Habitat Recovery for Lake Sturgeon on the Detroit River

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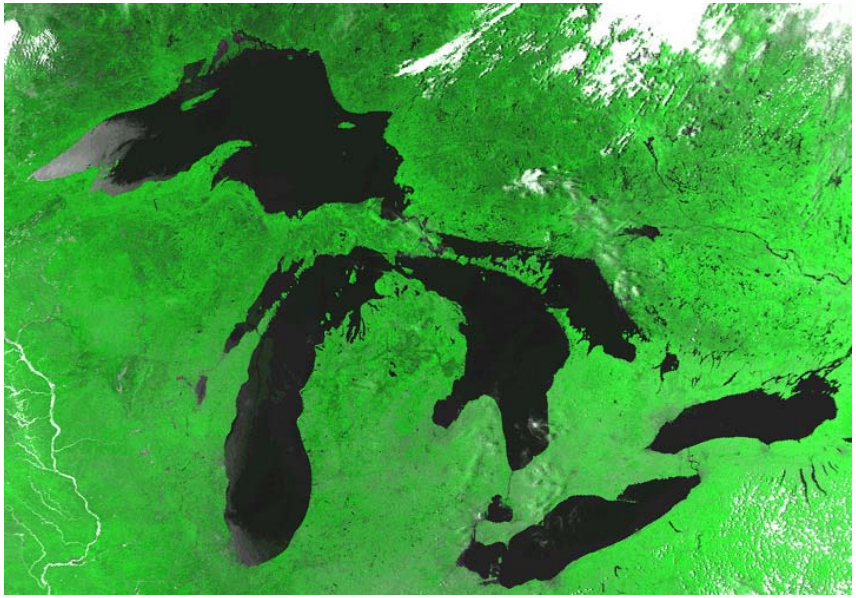
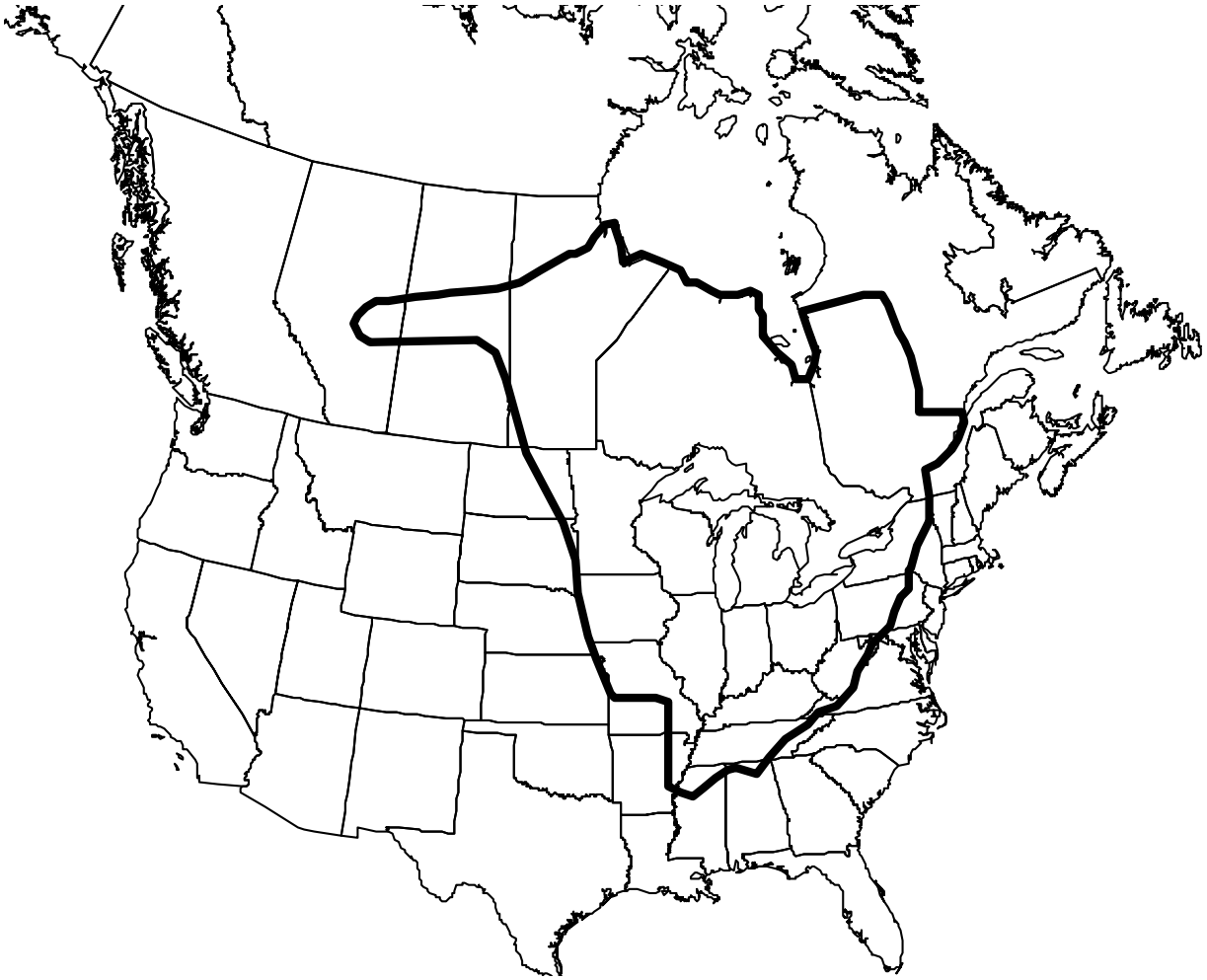
Lake sturgeon and other sturgeon species

