

Great Lakes Mass Marking: *an Overview and Update*

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Great Lakes Mass Marking: *an Overview and Update*

Presentation outline:

- Goals, purpose, & methods
- Preliminary results
- Future plans



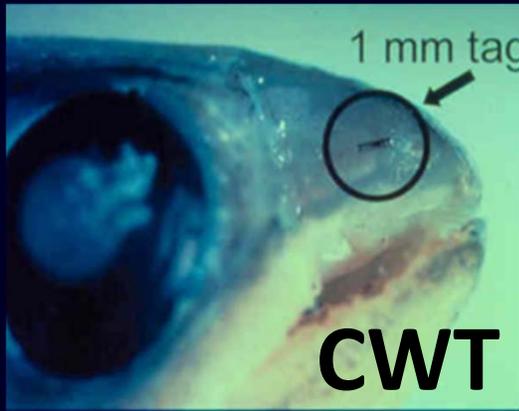
About 30 million salmon and trout stocked throughout the Great Lakes annually



Uncertainty:

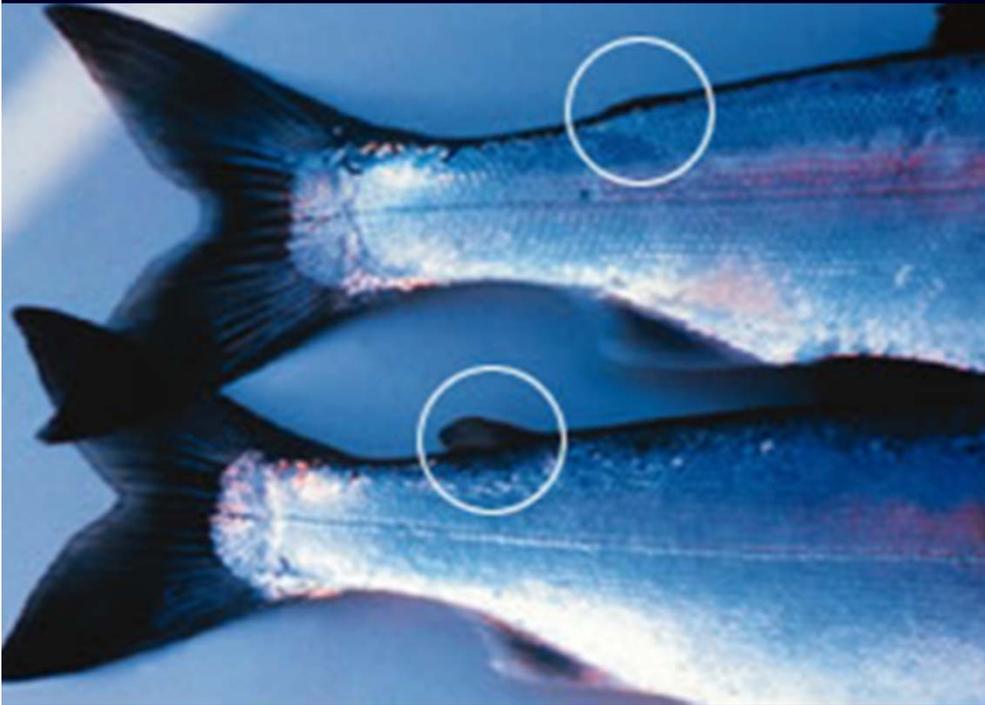
- Movements?
- Growth rates?
- Natural reproduction?
- Stocking rates?

Various Methods for Tagging Studies

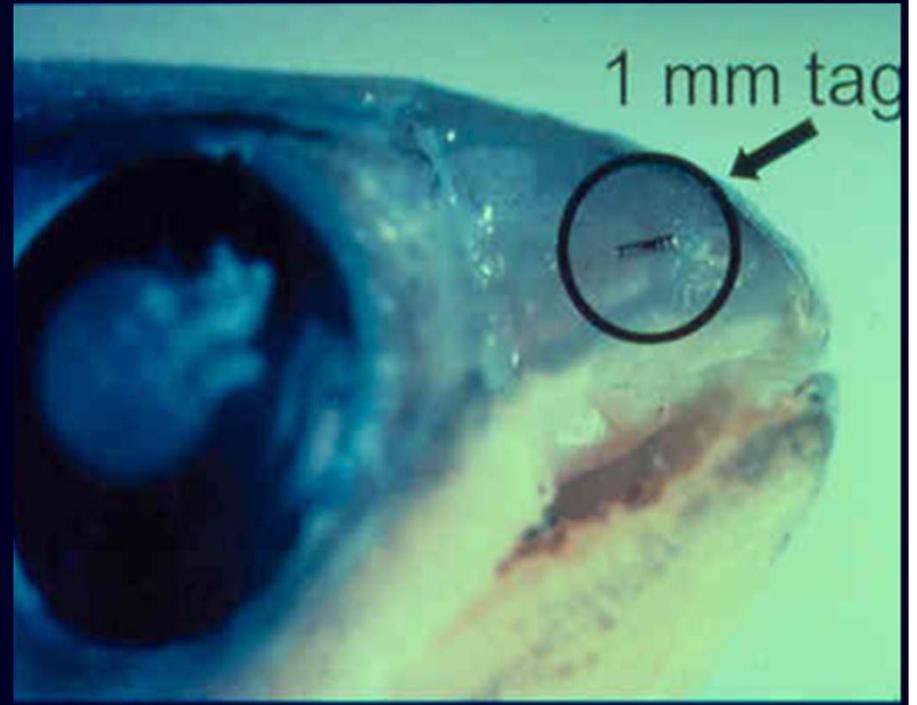


Why is Great Lakes mass marking unique?
Most Chinooks tagged, across the Great Lakes basin.

Great Lakes Mass Marking: *Marking Techniques*



Adipose Fin Clip



Coded Wire Tag

Coded Wire Tag



This number tells us what hatchery, approximately where & when stocked?

Mass Marking: 4 Overlying Goals

1. Estimate levels of natural reproduction
2. Determine among- and within-lake movements
3. Measure growth & age at capture
4. Evaluate hatchery and stocking practices

Tagged at Hatcheries when
Chinooks are small.



Tagged by U.S. Fish and Wildlife Service using Automated Trailers



Automated Tagging Trailers



Automated Tagging Trailers



Search: "Mass Marking in the Great Lakes"



Search: "Lake Michigan fish tagging machine"

Number of Chinook tagged & marked by USFWS for Lakes Michigan and Huron

Year	# Tagged & Clipped	Efficiency (fish / hour)
2011	4,689,947	7,242
2012	3,931,206	8,288

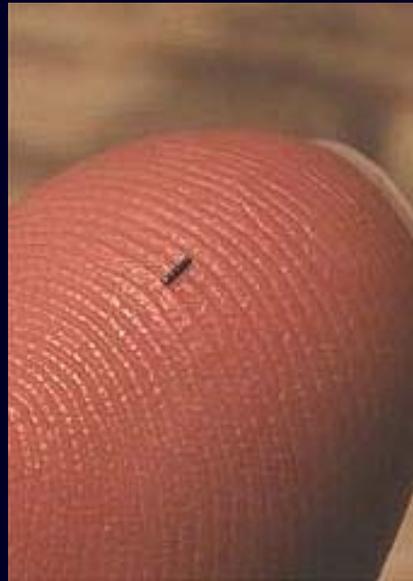
Currently almost all hatchery Chinook and Lake Trout, eventually every hatchery fish?

