

# Reference Guide for Fish and Mussel Species at Risk Distribution Maps

## A Referral Review Tool for Projects Affecting Aquatic Species at Risk

Conservation Authority Edition v5.0

v5.0 maps released April 2011, Document updated April 2011

Note: New information contained in this release:

1. Delineated areas for proposed and final Critical Habitat;
2. GIS files containing colour-coded segments are available via Conservation Ontario website (compressed/zipped package for each Conservation Authority).
3. Redside Dace records pre 1989 were not used, this is in keeping with the OMNR approach to Redside Dace management.

**Maps and document valid until May, 2012.**

**Disclaimer:** Every effort is made to ensure the accuracy and currency of the information contained in the map. However, contents are subject to change and Fisheries & Oceans Canada (DFO) cannot guarantee the accuracy of all the information presented in the maps. Check with local DFO designated biologist for more information and latest version.

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# Reference Guide for Fish and Mussel Species at Risk A Referral Review Tool for Projects Affecting Aquatic Species at Risk

## Purpose

The attached fish and mussel Species at Risk (SAR) maps are being provided to staff within Conservation Authorities (CAs), Ontario Ministry of Natural Resources (OMNR), Ontario Ministry of Transportation (MTO) and other partner agencies to aid in determining whether development proposals should be referred to Fisheries and Oceans Canada (DFO) as a result of the potential presence of SAR and the impacts of the development proposal activities on the SAR and their habitat.

These distribution maps are designed as a screening tool to help partner agencies determine whether proposed projects are occurring within areas where SAR may be present. This document is not intended to provide information on how to conduct the impact assessment review of proposed project activities. Once it is determined that a proposed project occurs in an area where a SAR may be present, DFO should be contacted for additional advice on next steps. Site specific conditions of each project will determine the next course of action in the review process.

If you have any questions about these maps, please contact your DFO designated biologist. Note that "designated biologist" is a term used by DFO Ontario Great Lakes Area (OGLA) - CAs and MTO have OGLA biologists assigned to them – CAs and MTO staff will call their designated biologists if they have any questions regarding the review of a development proposal under the *Fisheries Act*. For agencies that do not have a DFO designated biologist, contact your local DFO office for more information. Inquiries from the general public can be directed to a local CA or MNR office.

## The Approach

The fish distribution data on the SAR maps come from a national freshwater fish distribution database, developed by Dr. N. Mandrak (DFO Science). This database includes approximately 329,000 records (where a record represents a collection of a single species at a specific location on a specific date) from various agencies and programs including DFO,

Canadian Museum of Nature, CAs, OMNR lake and stream inventories, and the Royal Ontario Museum (ROM). The database includes both historic (pre-2000) and current records, including those collected under SAR permits.

The mussel distribution database is a compilation of data from various sources including natural history museums, federal, provincial and municipal government agencies (including some American agencies), CAs, Remedial Action Plans for the Great Lakes Areas of Concern, university theses, and environmental consulting firms. It consists of more than 12,000 records for 40 species collected from nearly 2500 sites throughout the



Lake Ontario, Lake Erie, Lake St. Clair and lower Lake Huron drainage basins and is updated annually. (Metcalf-Smith et al.1998)

With DFO's responsibilities under the *Species at Risk Act* (SARA), aquatic surveys are being undertaken to determine the current distribution and abundance of fish and mussel SAR in Ontario. These surveys are being undertaken at sites where the species were historically present (i.e., before the year 2000), and new sites that contain suitable habitat for SAR, but may not have been sampled previously.

In an effort to model the distribution of fish and mussel SAR in Ontario, DFO has adopted a "valley segment" approach. A valley segment approach breaks stream segments into groupings based on common landscape attributes. The Aquatic Landscape Inventory System (ALIS) layer, developed by OMNR, was used to define stream segments based on a number of unique characteristics found only within those valley segments. Each valley segment is defined by a collection of landscape variables that are believed to have a controlling effect on the biotic processes within the catchment. The primary variables include upstream drainage area, position, connectivity, surficial geology, slope, climate, barriers and land cover. ALIS was provided by the OMNR in two components – a spatial layer representing the geometry of streams found within the Great Lakes basin, and a database of the attributes listed above. Each segment in the spatial layer has been given a unique Segment\_ID, which identifies related attribute data found in the database tables. Fish and

mussel sample points were merged with the stream segments to provide summaries based on these unique Segment IDs. It is important to note that a segment may incorporate multiple streams if the streams all share a unique combination of landscape variables that define the segment. Conversely, segments may split apart a stream if there is more than one unique combination of landscape variables found within the stream system. In 2009/10 the segment layer was updated to more adequately represent "main stem" vs. "tributary" colour-coding for SAR. The following rivers and their tributaries were modified: Ausable, Credit, Grand, Maitland, Saugeen, Sydenham, Thames. This update addresses concerns regarding colour-coding tributaries that contained no SAR records. Segments that were modified were given a new Segment\_ID starting at 880000. Not all ALIS segments have been sampled for fishes and mussels, nor have all the sampled segments been surveyed recently or use a standardized approach.