- 23 species of sturgeon world wide
- Have outlived the dinosaurs and survived the ice ages
- In the last 200 years all species have been in decline
- All are listed as threatened or endangered
- LS confined to NA and Eurasia
- One species in the GL region



Lake sturgeon historical range

(modified from Scott and Crossman)



Less than 1% of original populations remain

Reasons for the decline

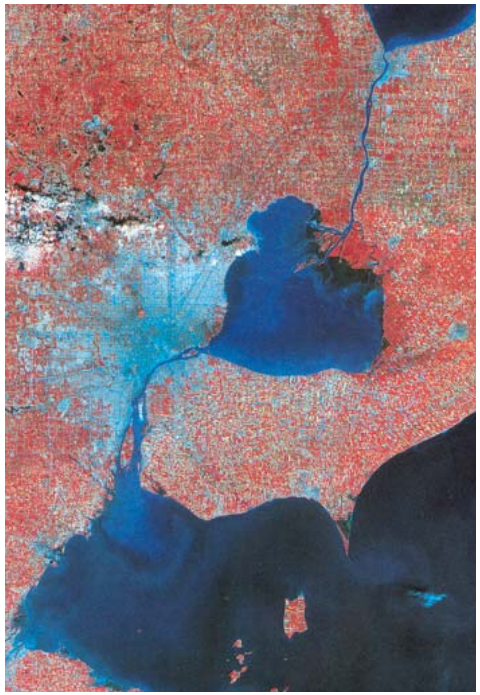
1800

- Nuisance species

- Over harvest
- Forestry practices

1900

- Exclusion from rivers



- Pollution

2000

- Exotic species

Their life history and how it has worked against them

- Large size
- Late sexual maturity
- Periodic Spawning
- Spawning takes place in fast flowing water