Coded wire tags are recovered from: Agency Surveys & Anglers



Length, weight, location, snout, etc.

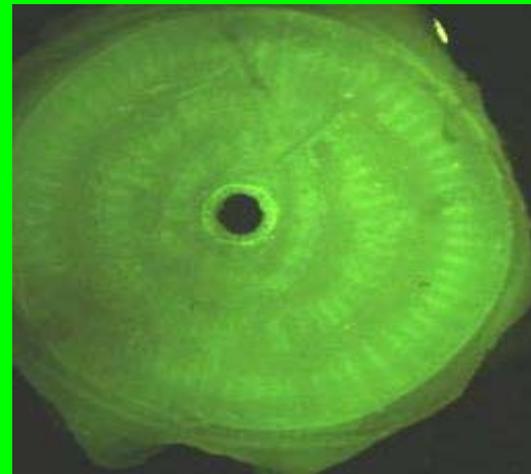
Tags are extracted by USFWS



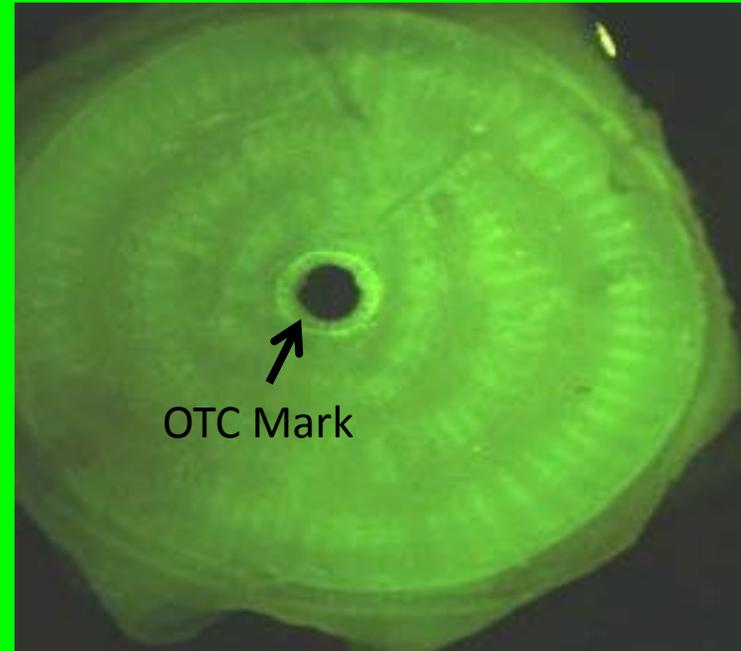
- Metal detector
- What hatchery, where & when stocked?

Chinook Natural Reproduction:

CWT (newer study) **vs.** **OTC** (older study)



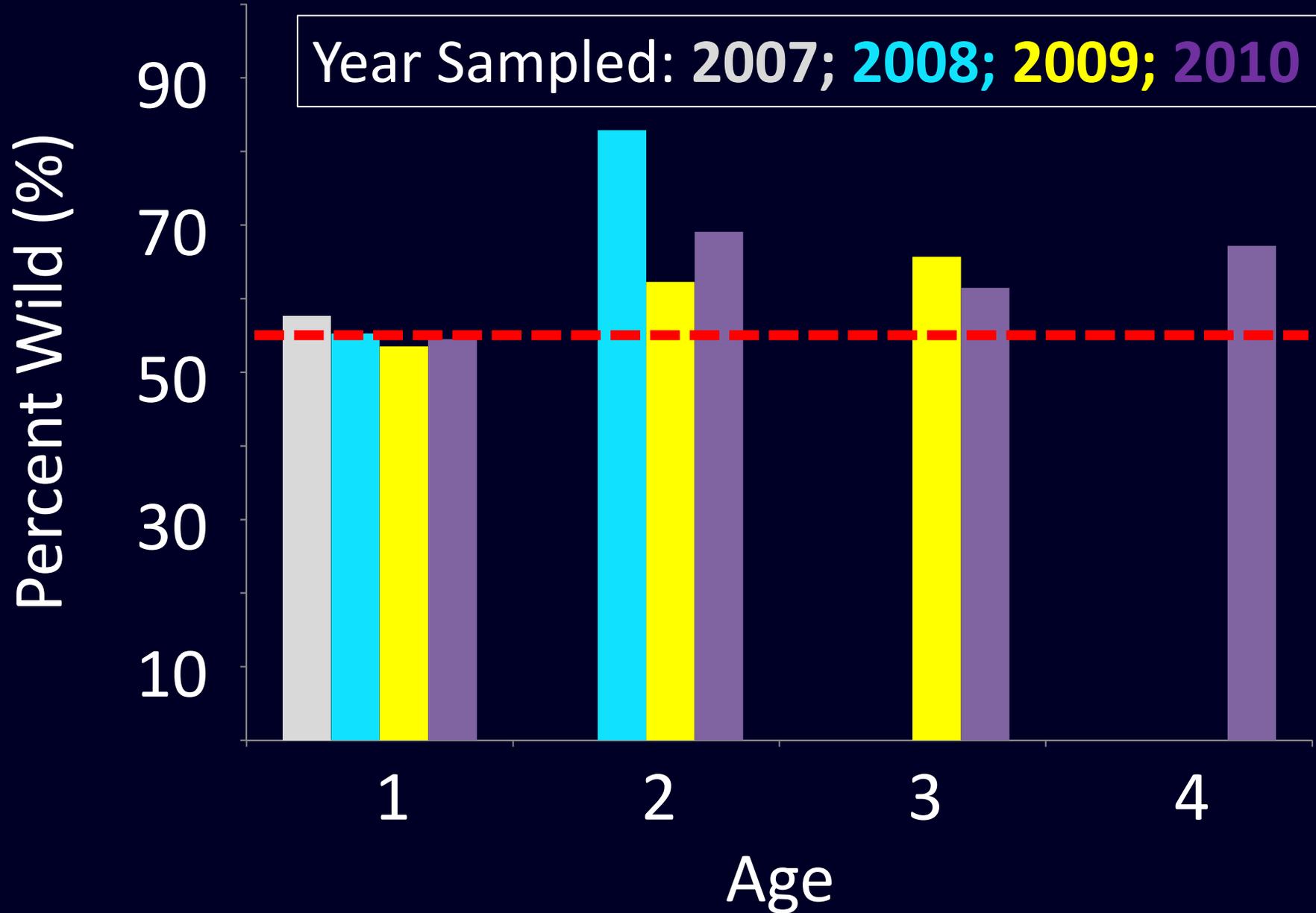
OTC Project Results...



OTC is fed to hatchery Chinooks, and it creates a mark on the vertebrae.

OTC Project Results

Year Sampled: 2007; 2008; 2009; 2010



Preliminary CWT Results, for movement...



