Michigan Fisheries Education Initiative

Vampire of the Great Lakes!

Program funded by the Great Lakes Fishery Trust

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An Alien Invader!

- Characteristics of an invasive species:
  - Non-native
  - Eat large amounts of food
  - Aggressive towards native species
  - Few predators
  - Reproduce quickly
  - Harmful to native species
  - Harmful to human health and economy

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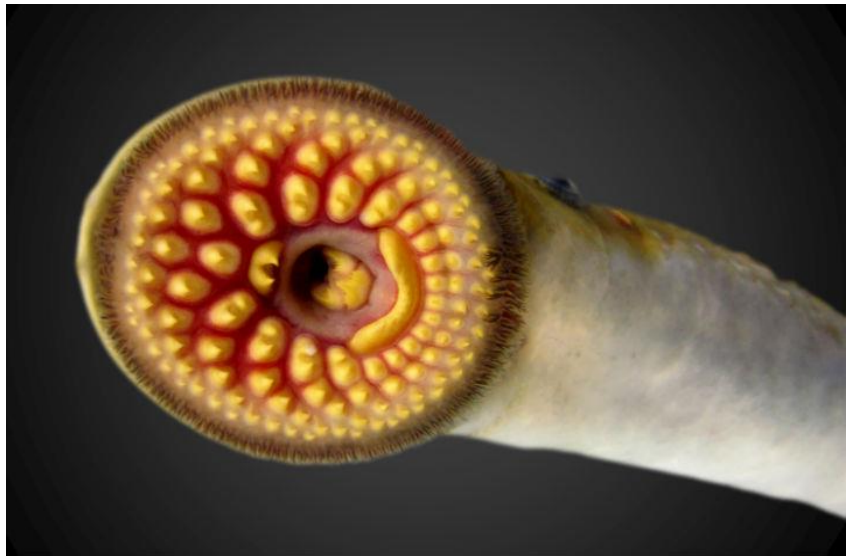
It’s NOT an eel!

- It’s a FISH!
- Native to the Atlantic Ocean
- Round mouth that forms a suction disk
  - Sharp, horn-shaped teeth
  - Rasping tongue
- Cartilage body
- Scales?
- How do fins compare to other fish?
- No lateral line
- No swim bladder



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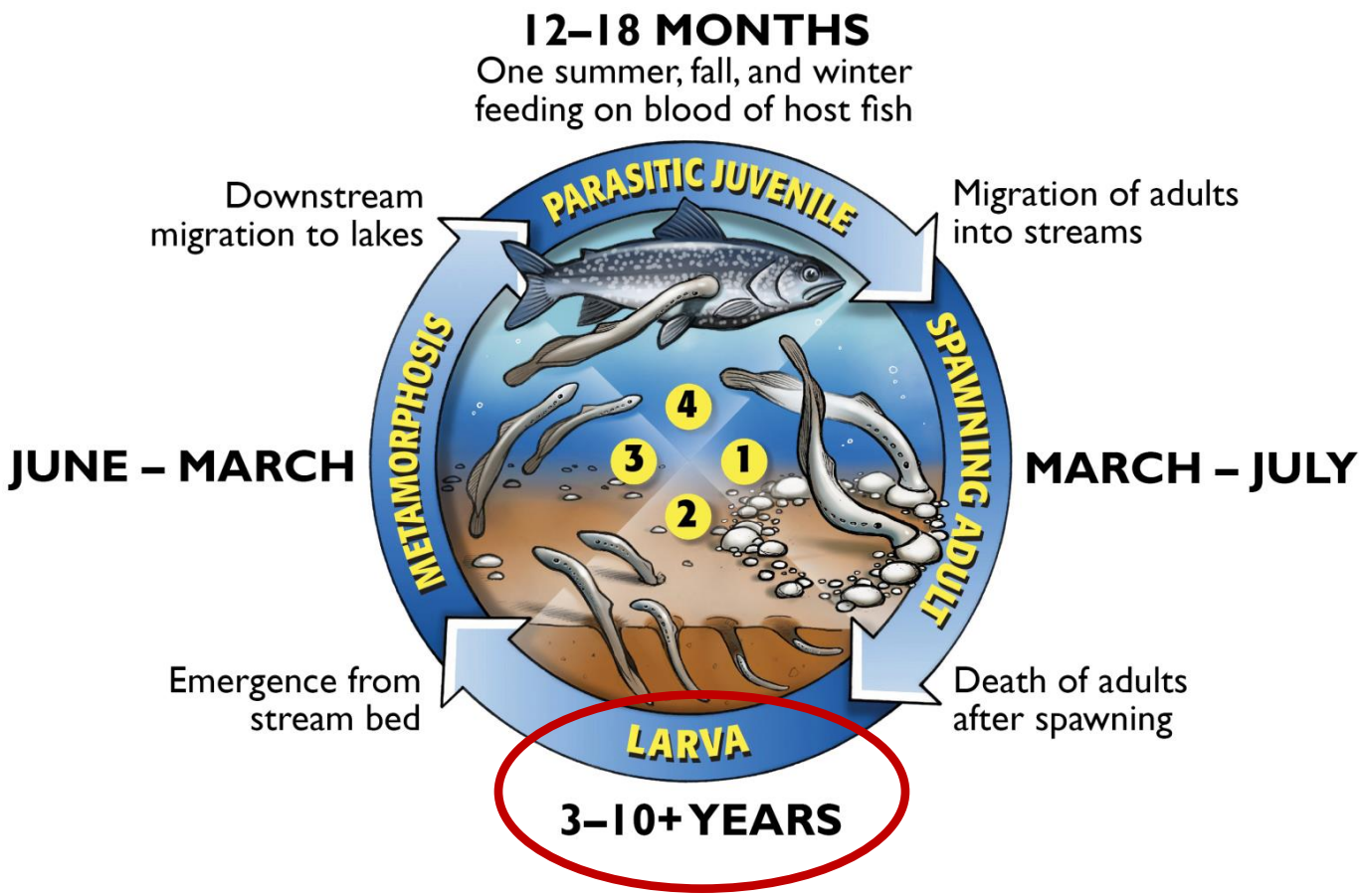
Sea Lamprey Life Cycle