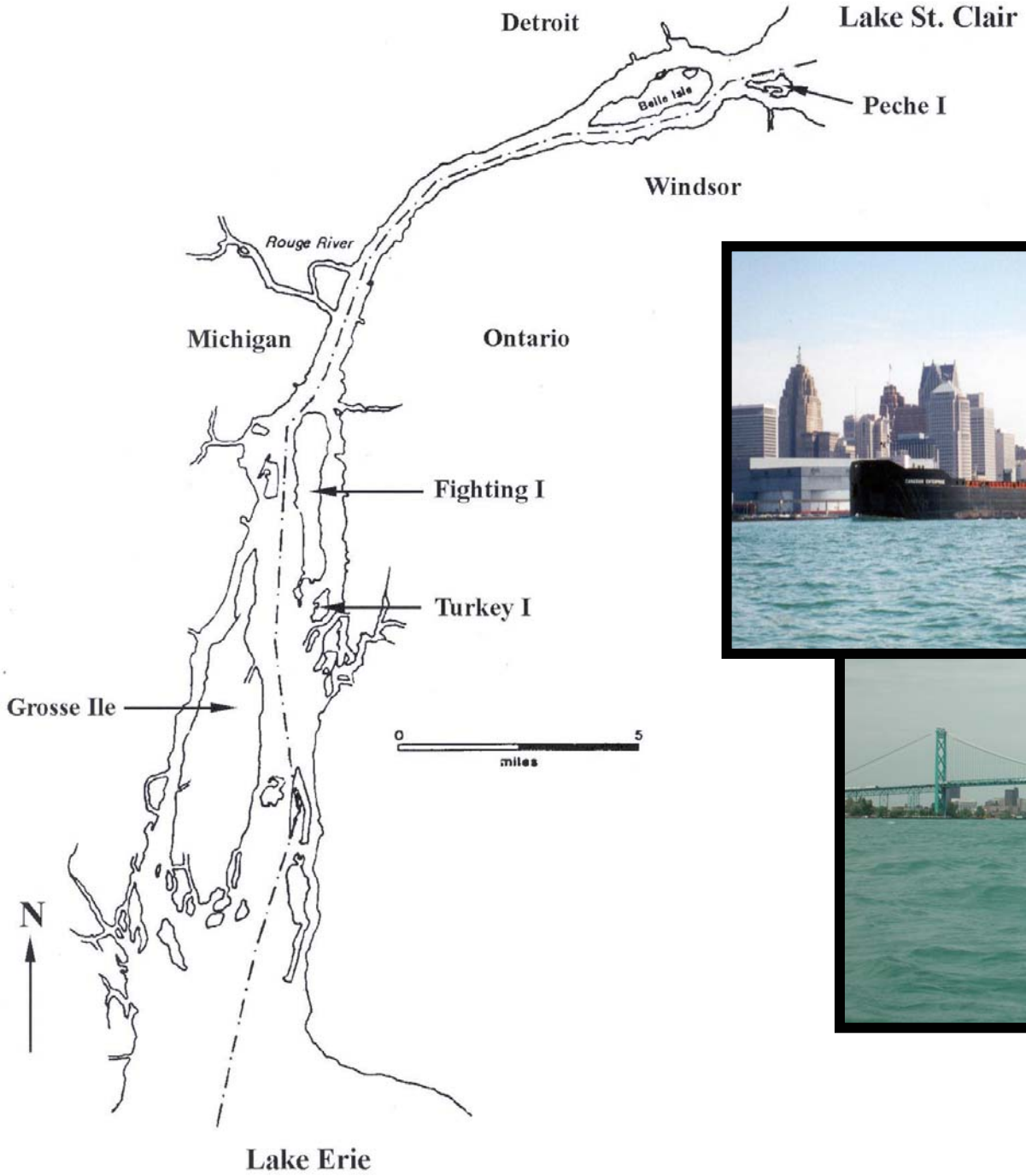
Knowledge is the key to restoring lake sturgeon
Four major research needs according to GLFT:

1. Habitat constraints and preferences and role they play at various life stages
2. Distribution and status of lake sturgeon in the entire Great Lakes System
3. Potential dam removal sites and if not possible develop fish passage technology
4. The need for cost-effective artificial propagation techniques