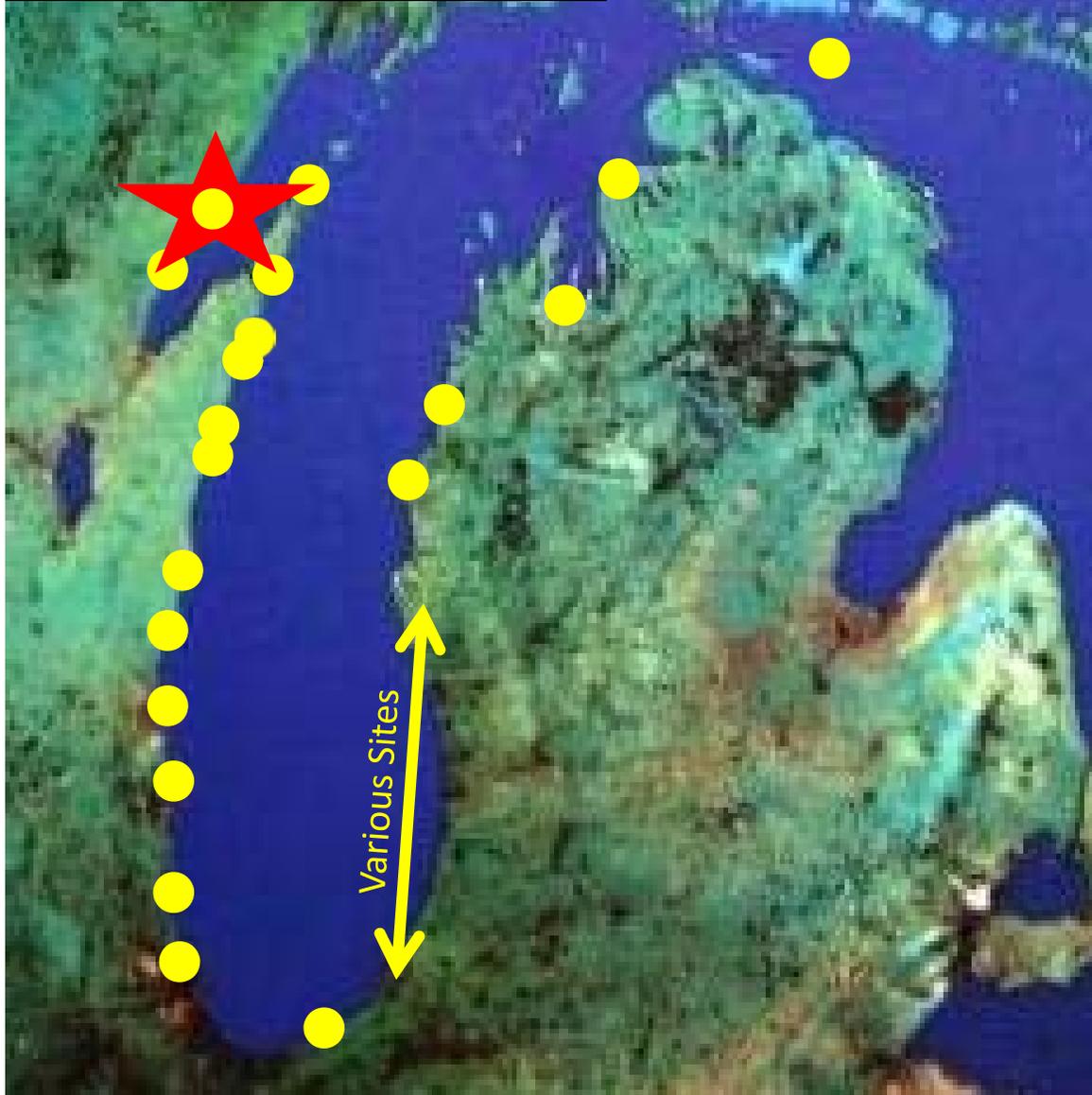
Adipose Clip



Coded Wire Tag

Marinette / Menominee

N = 49 CWTs

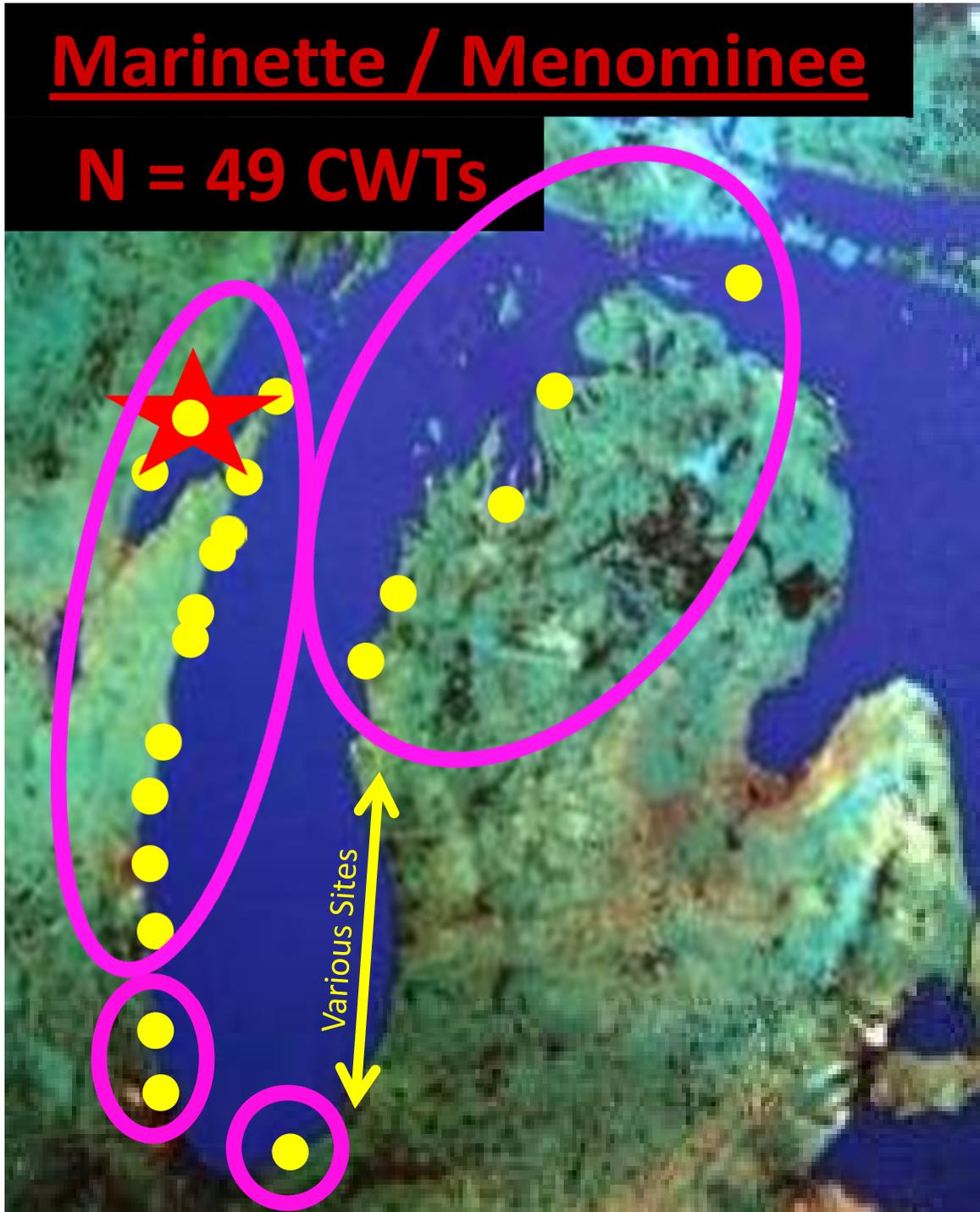


Preliminary Results 2012:

- ★ = Sampling Location
- = Stocking Sites

Marinette / Menominee

N = 49 CWTs



Preliminary
Results 2012:

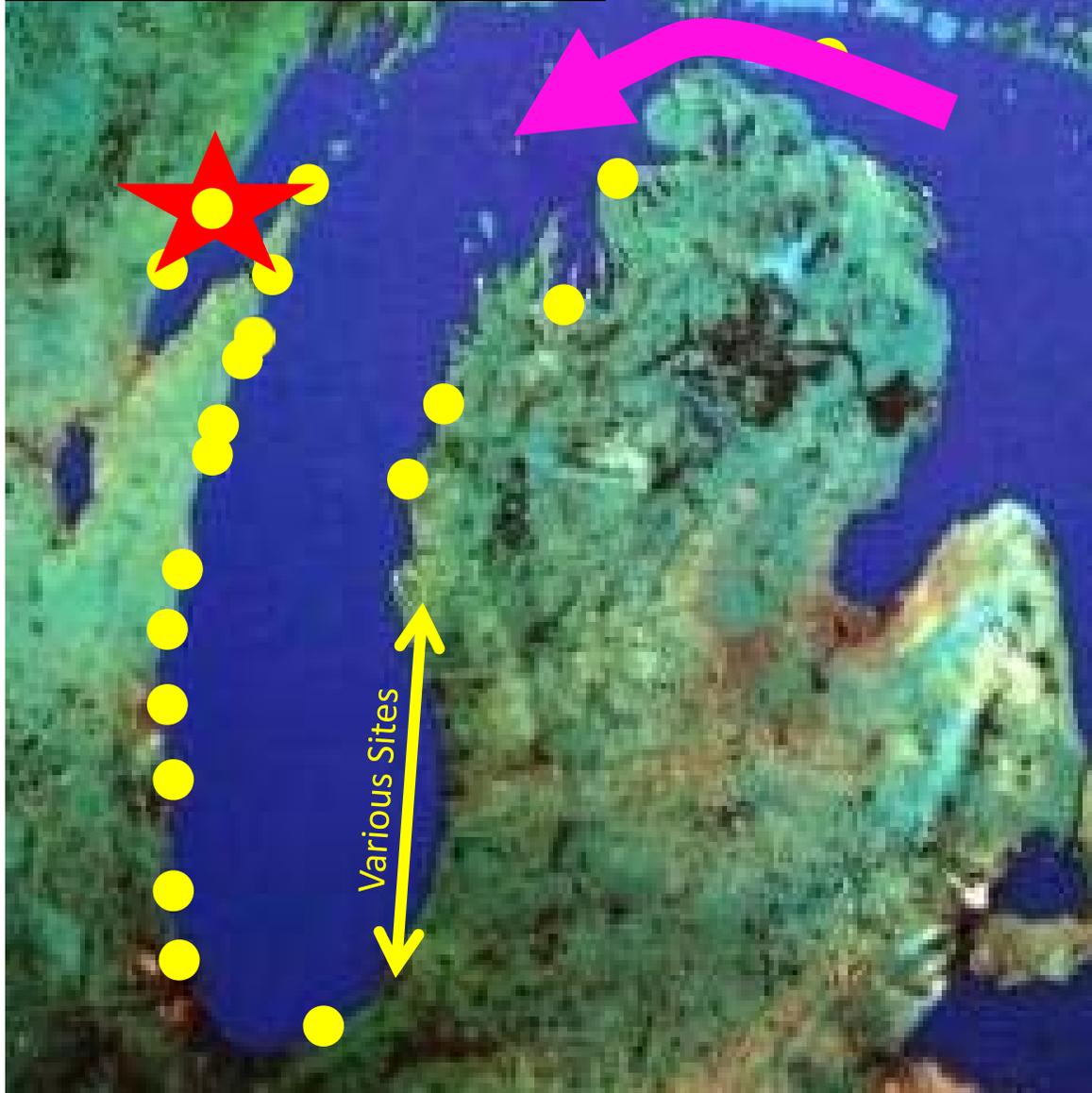
4 States

★ = Sampling
Location

● = Stocking
Sites

Marinette / Menominee

N = 49 CWTs



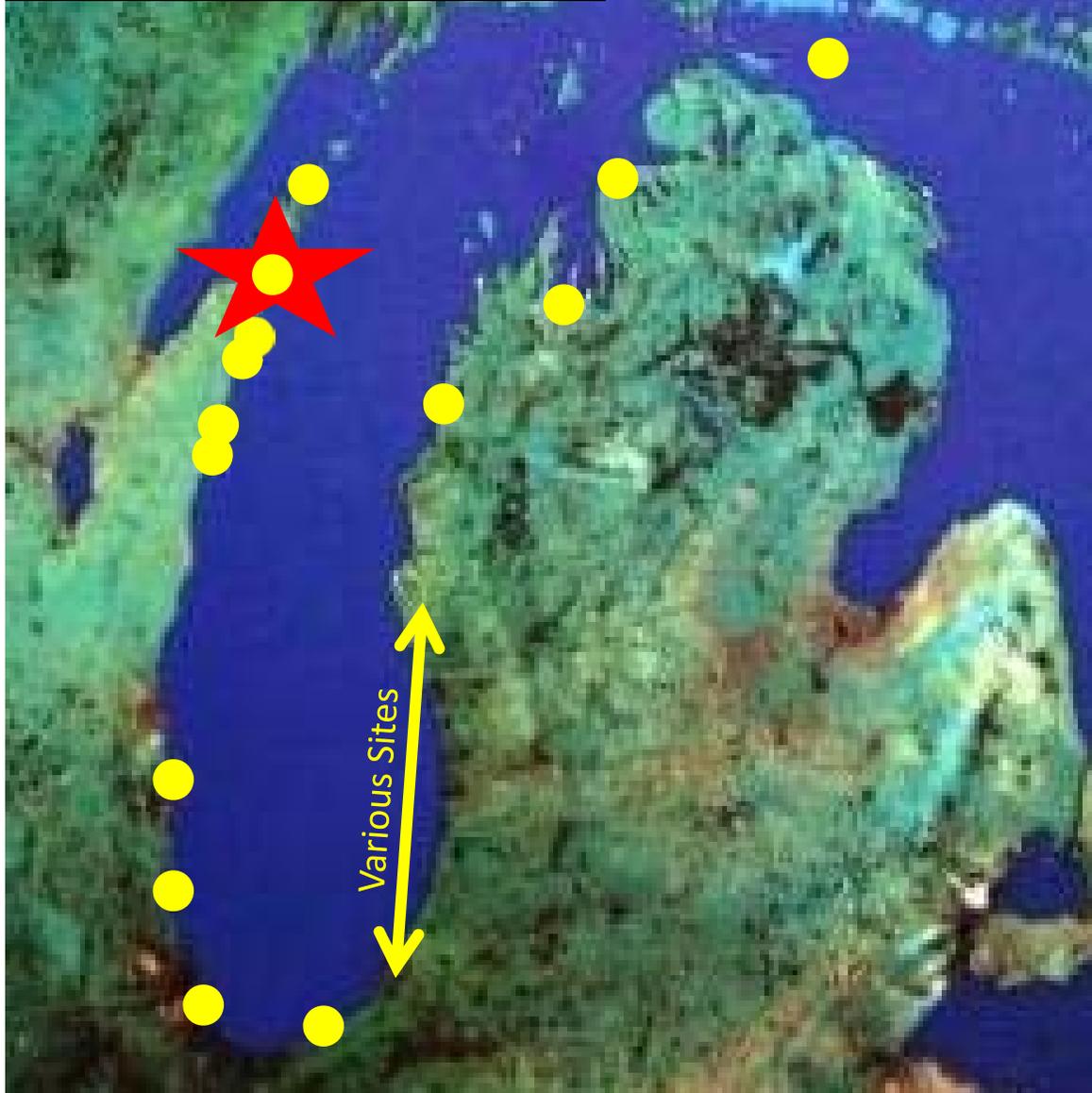
Preliminary
Results 2012:

Lake Huron

- ★ = Sampling Location
- = Stocking Sites

Sturgeon Bay

N = 30 CWTs

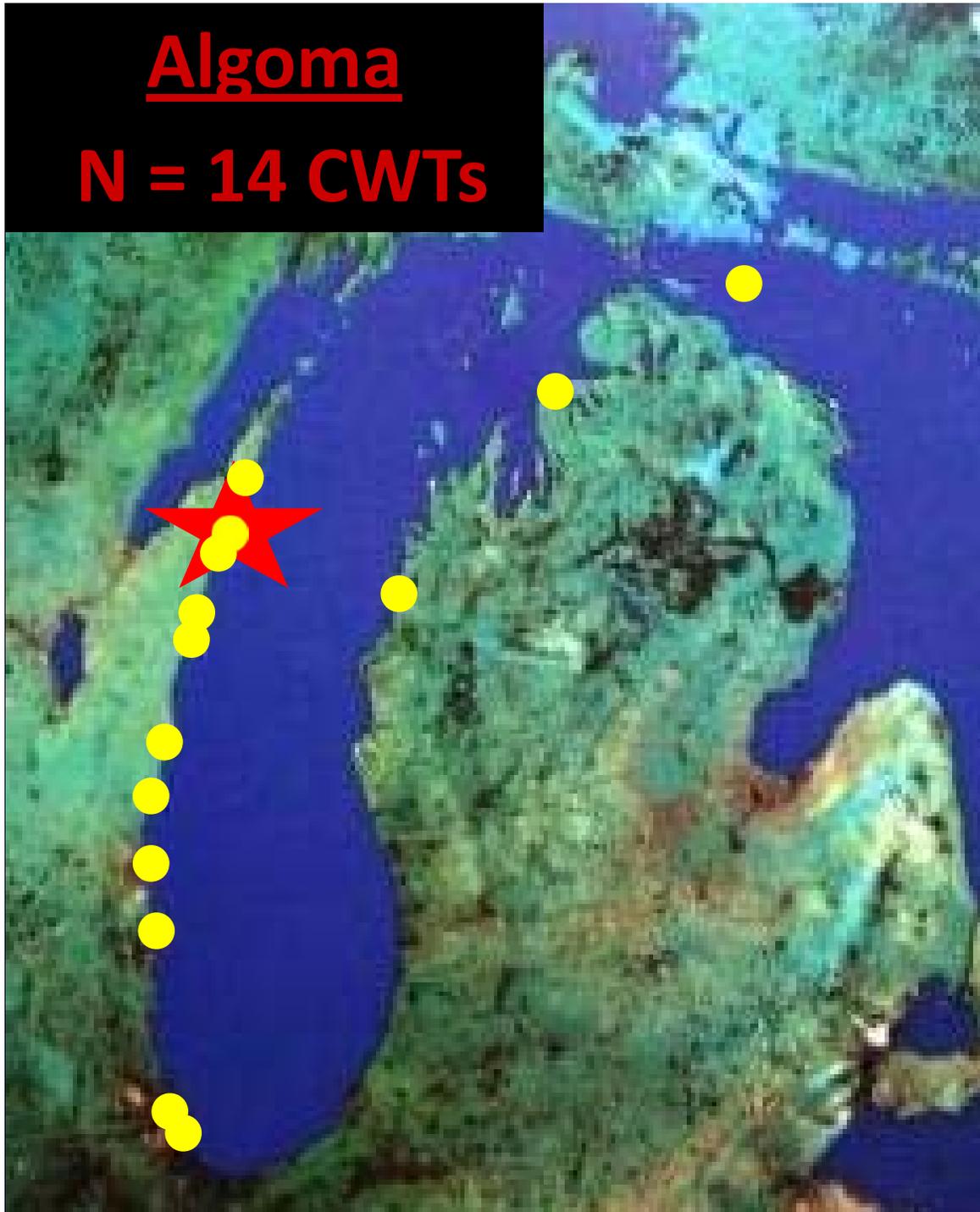


Preliminary Results 2012:

- ★ = Sampling Location
- = Stocking Sites

Algoma

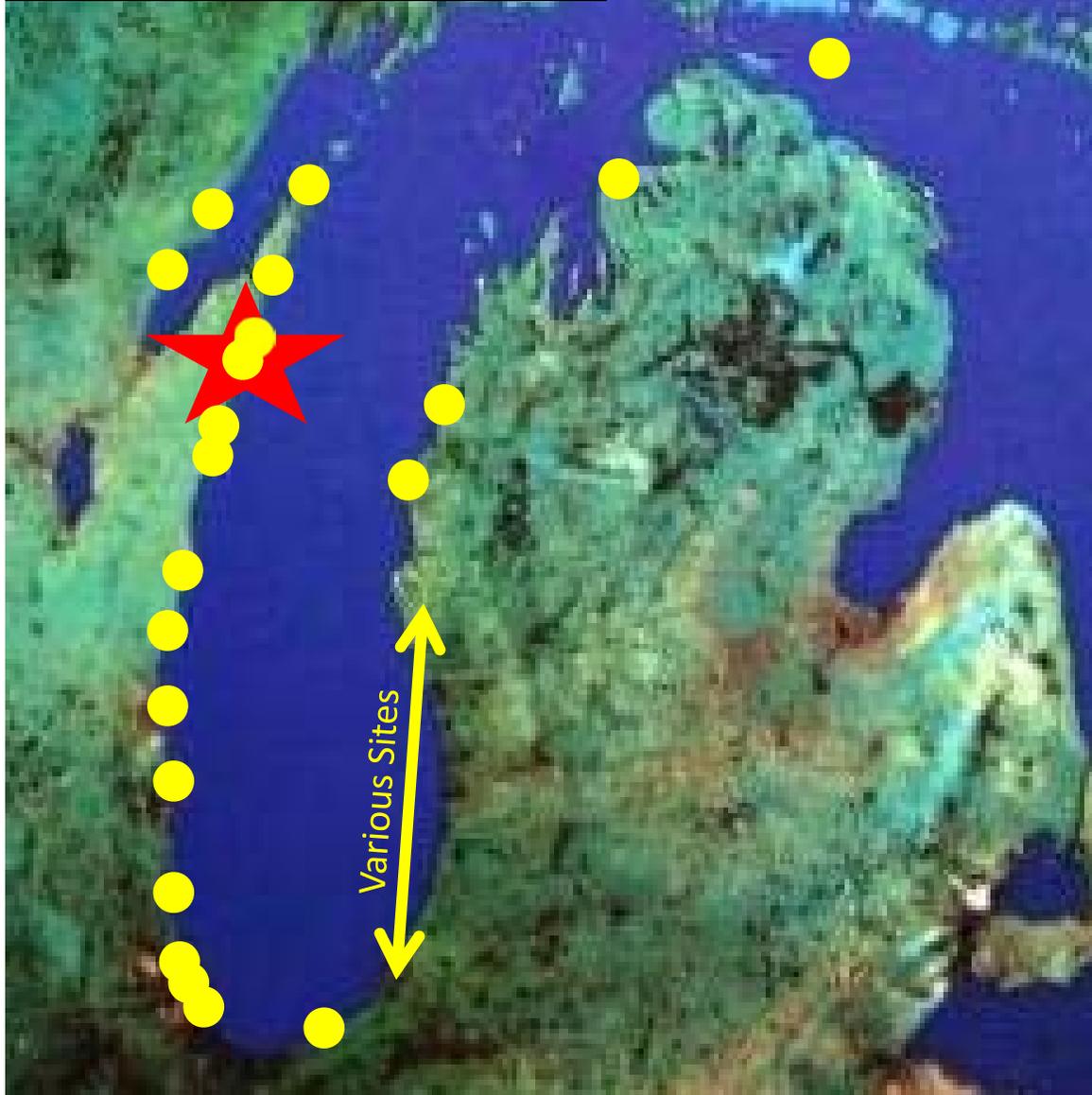
N = 14 CWTs



Preliminary Results 2012:

- ★ = Sampling Location
- = Stocking Sites

Kewaunee
N = 46 CWTs

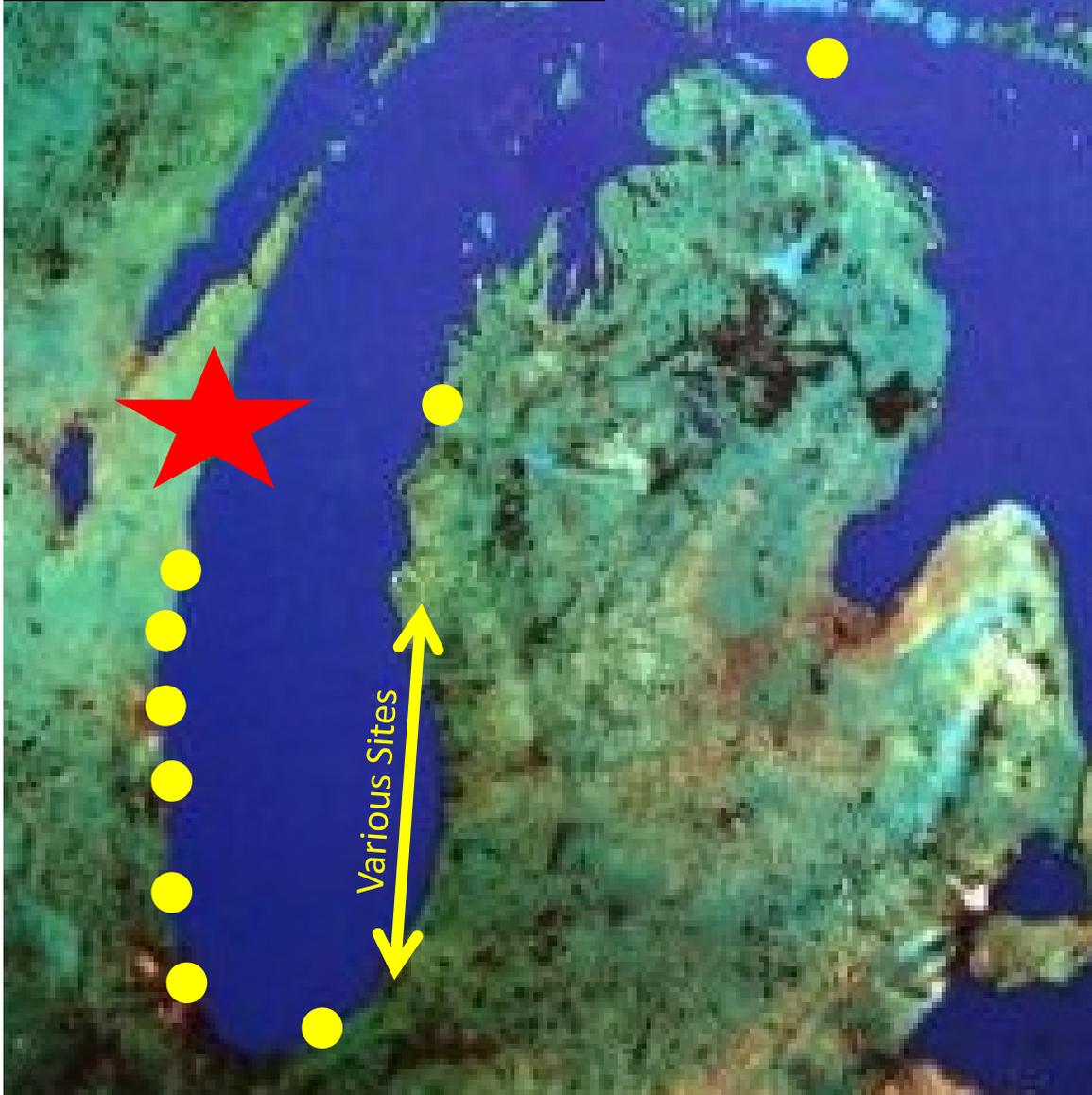


Preliminary
Results 2012:

- ★ = Sampling Location
- = Stocking Sites

Two Rivers

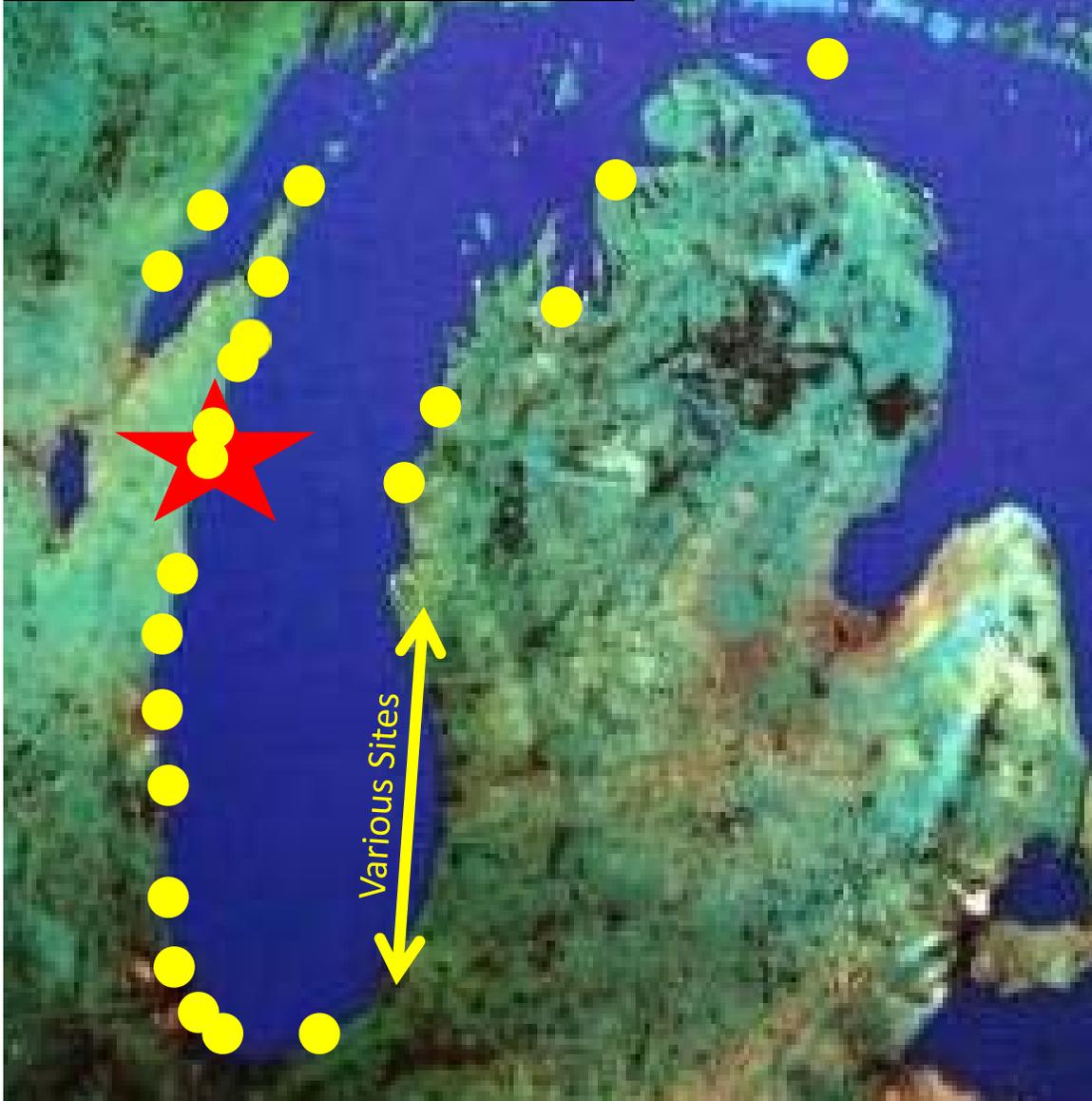
N = 11 CWTs



Preliminary Results 2012:

- ★ = Sampling Location
- = Stocking Sites

Manitowoc
N = 113 CWTs

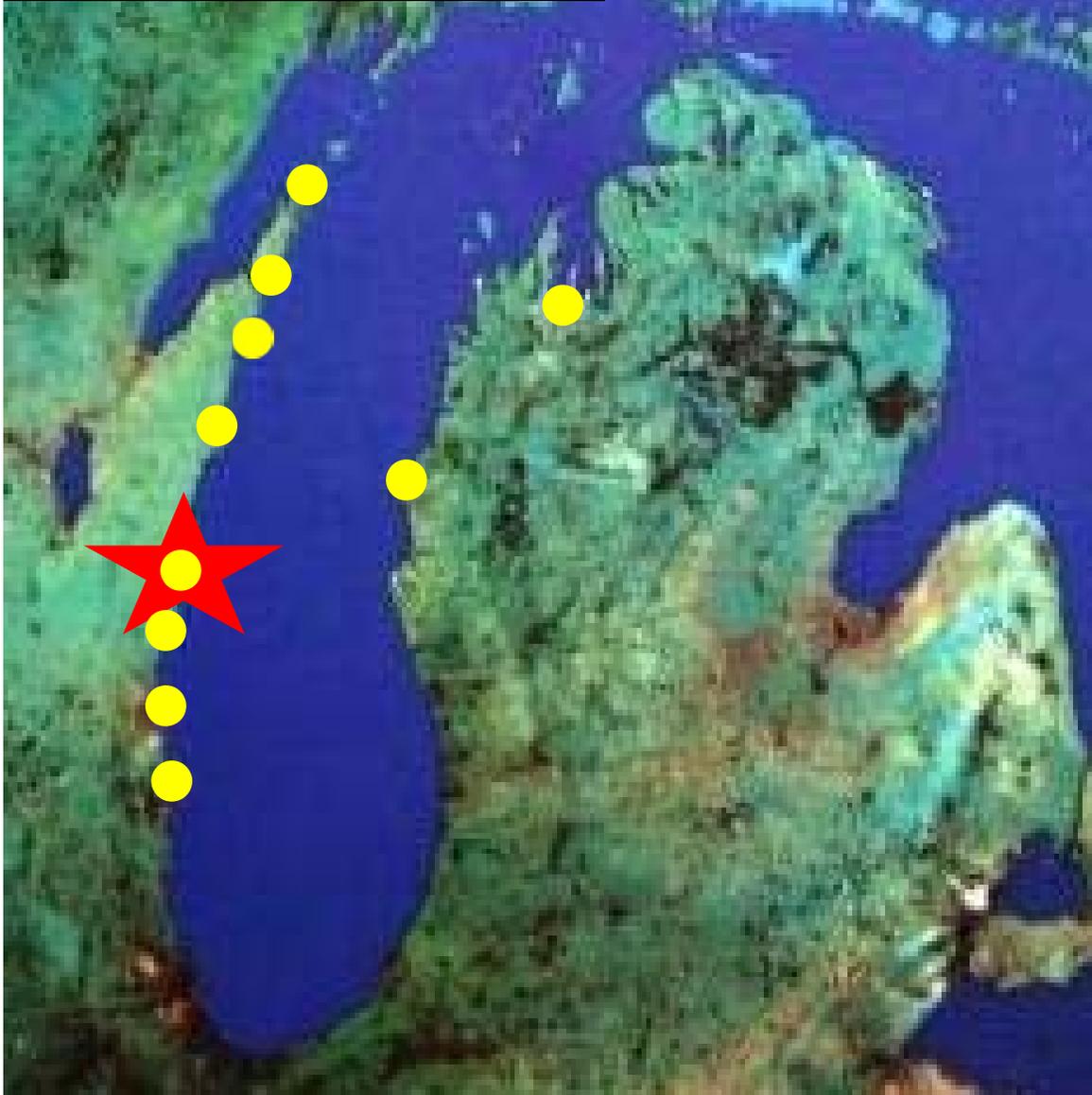


Preliminary
Results 2012:

- ★ = Sampling Location
- = Stocking Sites

Sheboygan

N = 7 CWTs



Preliminary Results 2012:

★ = Sampling
Location

● = Stocking
Sites

WI anglers catch Chinooks from many stocking locations!