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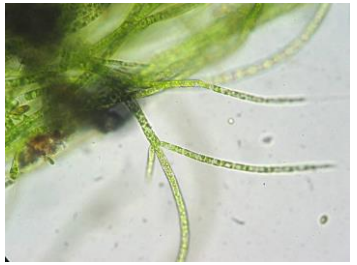
Sea Lamprey Life Cycle

- Larval stage (baby lamprey)
- Hatch from eggs in summer
- Burrow into sediment of a *river*
- Food – floating algae and plankton



3–10+ YEARS

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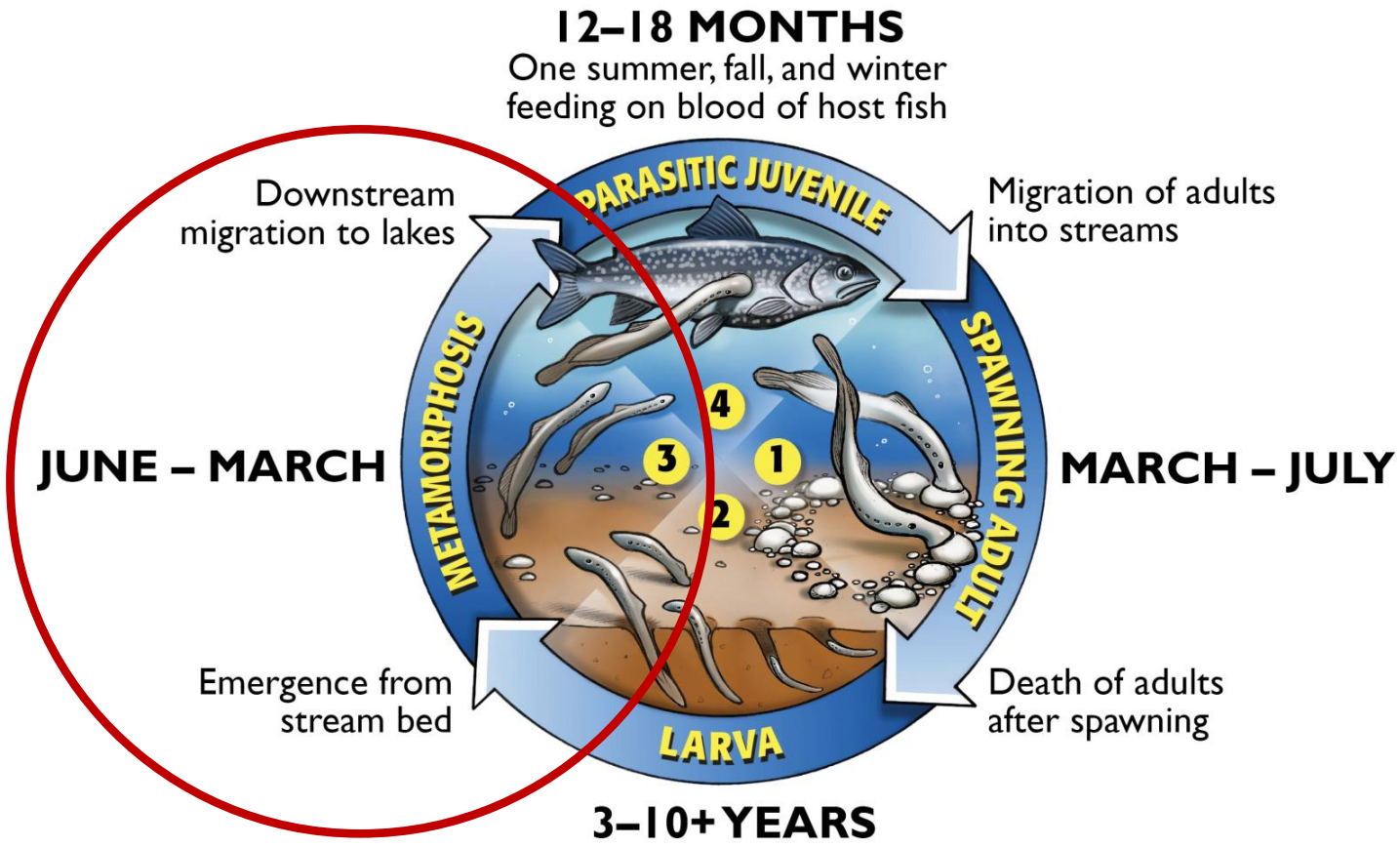
Sea Lamprey Life Cycle



