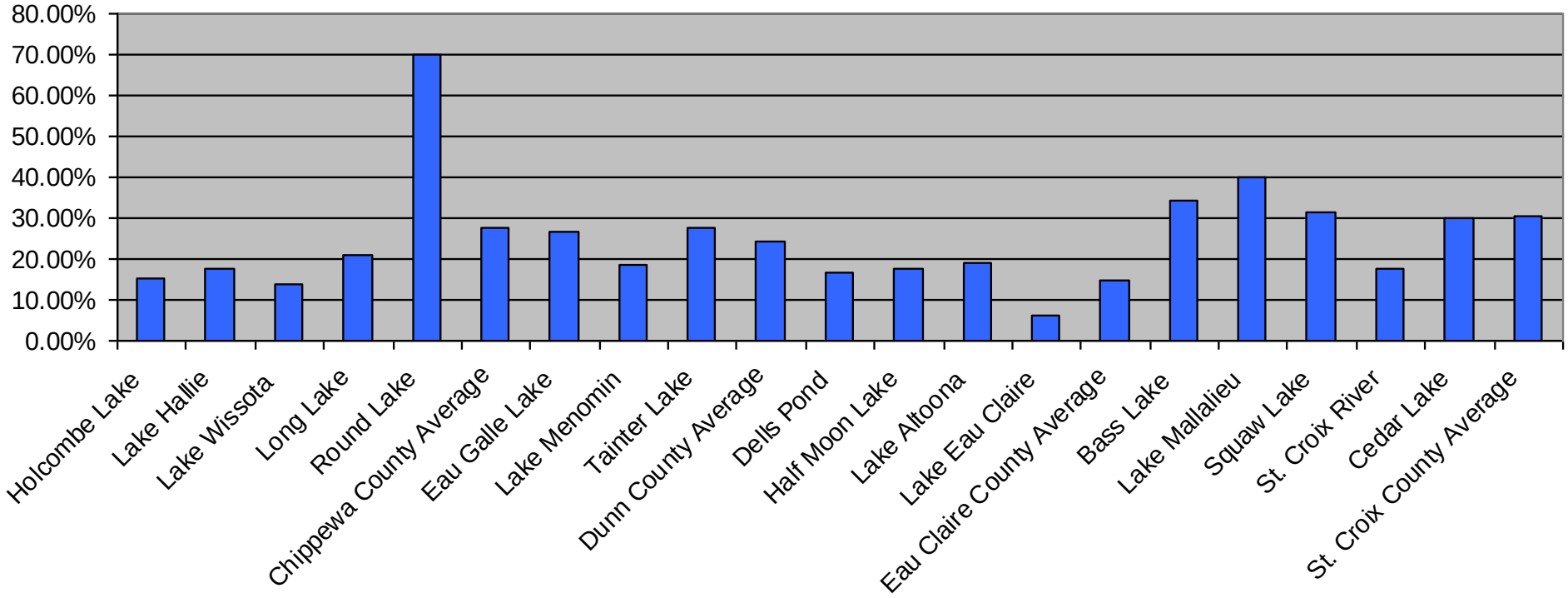
Potluck Picnics

- BCR hosts picnic
- In August each year
- Two location options
  - Baldwin area (for Dunn and St. Croix counties)
  - Chippewa Falls area (for Chippewa and Eau Claire counties)
- Good over WCI and survey results for the year
- Good turnout in Chip. In 2009
- Poor turnout in Chip. and Baldwin in 2010