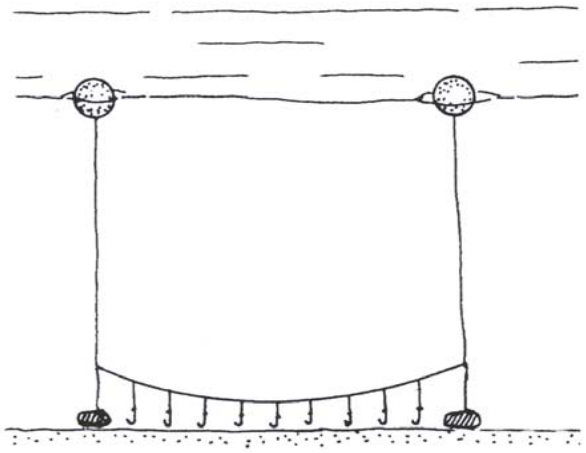
Sturgeon Research Begins on the Detroit River

1. Collect baseline data on Detroit River sturgeon population
2. Use telemetry to determine movement patterns
3. Locate active spawning sites

Study Site


Detroit
Lake St. Clair
Belle Isle
Peche I
Windsor
Rouge River
Michigan
Ontario
Fighting I
Turkey I
Grosse Ile
0
5
miles
N
Lake Erie

How were fish captured?



Modified from Murphy and Willis (1996)

- 100m baited line
- 25 hooks/line 7/0 hooks
- Bait used Goby and Squid

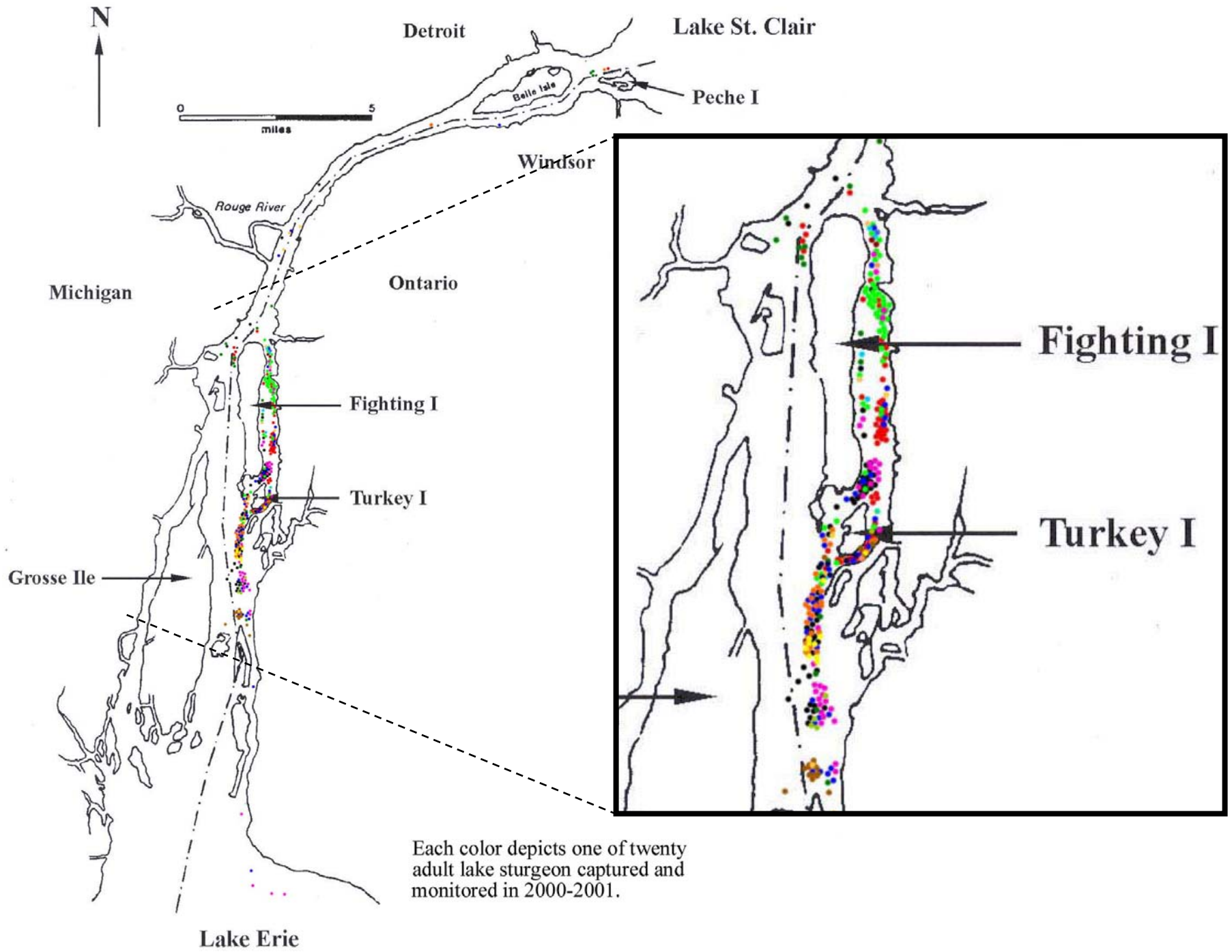
- 4 - 8 lines
- Each set 24 - 48 hours
- April - October, 2000
  March - September, 2001
  April - May, 2002