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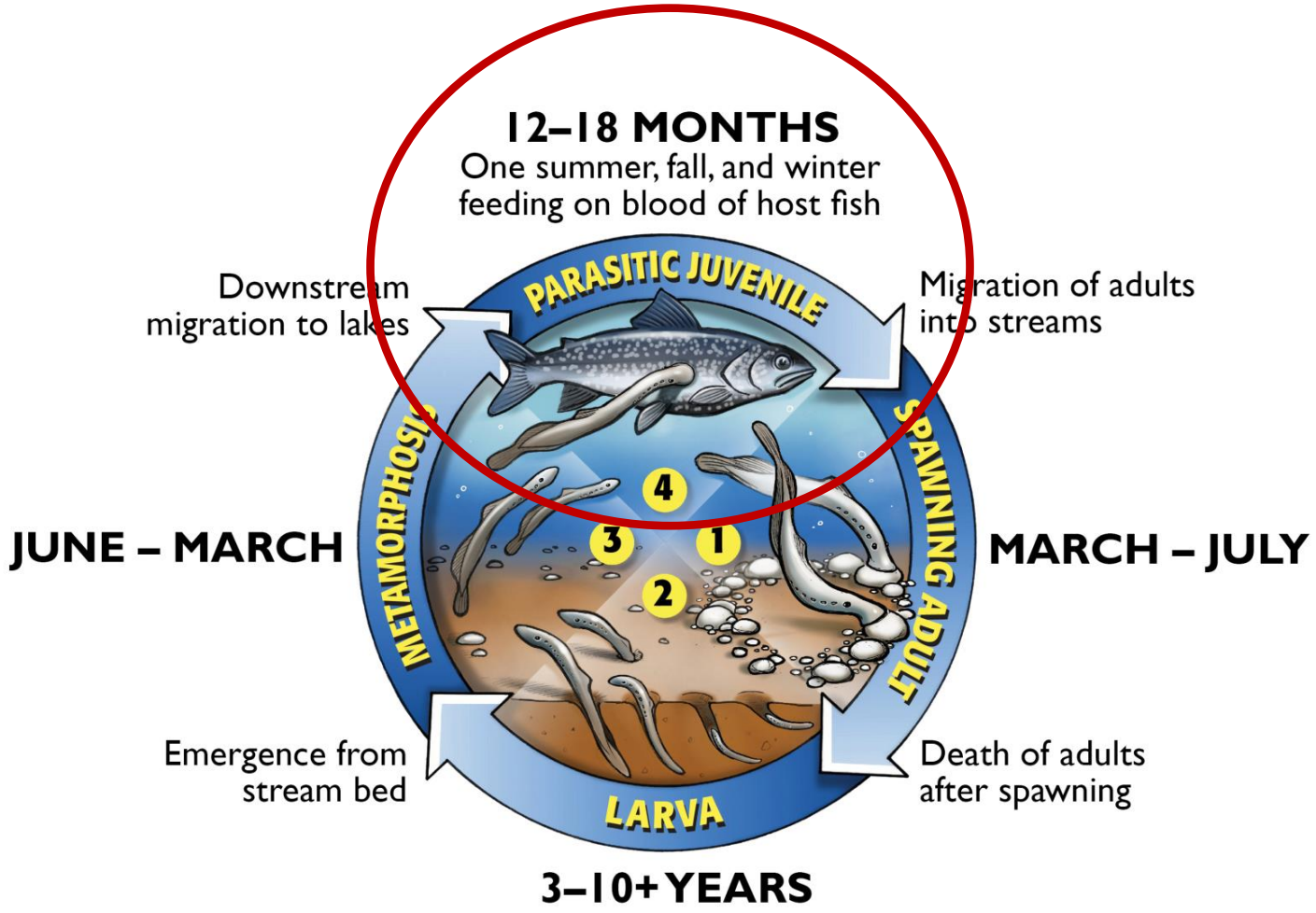
Sea Lamprey Life Cycle