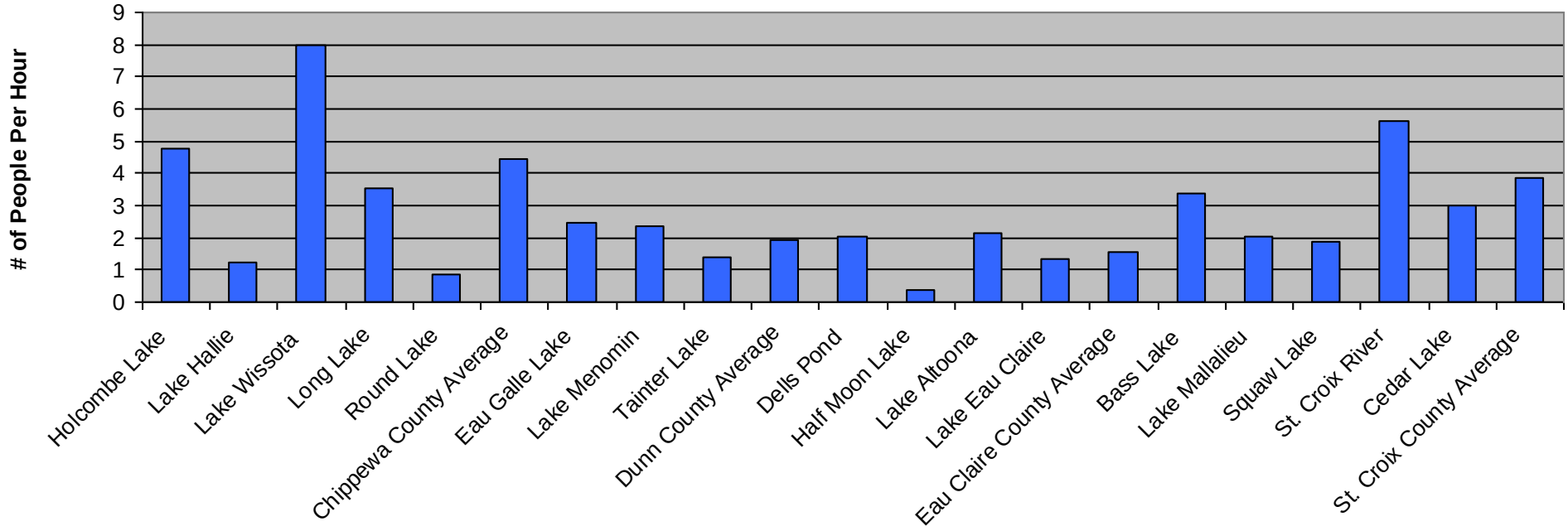


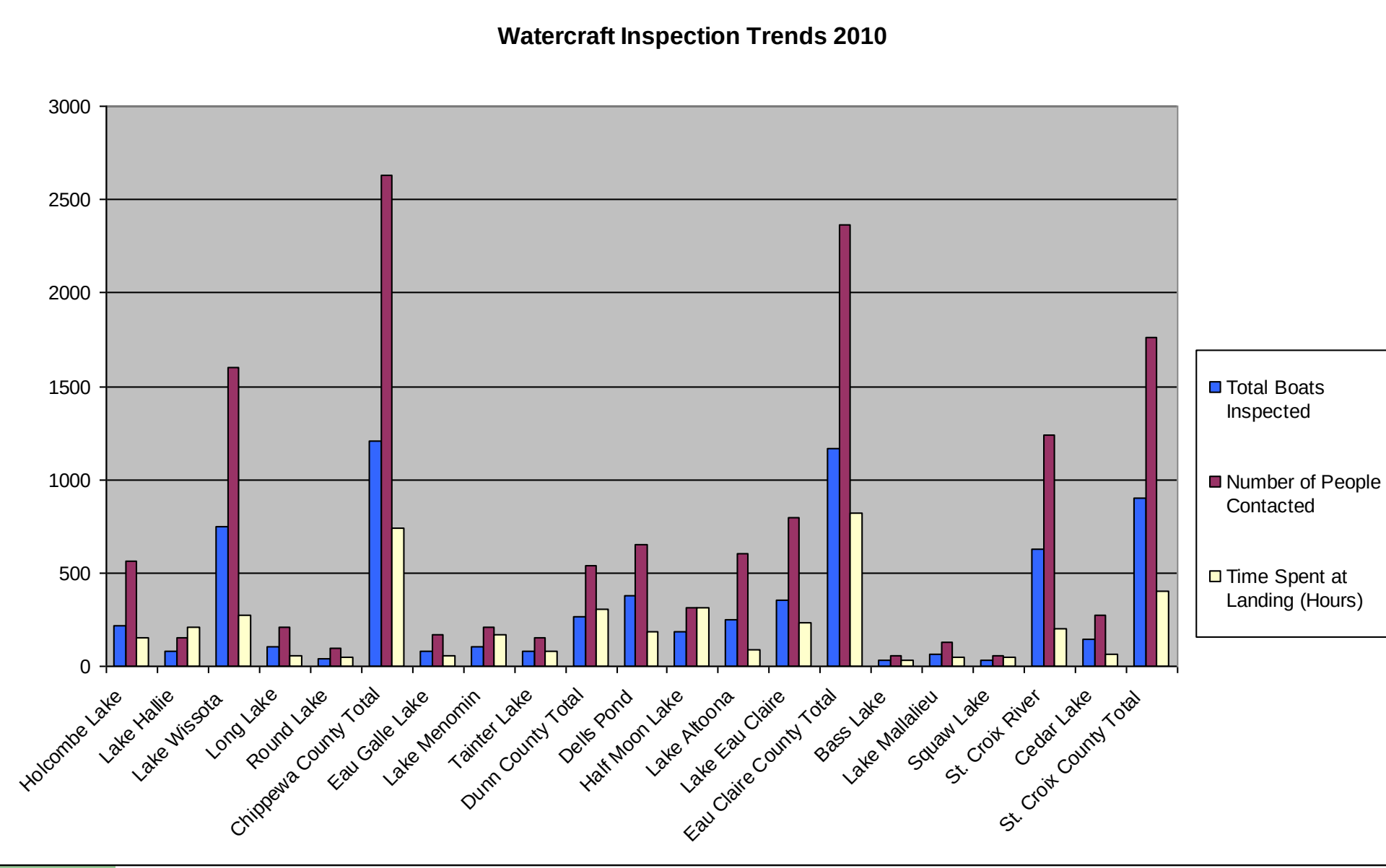
- 7,168 boats inspected (statewide 63,000)
- 15,640 people contacted (statewide 134,000)