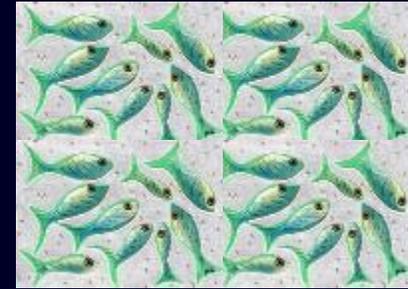
- Ellison Bay, WI
- Menominee River, WI
- Oconto River, WI
- Ahnapee River, WI
- Kewaunee River, WI
- East & West Twin, WI
- Manitowoc, WI
- Sheboygan, WI
- Port Washington, WI
- Milwaukee, WI
- Racine, WI
- Waukegan, IL
- Diversey Harbor, IL
- Jackson Harbor, IL
- Little Calumet, IN
- Buffington Harbor, IN



CWT data will help us to evaluate growth rates & predator-prey balance.



slow
growth?



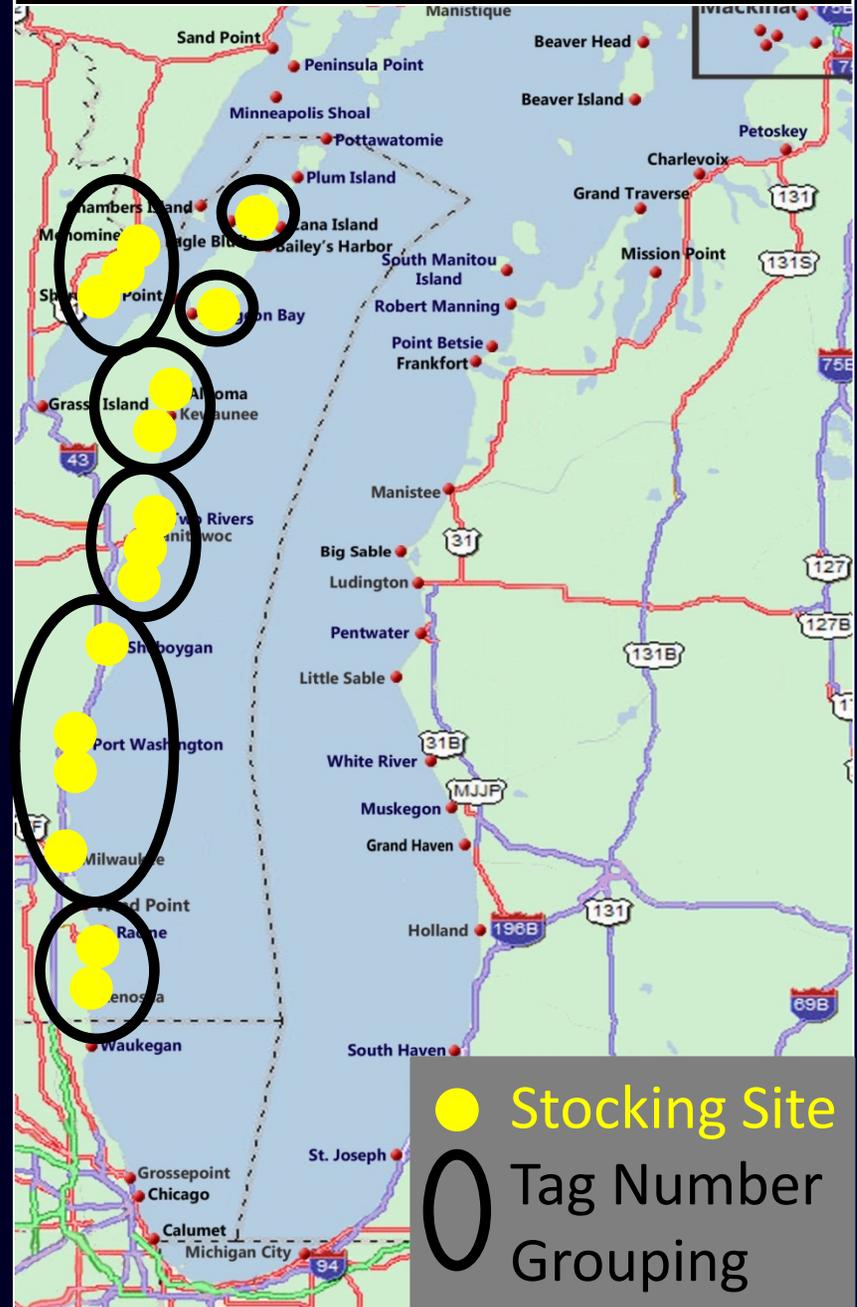
CWT data will also help to evaluate hatchery and stocking practices for Chinooks. In the future, other species may also be evaluated using coded wire tags (depending on funds, etc.).



Possible Limitations

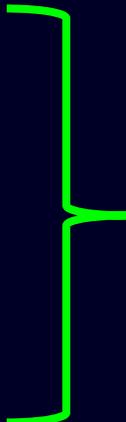
- A CWT number is assigned to each lot of stocked fish, not to each individual fish
- \$5.9 million annual operating budget

Possible Example of Lot Codes



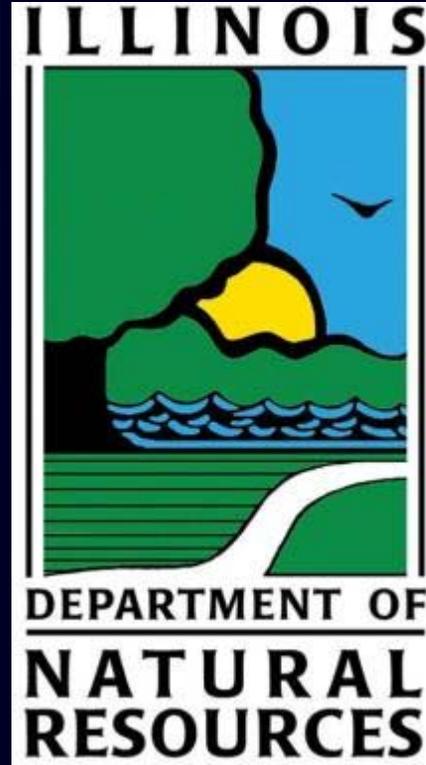
Overall Conclusions

- Growth?
- Survival?
- Movement?
- Reproduction?



Use what we learn to
guide management
decisions!

Acknowledgements



USFWS "Great Lakes Fish Marking Laboratory" in Green Bay – thanks!



Questions?



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