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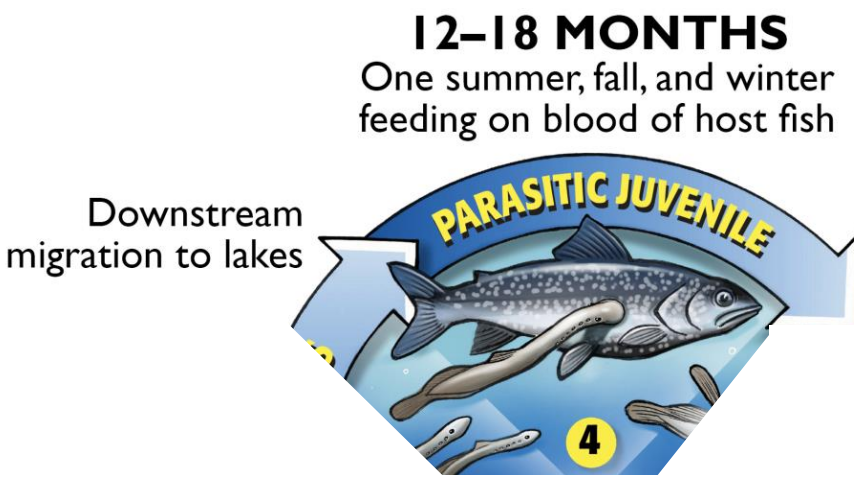
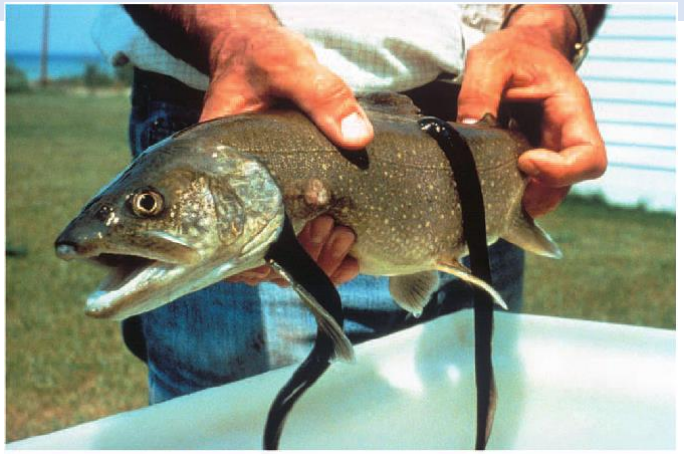
Sea Lamprey Life Cycle





- Parasitic Juvenile
- The Vampire stage!

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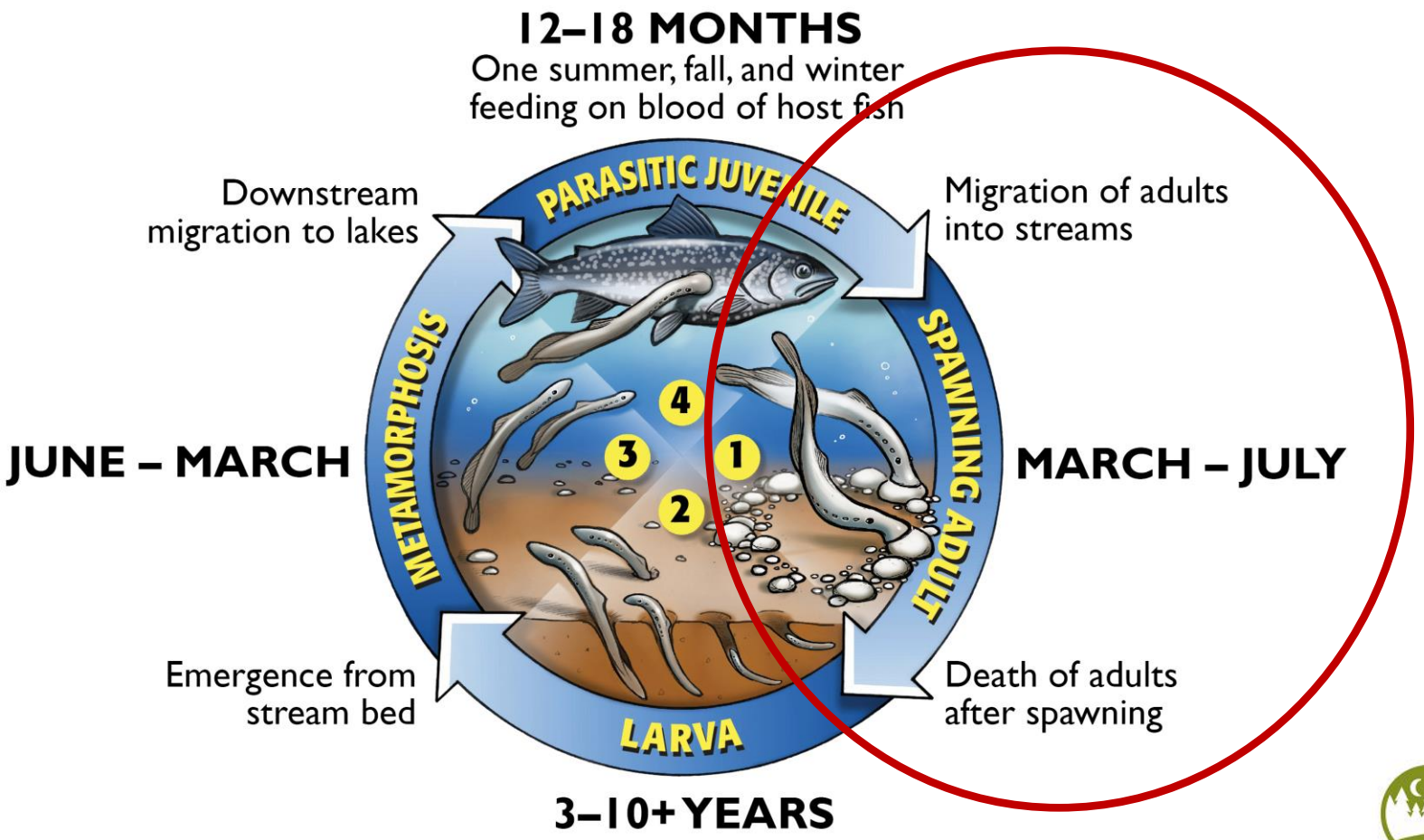
Sea Lamprey Life Cycle



