Fish Species at Risk
Research and Assessment in Southern Ontario

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SOSMART Meeting, December 1st 2011
Outline

• Overview of DFO Fish SAR Research in Ontario
  – Fish Species at Risk Research in Ontario
  – Recover Planning, Management Plans
  – Ontario SAR Mapping Tool

• Fish Species at Risk in Southern Ontario
  – Species, Assessment Techniques/Gear, Distribution

• Discussion(?)
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• Discussion (?)
Role of DFO Fish SAR Research in Ontario
DFO Fish SAR Overview
DFO Fish SAR Research in Ontario
How is SAR Assessment Data Used?
Species Recovery Strategies

- Aurora Trout*
- Redside Dace*
- Channel Darter
- Eastern Sand Darter
- Spotted Gar
- Pugnose Shiner
- Northern Madtom
- Lake Chubsucker

* OMNR lead
Species Management Plans

- Blackstripe Topminnow
- Pugnose Minnow
- Silver Chub
- Grass Pickerel
- Warmouth
- Spotted Sucker
- Bridle Shiner
Watershed-based Recovery Plans

Partners
- Federal Agencies
- Provincial Ministries
- Conservation Authorities
- First Nations
- Academic Institutions
- Other – stewardship organizations, naturalists, angling groups, local landowners
Recovery Potential Assessments

REVISED PROTOCOL FOR CONDUCTING RECOVERY POTENTIAL ASSESSMENTS

Figure 1: Department of Fisheries and Oceans' (DFO) six administrative regions.
Recovery Potential Assessments

- Phase I: Assess current/recent species status
- Phase II: Scope for management to facilitate recovery
- Phase III: Scenarios for mitigation and alternative to activities
Species at Risk Mapping

FISH SPECIES LIST
Species at Risk Mapping

Local Example

- Red Light
- Yellow Light
- Green Light
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Fish Species at Risk in Southern Ontario
### Fish SAR – Surveying Techniques

<table>
<thead>
<tr>
<th>Wadeable</th>
<th>Non-Wadeable</th>
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<tbody>
<tr>
<td>Backpack Electrofisher</td>
<td>Trap Net</td>
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<tr>
<td>Bag Seine</td>
<td>Minnow Trap</td>
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<tr>
<td>Benthic Trawl (Hand)</td>
<td>Hoop Net</td>
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<tr>
<td>Minnow Trap</td>
<td>Boat Seine</td>
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<tr>
<td>Electrofishing Punt</td>
<td>Boat Electrofisher</td>
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<tr>
<td>Larval Traps</td>
<td>Benthic Trawl (Boat)</td>
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<td>Pelagic Trawl</td>
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<tr>
<td></td>
<td>Larval Traps</td>
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</table>
Silver Shiner (*Notropis photogenis*)

Status: Special Concern

- Recently reassessed from Special Concern to Threatened (COSEWIC recommendation)
- Recovery Potential Analysis - early 2012
- SOSMART Species – 16 Mile Creek, Bronte Creek
Silver Shiner (*Notropis photogenis*)
Survey Gears – Seine Nets
Silver Shiner (*Notropis photogenis*)

Distribution – 16 Mile Creek
Silver Shiner *(Notropis photogenis)*

Distribution – Bronte Creek
Habitat: The Northern Brook Lamprey is a freshwater fish that is found in clear streams of varying sizes.

Identification: Lampreys are a challenging to distinguish and require training and practice to be effective.

Recovery: Management Plan is currently under development

SOSMART Species – Lake Huron drainages
Northern Brook Lamprey (*Ichthyomyzon fossor*)

**Distribution – Ontario**
Lake Chubsucker (*Erimyzon sucetta*)

**Status:** Threatened

**Distribution**
Coastal wetland systems in the Lower Great Lakes (Lake Erie, Lake Huron, Lake St. Clair. Also populations found in Lyons Creek (Niagara Region)

**Preferred Habitat**
Clear, shallow and warm water with moderate to dense macrophyte growth

**SOSMART Species – Lyons Creek (Welland Area)**
Lake Chubsucker (*Erimyzon sucetta*)

Status: Threatened
**Pugnose Shiner**  
*(Notropis anogenus)*  
**Status:** Endangered

**Where?**  
Coastal wetlands, Riverine wetlands in the Great Lakes including the St. Lawrence River, Prince Edward County, Long Point Bay, Lake St. Clair and the Old Ausable Channel

**Preferred Habitat**  
Very clear, shallow and warm water with moderate to dense macrophyte growth.

**SOSMART Species – Trent River, Prince Edward County**

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**Bridle Shiner**  
*(Notropis bifrenatus)*  
**Status:** Special Concern
Pugnose Shiner (*Notropis anogenus*)

Sampling Gears: Hand Seines, Boat Seines

Assessment vs. Depletion/Repeated Seining
- Species Detectability
- Abundance and Population Estimates
Pugnose Shiner (*Notropis anogenus*)

Distribution - Ontario

Legend:
- 2001-2010
- 1991-2000
- 1881-1990
- 1835-1890
- Park
- First Nations
- Established Area

Fish SAR in Southern Ontario
Pugnose Shiner (Notropis anogenus)
Distribution – Eastern Ontario
Bridle Shiner (*Notropis birfrenatus*)

Distribution – Eastern Ontario
Bridle Shiner (*Notropis birfrenatus*)

Distribution – Eastern Ontario
Grass Pickerel (*Esox americanus*)