Fish used for the telemetry study

- All fish > 55 inches
- Both males and females used
- Ultrasonic transmitters implanted
- Ten implanted in 2000
- Ten implanted in 2001
- No fish implanted in 2002

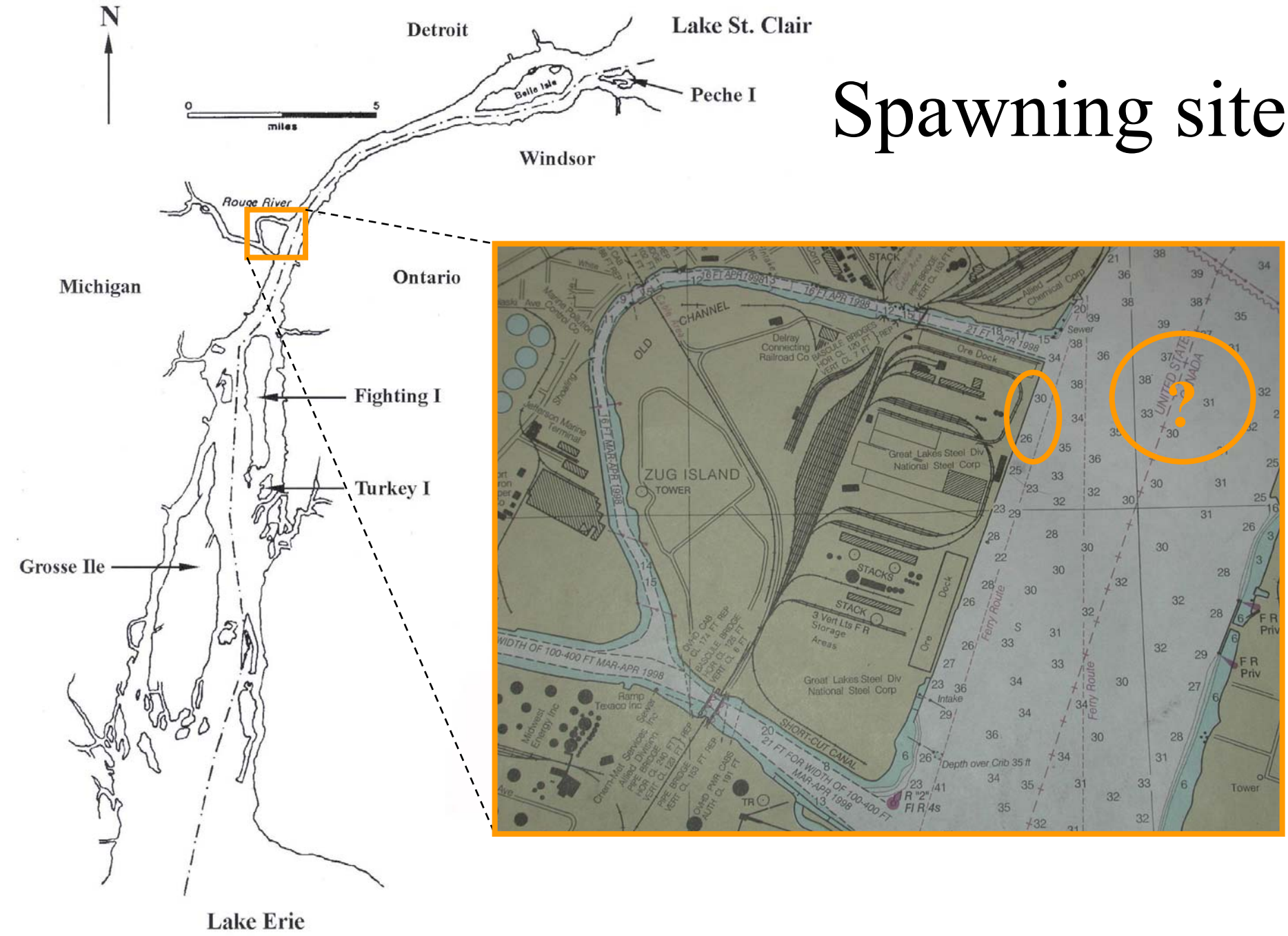
Fish movements were plotted from 2000 - 2002