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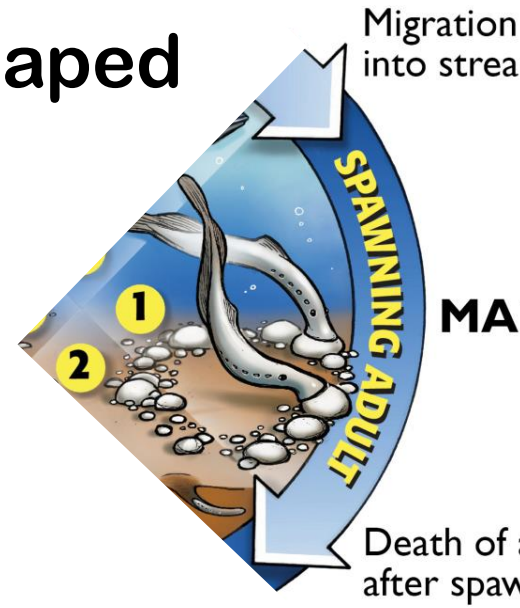
Lamprey Life Cycle

- Adult stage
- Return to streams
- Build crescent shaped nests with rocks
- Spawn
- Die



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Sea Lamprey Life Cycle

https://www.youtube.com/watch?v=TFH-CiuCEPQ

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Journey of the Sea Lamprey

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Journey of the Sea Lamprey

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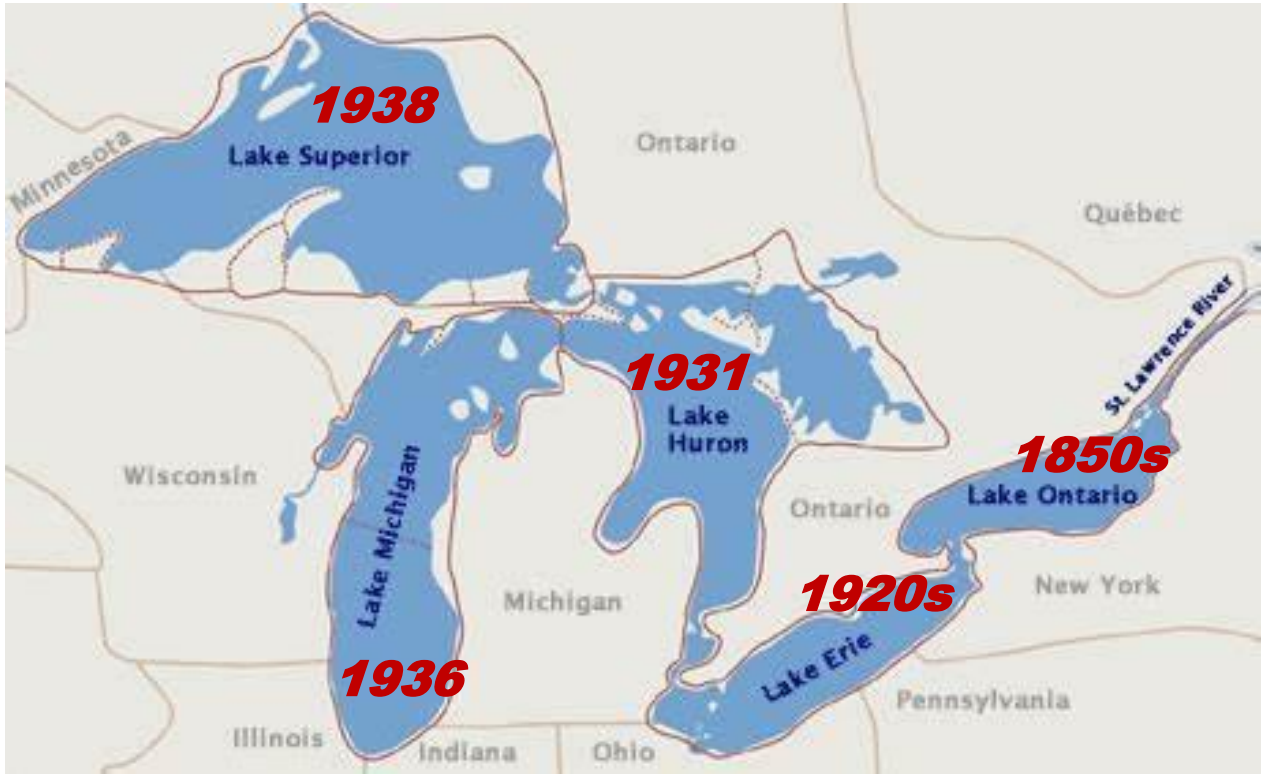
Journey of the Sea Lamprey