Percentage of Boaters That Used Their Boat on a Different Body of Water Within the Five Days Previous to Watercraft Inspection in 2009



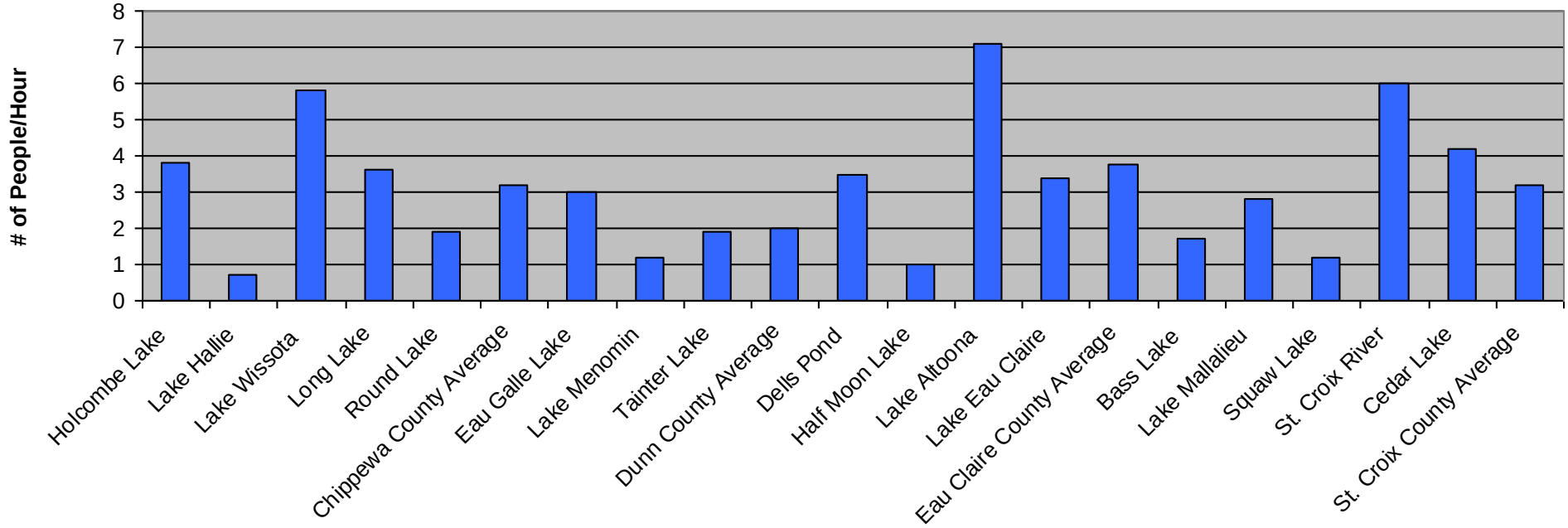
Number of People Contacted About the Clean Boats Clean Waters Message Per One Hour of Watercraft Inspection in 2009