1. Lake sturgeon from Lakes Erie, St. Clair and Huron use the Detroit River
2. Only a small percentage of the River is used
   - East Fighting Island
   - Turkey Island
   - Ballard's Reef
3. Spawning sites were identified

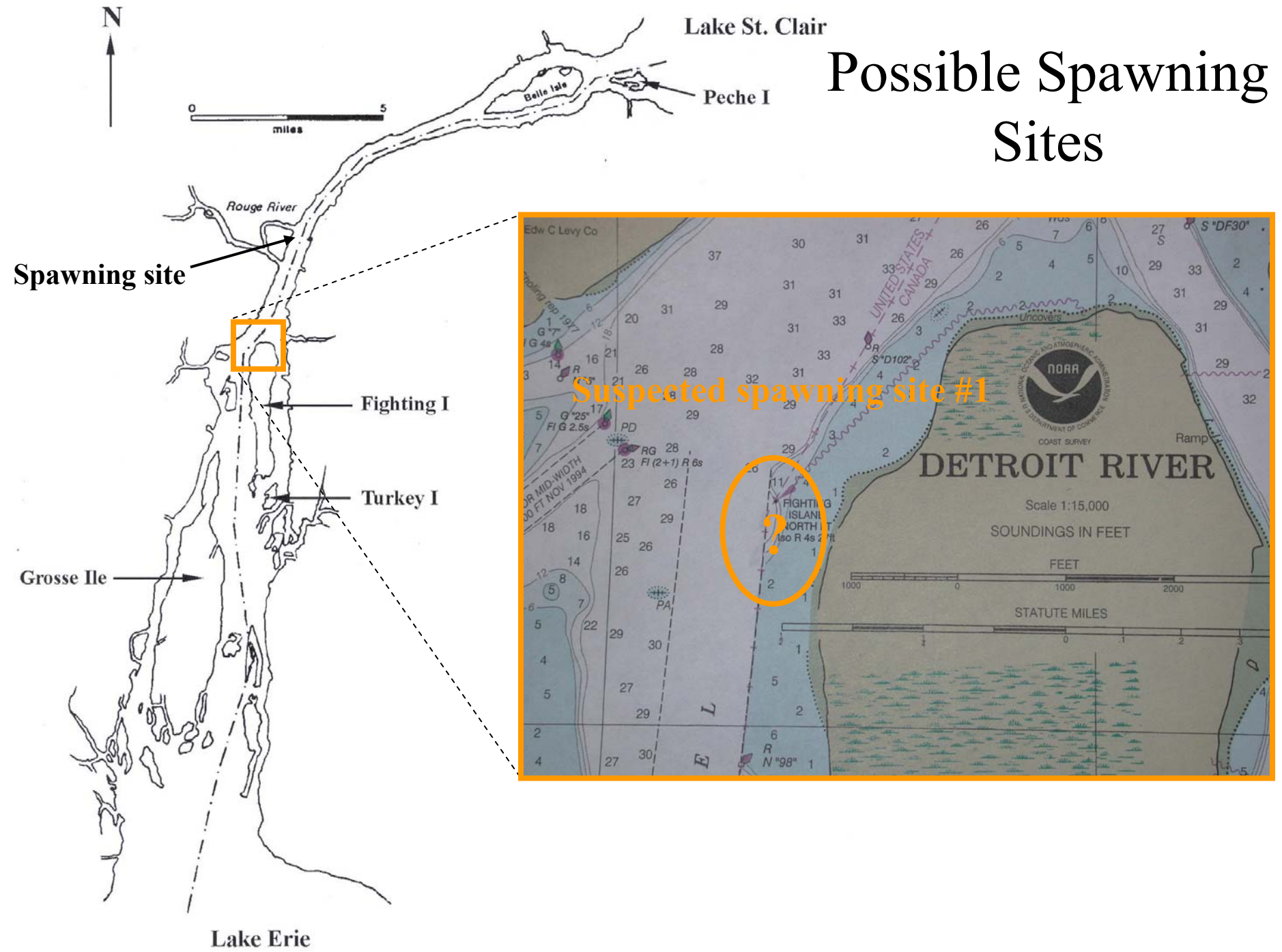


Each color depicts one of twenty adult lake sturgeon captured and monitored in 2000-2001.