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How did Sea Lamprey impact our fish?

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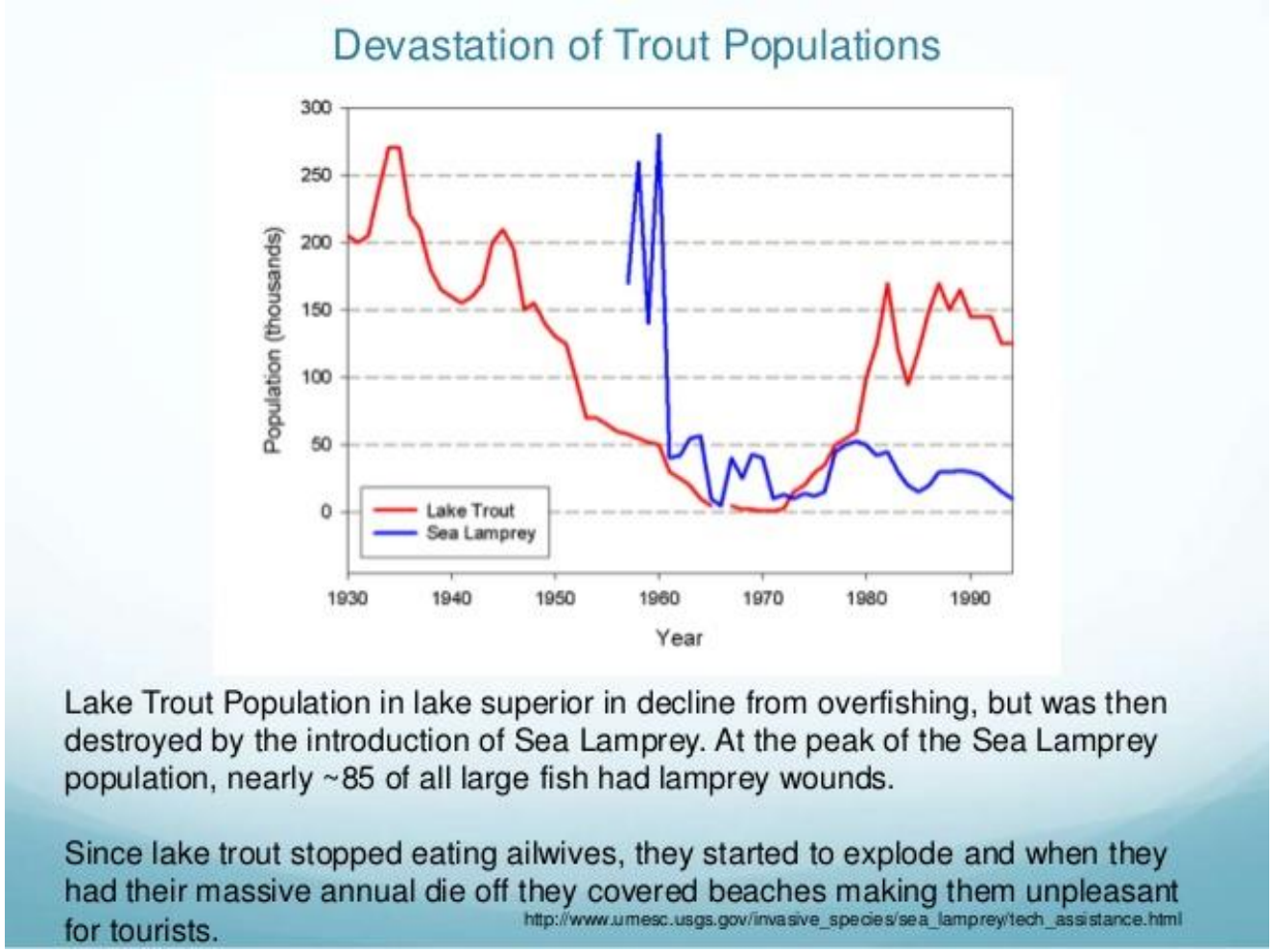
How did Sea Lamprey impact our fish?