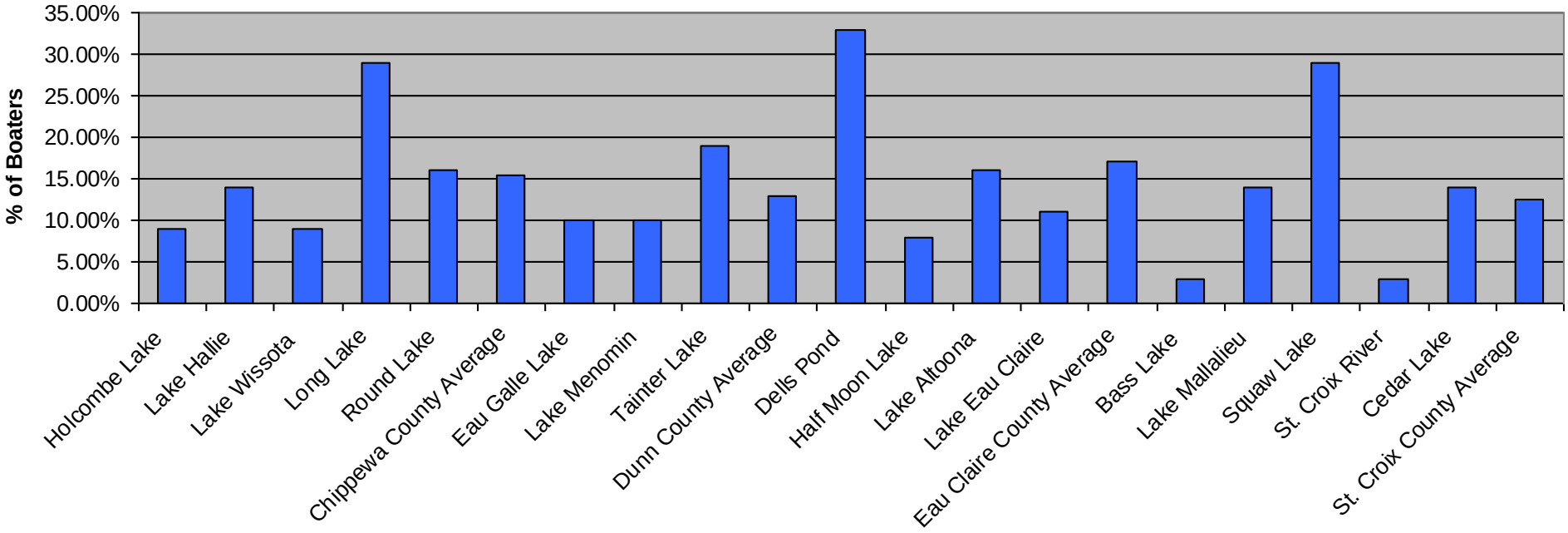


- 7,062 boats inspected (statewide 69,000)
- 14,578 people contacted (statewide 151,000)

Number of People Contacted About the Clean Boats Clean Waters Message Per One Hour of Watercraft Inspection in 2010



Percentage of Boaters That Used Their Boat on a Different Body of Water Within the Five Days Previous to Watercraft Inspection in 2010



Challenges

- Volunteer hours
  - Engaging the lake groups
    - Asking for help with surveying instead of WCI hours
  - Equal participation from all of the groups
- Scheduling multiple people for the same county
- Making all of the lake groups happy with the amount of time spent at their landing
- Attendance at potluck picnics

Accomplishments so far

- Volunteer hours – 3,700
  - Lake groups - 1/2
  - Citizens at large – 1/2
- Paid hours of watercraft inspection – 3,800
- Documented 6 new AIS occurences
- Trainings - 20
- Events – 10
- Relationships with new lake groups

Partnerships

- WDNR
- Department of Workforce Development
- Memorial High School
- UW-Eau Claire
- Community Service
- Lake groups in the project area
- Local libraries
- At large community members
- UWEX – Lakes
- More !

The Future

- We would like to continue this type of work in the future
  - Surveying for AIS
  - Paid WCI
  - Provide educational opportunities
- Maybe include rivers next
- Fewer lakes for WCI
- Maybe only WCI on the weekends
- ?????

Questions?

Curly-leaf Pondweed

- Fairly widespread
- Wavy leaves

  3-10mm long
- Finely-toothed leaf edge
- Peak growth near Memorial Day, die back by mid-July


FALL
WINTER
SPRING
SUMMER
FALL
ICE
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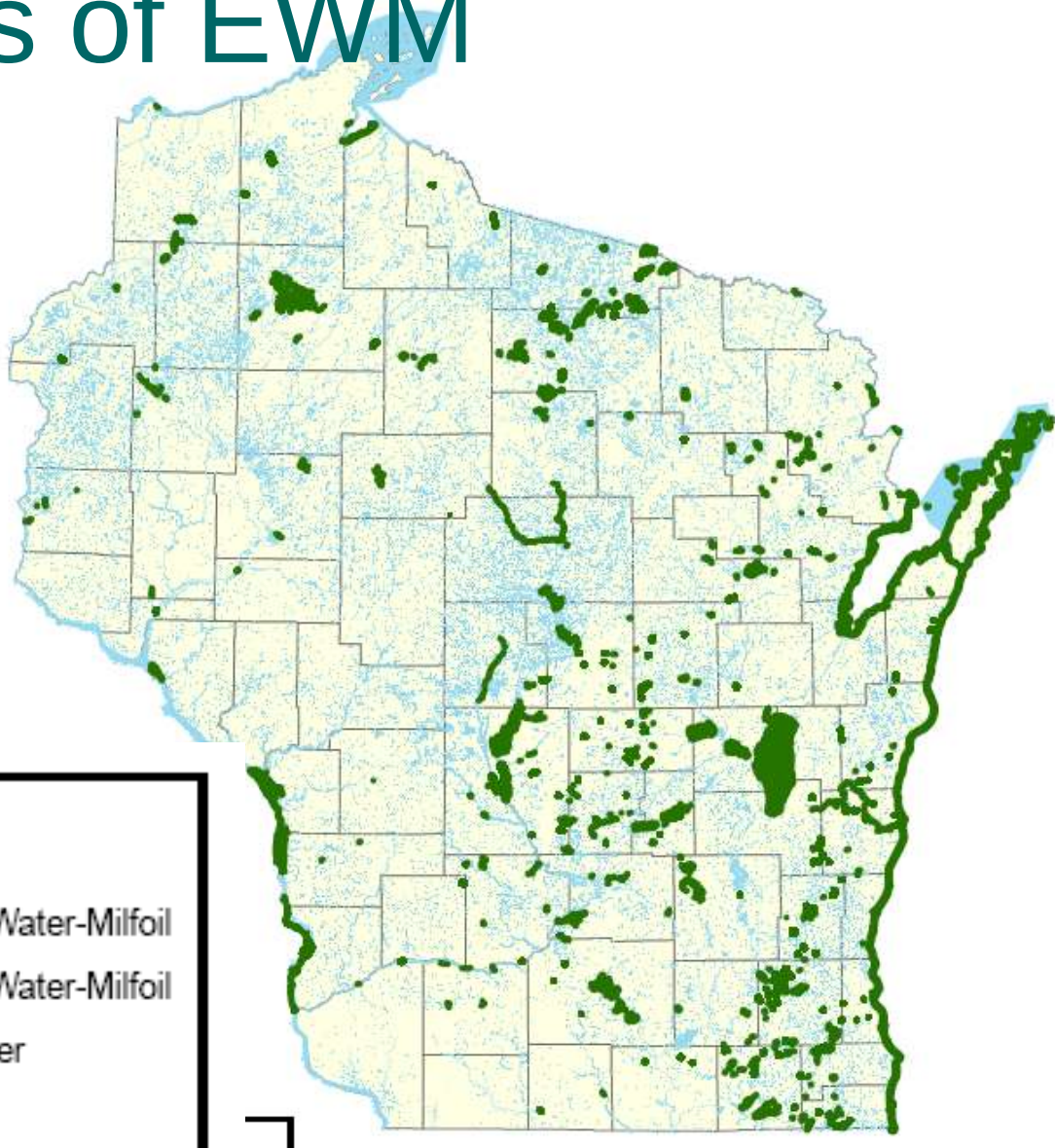
Eurasian Water Milfoil