Spawning site



Possible Spawning Sites



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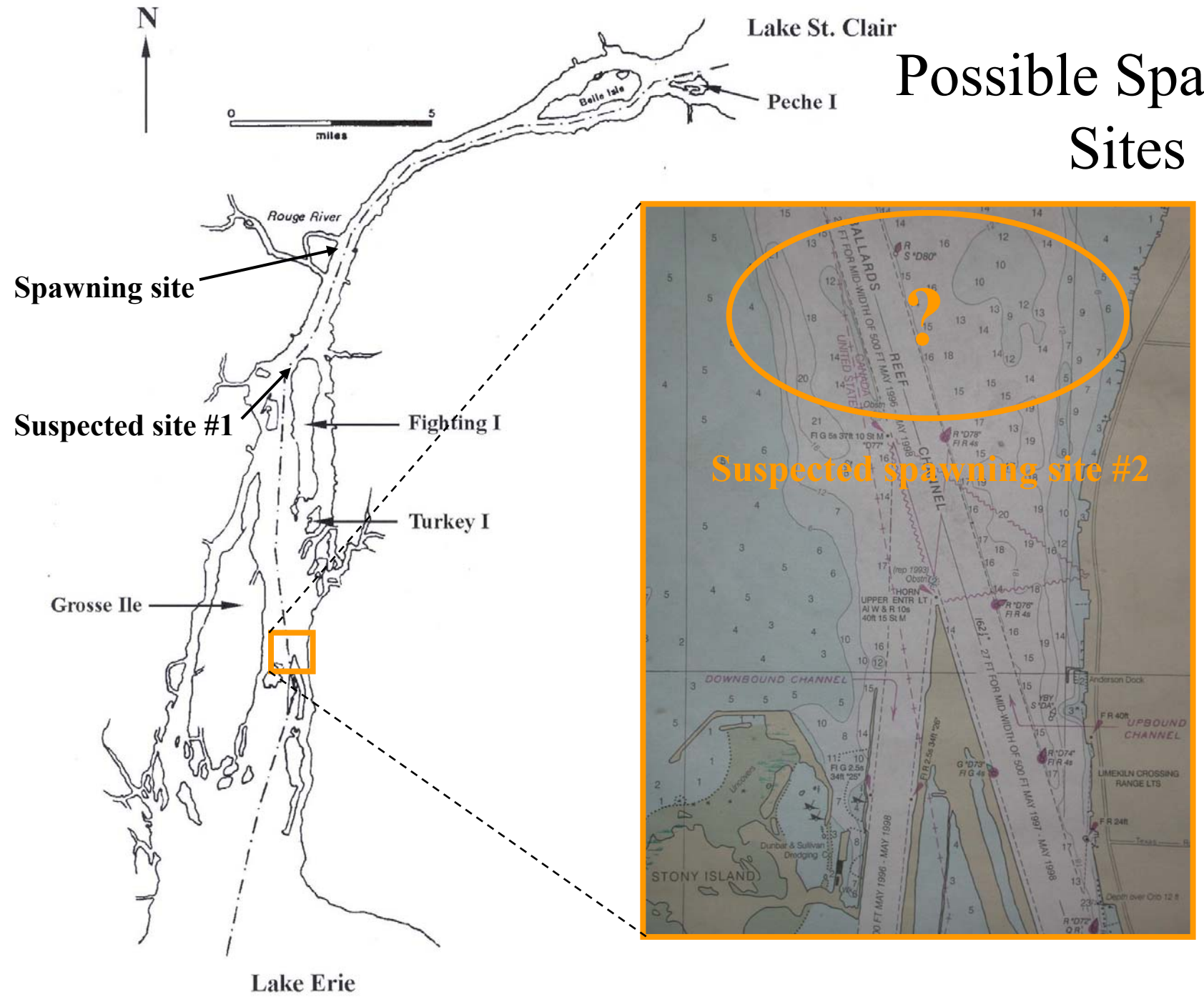
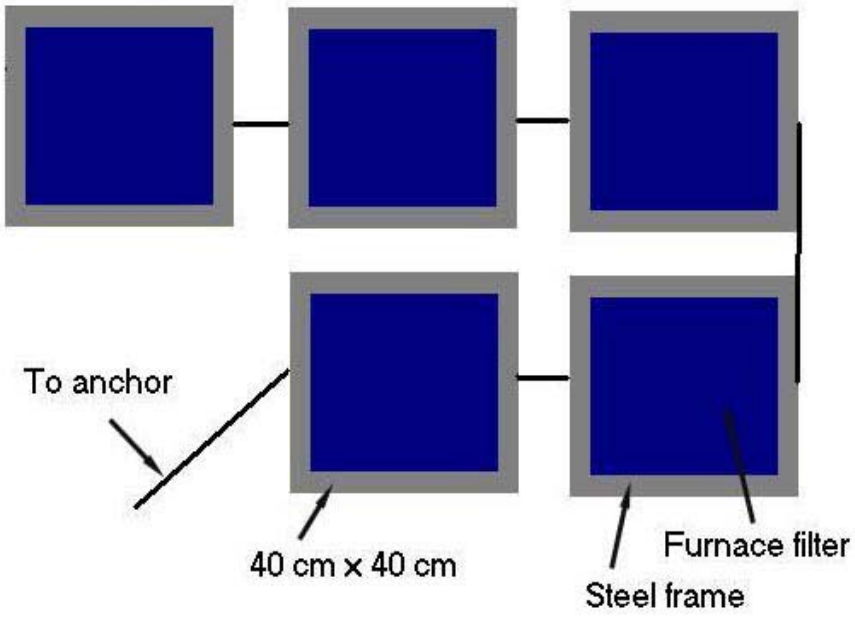


Egg mats used to verify spawning

- Spawning verified at Zug Island in 2001 and 2002
- Spawning is suspected at Fighting Island and Ballard's Reef but has not been documented



Comparison of spawning sites

- Zug Island
  - 15,000 m^2
  - coal cinders
- North Channel SCR
  - 2,500 m^2
  - coal cinders
- Blue Water Bridge SCR
  - 160,000 m^2
  - glacial till

How is the information being used?

- Artificial reef construction near Belle Isle
  - three substrates proposed; limestone (6-24in), igneous cobble (4-6in) and coal cinders (1-3in)
  - Reef will benefit lake sturgeon and other species; walleye *Stizostedion vitreum*, smallmouth bass *Micropterus dolomieu*, yellow perch *Perca flavescens*, and redhorse suckers *Moxostoma spp.*.
- Application to other areas
  - St. Clair River near Sarnia, ON

Sturgeon rehabilitation as a gauge of environmental quality

- Virtually all spawning sites are in the connecting waterways
- Sturgeon are in the rivers during vulnerable periods
- Good historical records available
- Life history