Sea Lamprey

Lake Trout

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How damaging are they?

- A single lamprey is capable of killing 40 pounds of fish in its life
- Killed 100 million pounds of Great Lakes fish annually at their peak
- Commercial fishery catch dropped to only 2% of what it was
- Thousands of fisheries-related jobs were lost
- Ways of life for thousands of people were changed…

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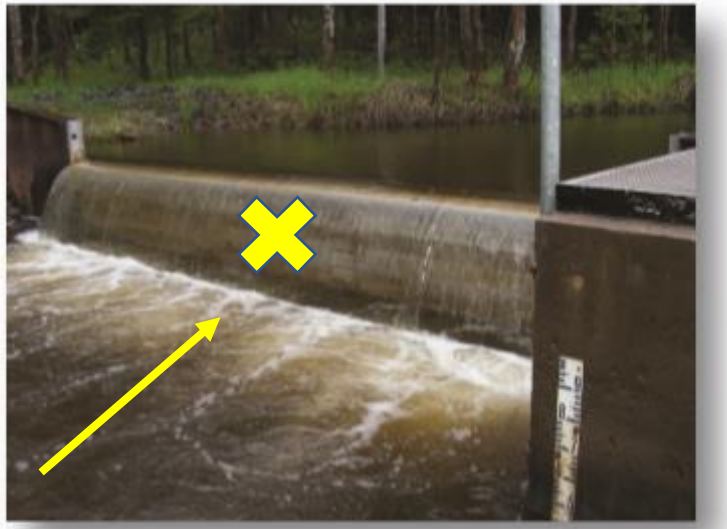
What has been done?
Barriers:

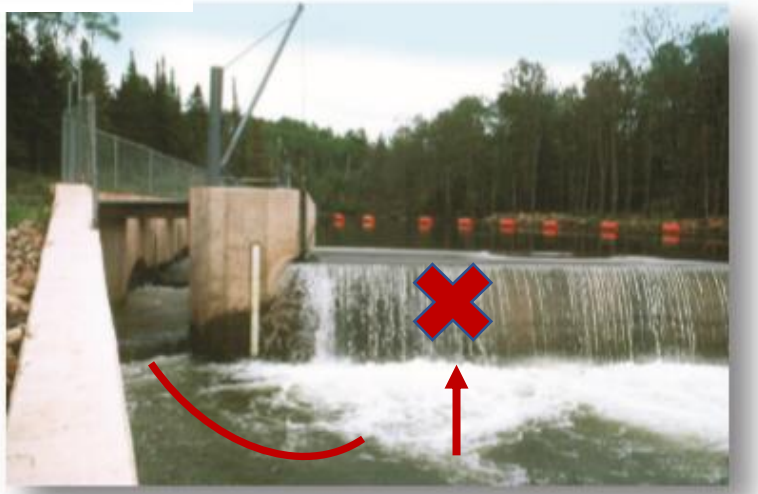
A typical "low-head" barrier, Carp Lake Outlet, Michigan.

- Dam must already be present
- Lamprey can't jump very high!



Adjustable stop log sea lamprey "low-head" barrier, Carp River, Ontario.

What about other non-jumping migrating fish?



Fishway at Brule River sea lamprey barrier, Wisconsin.

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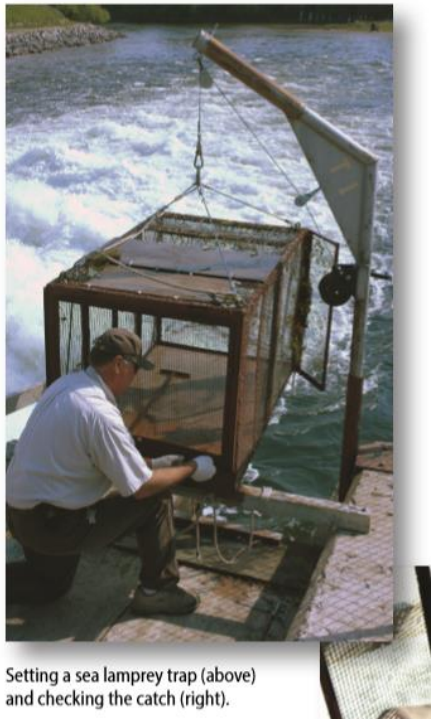
What has been done?
Traps:

Juvenile Sea Lamprey are trapped as they migrate downstream to begin feeding on fish in lakes

A fyke net is used to capture migrating juvenile sea lampreys before they enter the lake to destroy fish.



Setting a sea lamprey trap (above) and checking the catch (right).

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What has been done?
Lampricide:

Sea lamprey control program experts before and during TFM application.