- First found in WI in 1960s
- Present in 475 WI water bodies (Jan 2007)
- Dense mats interfere with water recreation
- Can spread from small fragments

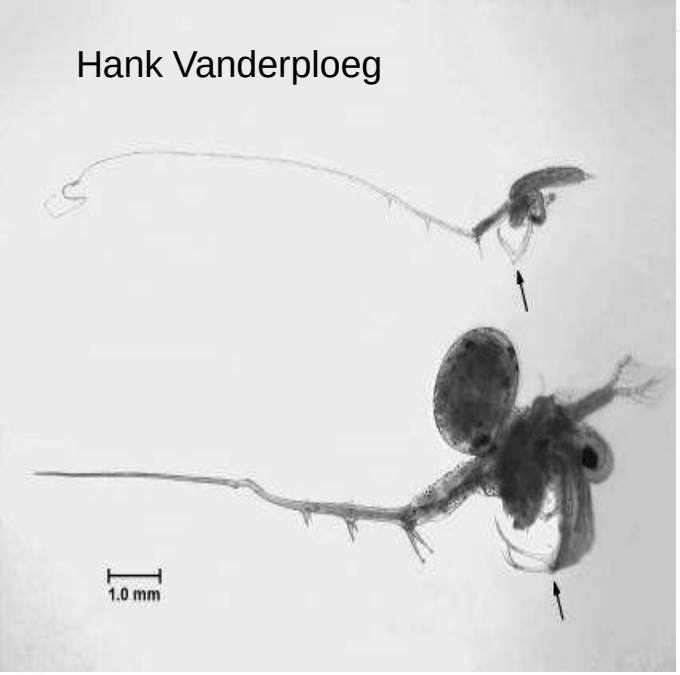
Locations of EWM

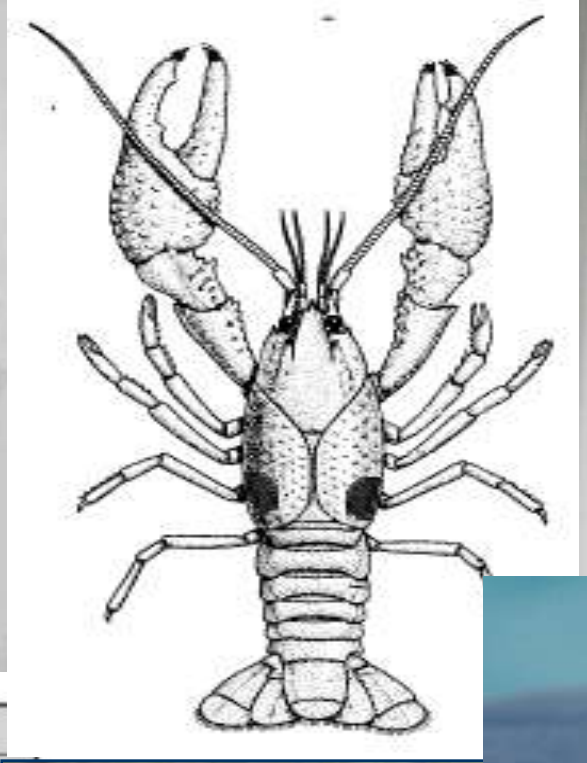
- Beaver Dam Lake
- Echo
- Holcombe
- Wissota
- Hallie
- Half Moon
- Eau Galle
- Bass
- Cedar
- Mallalieu