Status: Special Concern

- Primarily found in coastal wetlands, low gradient rivers/streams
- Disjunct distribution across Southern Ontario
- Management Plan Currently under review (2012)
- SOSMART Species – Niagara Region
- Ongoing Study – Impacts of Drain Maintenance on Grass Pickerel
Impacts of Agricultural Drain Maintenance on Grass Pickerel

- MSc Project (UofG)
- BACI Project Design – before/after (time), control/impact (tribs)
- Pre-construction/baseline monitoring (June 2009 - November 2011)
  - PIT Tagged ~ 600 per year (2009 – 2011)
  - Radio Tagged – 15 per year (2010, 2011)
  - Spawning, Larval Surveys (2011)
  - Hydrological baseline conditions – level loggers, channel profiles, modeling
- Drain Maintenance (Winter 2011/2012)
- Implementation of Mitigation and Compensation (Winter 2011/2012)
- Post-Construction Monitoring (Winter 2012 to Fall 2013)
Grass Pickerel (*Esox americanus*)

Status: Special Concern
Grass Pickerel (*Esox americanus*)

**Distribution – Niagara Region**
Channel Darter (*Percina copelandi*)

Status: Threatened

Where?
Southern Ontario – Ottawa River, Trent River, Detroit River, St. Clair River and Great Lakes nearshore beaches of Lake Erie and Lake St. Clair

Preferred Habitat
Large sediment free rivers and Great Lakes beaches occurring over both sand and gravel substrate.

SOSMART Species – Bay of Quinte Tributaries, Trent River
Channel Darter (*Percina copelandi*)

Survey Gear – Benthic Trawling, Seining
Channel Darter (*Percina copelandi*)

Distribution – South Eastern Ontario
Eastern Sand Darter (*Ammocrypta pellucida*)

**Status:** Threatened

**Where?**
Large Rivers in Southern Ontario; Thames, Grand, Sydenham

**Preferred Habitat**
Large rivers or streams; associated with sandy substrates with > 80% sand composition.
Eastern Sand Darter (*Ammocrypta pellucida*)

Survey Gears – Benthic Trawling, Seining

DFO Survey Sites on the Thames River, Ontario
Eastern Sand Darter \textit{(Ammocrypta pellucida)}

Distribution – Canadian Distribution
Eastern Sand Darter (*Ammocrypta pellucida*)

Distribution – Ontario Distribution
Eastern Sand Darter (*Ammocrypta pellucida*)

Impacts on Invasive Fishes (?)

![Map showing distribution of Eastern Sand Darter and invasive fishes in Southern Ontario](image-url)
Spotted Gar (*Lepisosteus oculatus*)

Status: Threatened

Where?
Coastal wetland systems in the Lake Erie

Preferred Habitat
Shallow and warm water with dense macrophyte growth, turbidity is not an issue with this species.

* commonly mistaken for Longnose Gar, *Lepisosteus osseus*. 
Spotted Gar (*Lepisosteus oculatus*)

Survey Methods – Boat Electrofishing, Trap Nets, Hoop Nets
Spotted Gar (*Lepisosteus oculatus*)

**Distribution – South Western Ontario**
Spotted Gar (*Lepisosteus oculatus*)

Distribution – Eastern Ontario
Northern Madtom (*Noturus stigmosus*)

**Status:** Endangered

*Where?*
Found in large river systems in Southern Ontario (Thames River) and Great Lakes interconnecting waters (Detroit River and St. Clair River).

*Preferred Habitat*
Little is known about this species, it prefers deep river habitats and is not associated with macrophytes.
Northern Madtom, *Noturus stigmosus*

Survey Gears – Benthic Trawls and Seining

DFO Crews conducting trawling surveys for Northern Madtom on the Detroit River.
Northern Madtom (*Noturus stigmosus*)

Distribution
Channel Darter (*Percina copelandi*)

Distribution – South Western Ontario
Black Redhorse
(Moxostoma duquesnei)
Status: Threatened

River Redhorse
(Moxostoma carinatum)
Status: Special Concern

Where?
Found in Large River systems in Southern Ontario; Grand River, Thames River, Ausable River, Maitland River

Preferred Habitat
Large rivers and large streams with medium to fast flow.
Black Redhorse and River Redhorse

**Survey Methods** – Backpack Electrofishing, Boat Electrofishing, Seining, Trawling

- **Notes**: Little is known of this species. Common in Point Pelee National Park. Often misidentified as Rock Bass.

- **Survey Methods**
  - Backpack Electrofishing
  - Boat Electrofishing
  - Seining
  - Trawling

- **Preferred Habitat**: Shallow and warm water with dense macrophyte growth

- **Where?**: Coastal wetland systems in Lake Erie

- **Fish SAR in Southern Ontario**
Fish SAR Identification and Verification

- Fish SARA Permits Applicants are required to possess formal SAR ID Training
  - ROM SAR Workshop (Fish ID Workshop prerequisite)

- Permits holders must learn the key identification features for all fish species at risk.
  - Physical Vouchers vs. Digital Vouchers?
Identification of Fish SAR by Photographs

*Noturus stigmosus*

Size = 70mm
What’s next for fish SAR Research/Assessment in Ontario?
It is your sacred task to seek the Holy Grail!
What form does the grail assume?
Erimystax x-punctatus

Tomelleri
TRAWL, TRAWL, TRAWL!!!!

6 specimens
Moravian Town, Ontario 1923

9 specimens
Muncey, Ontario 1958
Discussion/Questions?