Photos: GLFC, T. Lawrence, R. McDaniels

Lampricide targets juvenile Sea Lamprey burrowed in sediment, before they migrate to lakes to feed on fish

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What has been done?
Using Pheromones or alarm cues:

Pheromone field trials, Ocqueoc River, Michigan.

A female lamprey is attracted to an area that is baited with male pheromone washings.

Photos: GLFC, A. Miehls

Pheromone – a chemical released by an animal that is used to communicate with others of the same type

Example: female lamprey ready to spawn would be attracted to male pheromones

Alarm cues – released to communicate potential danger

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What has been done?

- https://www.youtube.com/watch?v=xJ80mh2cYWY

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How do scientists start Lamprey control?

- Assessment and survey:
  - 1 - Where are the Lamprey?
  - 2 - Where should control methods be used?

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Targeting spawning areas

- Locate areas with the right spawning conditions
  - Gravel bottom – size > 9 mm
  - Water flow steady and unidirectional
  - Water flow velocity of 0.5 – 1.5 m/s
  - Water temperature – Between 10 degrees C and 26 degrees C

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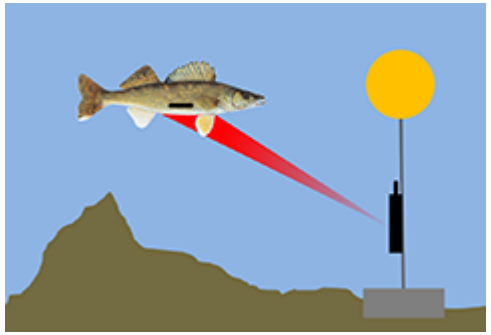
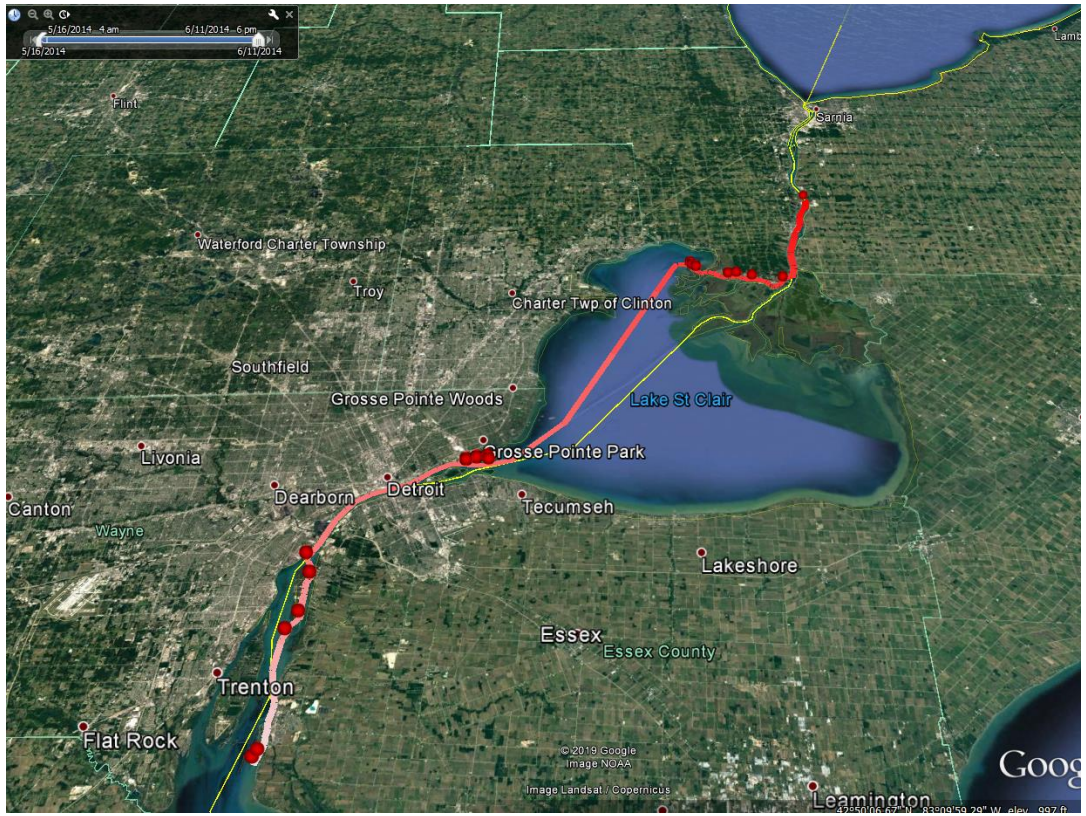
Conduct Lamprey surveys

- How are Lamprey being researched and assessed here in the Huron-Erie Corridor?
- Acoustic telemetry





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Tracking Lamprey in the HEC

(Open Google Earth)

- Show movements of a few different lamprey and open the information part about them
- Since all of the lamprey move in the same direction, and stop their movements in a tributary to Lake St Clair (the St. Clair River) what does this tell us about where we should try and target Lamprey control around here?

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