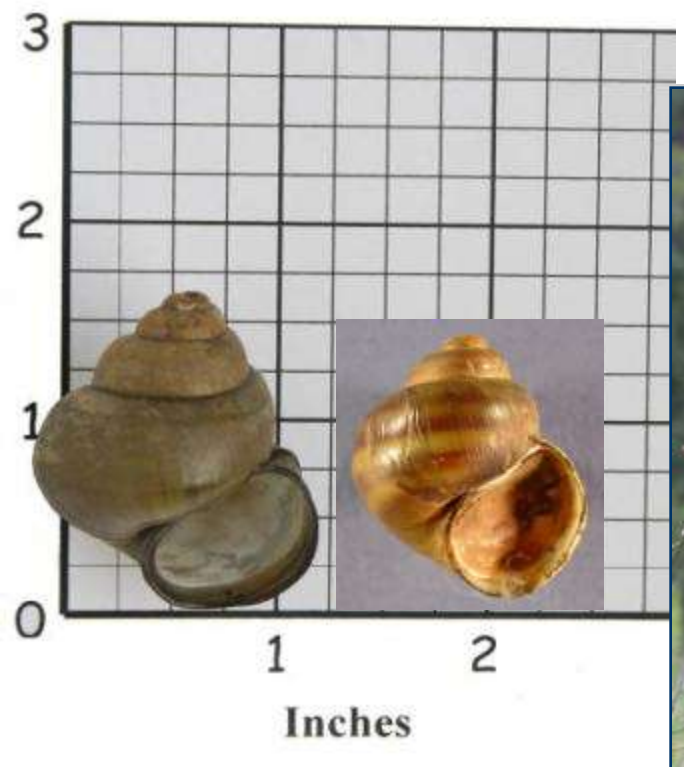


Purple Loosestrife

- Imported from Europe late 1800s for gardens
- Crowds out native wetland species
- More than 1 million seeds annually
- Also spreads vegetatively


Hank Vanderploeg
1.0 mm




3
2
1
0
1
2
Inches

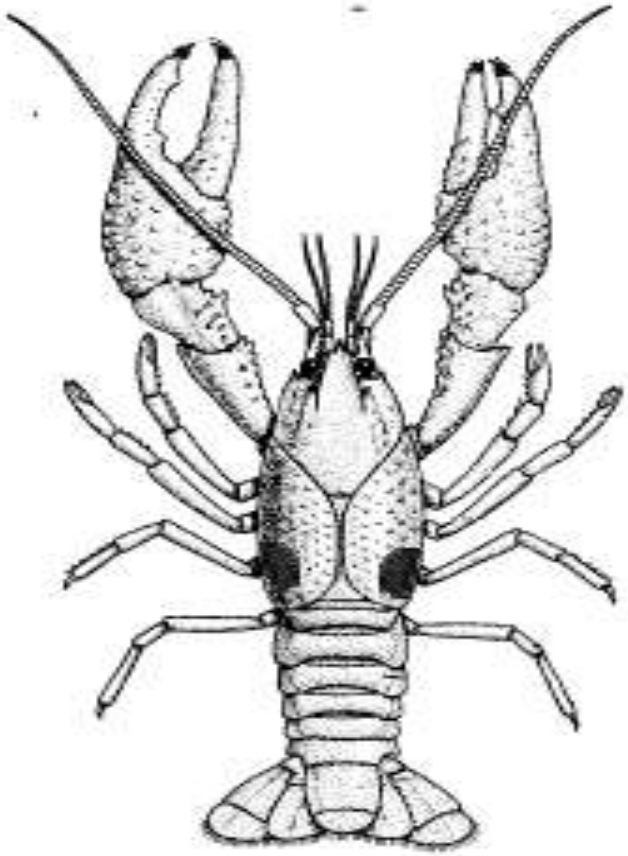
Purple loosestrife

- **Purple Loosestrife Biological Control**
  - Trained volunteers raise & release beetles
  - Beetles available for free - great school or family project

- **Contact:** *Brock Woods*

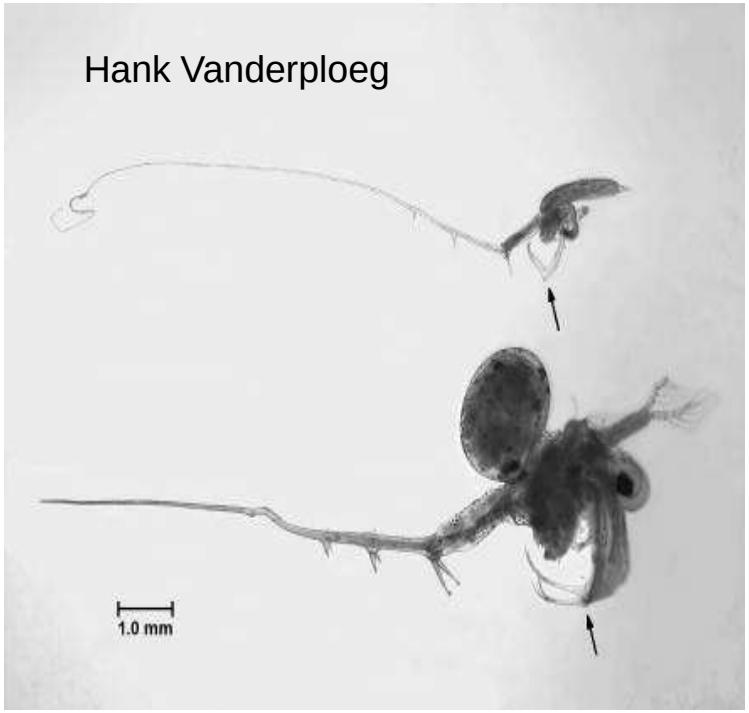
Rusty Crayfish

- Are native to Ohio and Kentucky
- Likely used as bait
- Eat four times more than native species
- Will “chase” native species



Spiny waterflea

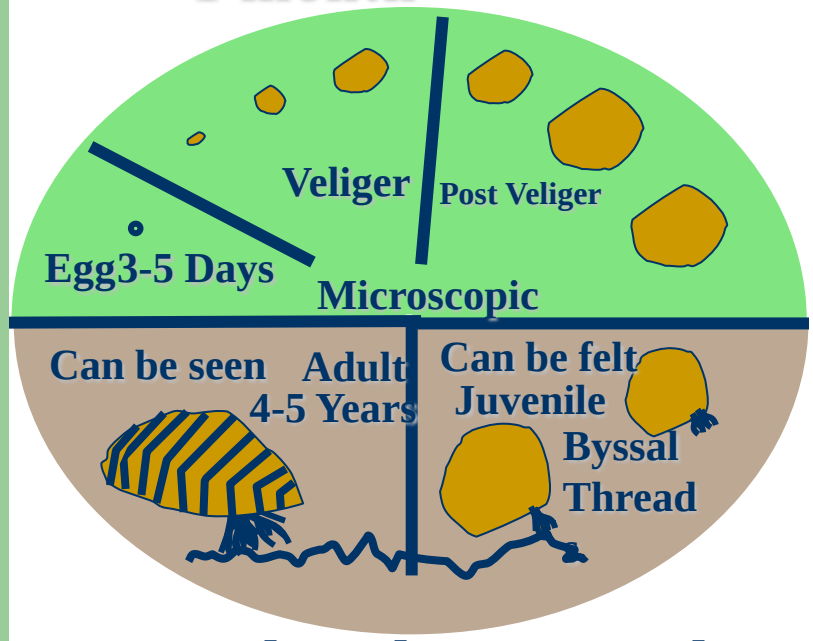
- Ballast water introduction to Great Lakes in 1980s
- Disrupt food chain & harm native fish
- Gummy clumps foul fishing gear
- Only in seven inland WI lake: Gile Flowage, Madison Lakes



Magnified—actual size less than ½″

Zebra Mussels

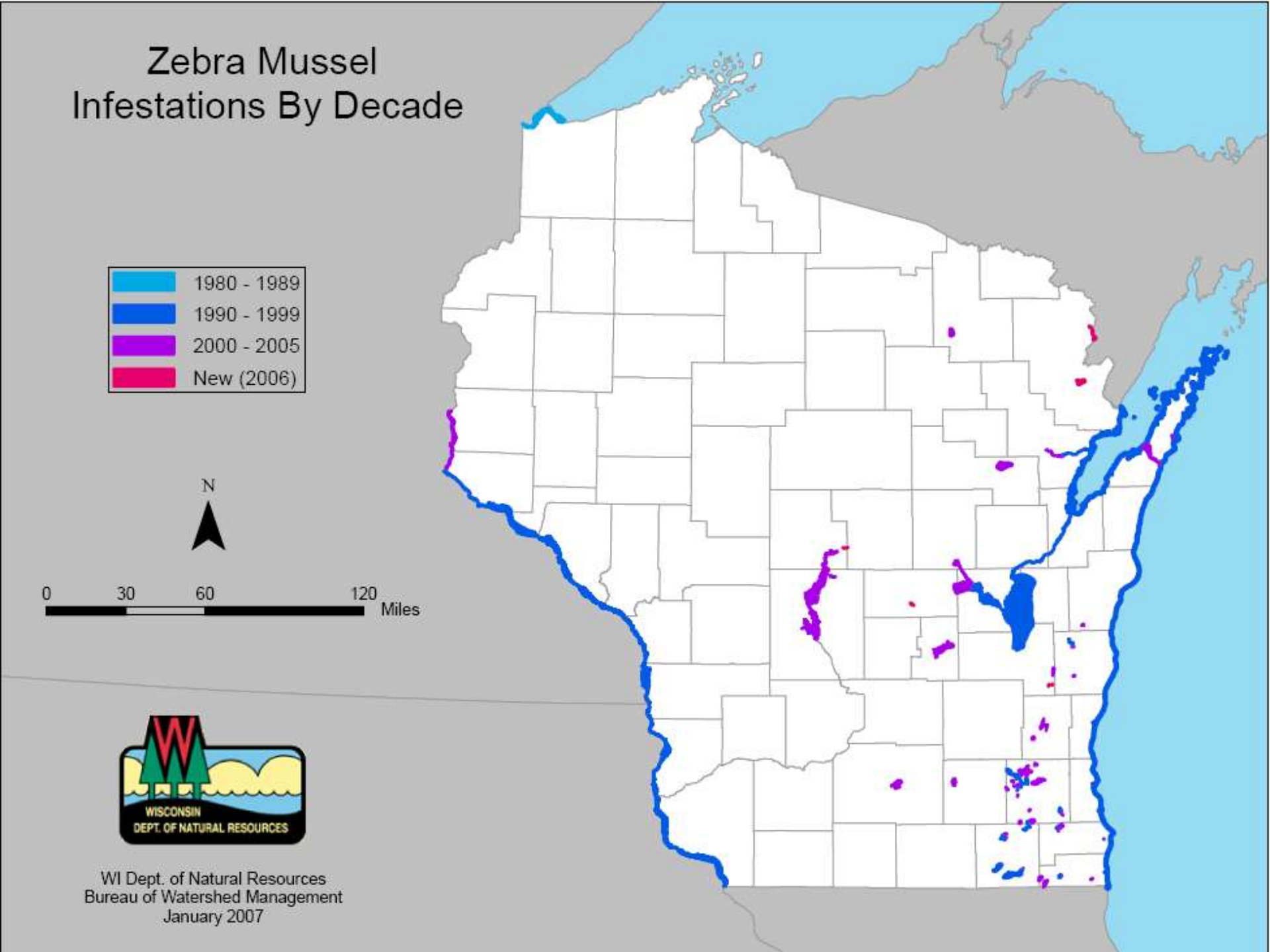
Planktonic up to 1 month



Settle to bottom and attach to substrate

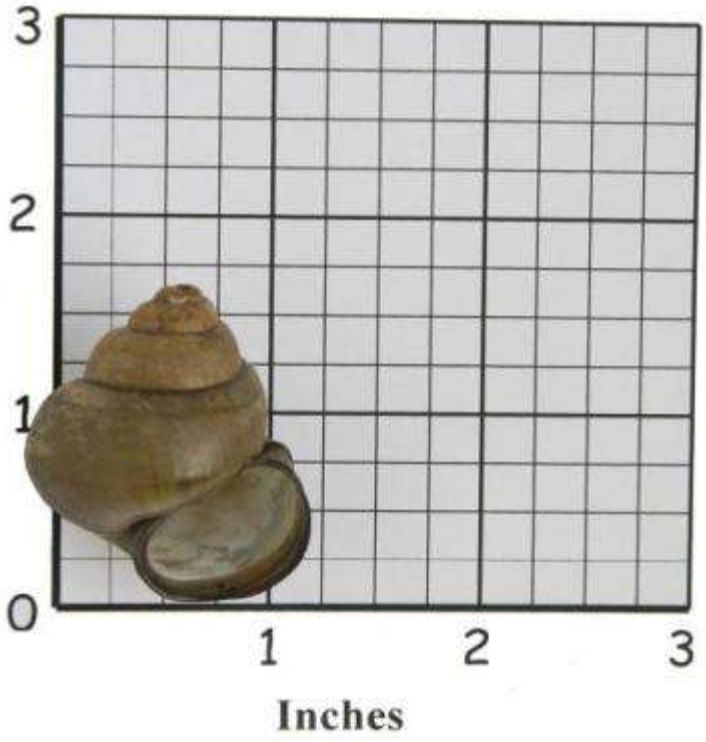
- Ballast water introduction to Great Lakes in 1980's
- Present in 118 WI water bodies
- Attach to any hard surface - thousands per square meter!
- Microscopic in early life stages

Zebra Mussel Infestations By Decade



WI Dept. of Natural Resources
Bureau of Watershed Management
January 2007

Chinese and banded mystery snails



Chinese mystery

Banded mystery