### **A Note on Accuracy**

Fully geo-referenced distribution databases are essential in recognizing distribution patterns and accurately summarizing species distributions by stream segment. These will help describe known distributions, identify key habitat characteristics, and facilitate the development of predictive models for SAR. Containing both current and historic records, these data have undergone strict quality assurance and control measures to confirm the validity and accuracy of the sample point locations. The locality and geographic coordinate data were examined to determine if each sample point was correctly placed and, if not, sample points were repositioned manually or using an automated routine.

### **Critical Habitat:**

Critical Habitat has been proposed or finalized for the following 7 fishes in Ontario, Aurora Trout, Channel Darter, Eastern Sand Darter, Lake Chubsucker, Northern Madtom, Pugnose Shiner, Spotted Gar. For all but Aurora Trout, Critical Habitat is defined as the habitats that meet the functional habitat requirements of one or more life-stages of the species within a specified geographic area. Refer to the species-specific recovery strategies for information on the functional habitat requirements. Note that an area located within a Critical Habitat extent is not considered to be Critical Habitat, unless it contains the functional habitat(s) of the species in question. The presence of Critical Habitat within a Critical Habitat extent must be determined on a

case-by-case basis, using current site-specific habitat data which consider the temporal aspect, and therefore requires a site visit to evaluate the habitat characteristics.

### **Map Interpretation – Referral process for projects proposed within Critical Habitat Extents, red, orange and purple segments**

A SAR package has been created for each CA watershed. Each package contains a main map with a legend, a key map for the area of interest, and a list of SAR found within the boundaries of the CA watershed. The map is composed of several base layers, including railways, major highways and roads, water bodies, wetlands, and urban areas. Some packages may contain more than one map depending on the available data and size of the watershed. Based on an individual species' status or schedule, stream segments with fish and mussel SAR distributions are colour-coded red, orange or purple on the maps. Critical Habitat extents are identified using a 'salmon' colour with a dark outline. These areas are proposed for Pugnose Shiner, Spotted Gar, Northern Madtom, Eastern Sand Darter and Channel Darter. Critical Habitat extents for Lake Chubsucker and Aurora Trout have been finalized through the posting of final Recovery Strategies to the SARA public registry.

### **For projects proposed within Critical Habitat Extents:**

The Critical Habitat extents identified on the map represent the geographic boundaries of areas that may be/are considered Critical Habitat for fishes and/or mussels designated as Endangered, Threatened or Extirpated on Schedule 1 of the federal SARA. These areas may be afforded special protection under the *Fisheries Act* and/or SARA and project activities proposed within or adjacent to any Critical Habitat extents must not contravene either the *Fisheries Act* and/or SARA. Proposed projects in Critical Habitat extents must consider the potential impacts to aquatic SAR and their habitats. If a project is proposed in or adjacent to a Critical Habitat extent, contact your local CA or designated DFO biologist to determine whether the project should be referred to DFO for review. Note that the identification of Critical Habitat is in various stages of development; the delineation of Critical Habitat extents on the maps does not distinguish between Critical Habitat that has been formally identified in a finalized Recovery Strategy and Critical Habitat that is currently being proposed by DFO. In either case, the designated DFO biologist should be contacted to determine how the presence of Critical Habitat may apply to the project site.

**For projects proposed within red segments:**

The red segments on the map represent the known distributions of fishes and/or mussels designated as Extirpated, Endangered or Threatened on Schedule 1 of the federal SARA. These species are afforded protection under SARA and project activities proposed in any red segments must not contravene the prohibition sections 32, 33 and 58 of SARA (refer to Appendix A). For more information on the SARA prohibitions and other sections of the Act, visit [www.sararegistry.gc.ca](http://www.sararegistry.gc.ca) Proposed projects in red segments must consider the potential impacts to aquatic SAR. If a project is proposed in a red segment, contact your local CA or designated DFO biologist to determine whether the project should be referred to DFO for review, to determine whether permitting requirements may apply. Note that, in addition to the legal protection under SARA, recovery measures are currently being developed and implemented for these species. Refer to Table 1 in the Quick Reference (Appendix A) for the current list of Schedule 1 species in Ontario.

**For projects proposed within orange segments:**

The orange segments on the map represent the known distributions of fishes and/or mussels designated as Extirpated, Endangered and/or Threatened that are not currently on Schedule 1, but are anticipated to be added to Schedule 1. Although the SARA prohibitions do not currently apply to species found in the orange segments, they could in the near future. These species may also currently be protected under the provincial Endangered Species Act (ESA). To plan properly for your project, and to avoid unnecessary delays, consider "orange-segment" species as if there is a potential that they will be added to Schedule 1 by the time the project is initiated. Refer to Table 2 in the Quick Reference (Appendix A) for a list of species anticipated to be added to Schedule 1. If a project is being proposed in an orange segment, contact your local CA or designated biologist to find out if the species is being considered for listing on Schedule 1 before or after the project construction activities begin as this will determine whether the SARA prohibition sections (32, 33 and 58 of SARA) would apply.

Note that 'historical records' (pre-1989) for Redside Dace were not included in the segment mapping to ensure that only currently occupied habitats for this species have been identified. This results in substantially fewer orange segments in the Greater Toronto Area where permanent habitat alterations have resulted in local extinctions. Under the provincial

*Endangered Species Act* (ESA), currently occupied habitat of Redside Dace receives general habitat protection. Contact your local OMNR office for more information.

**For projects proposed within purple segments:**

The purple segments on the map represent the distributions of fishes and/or mussels designated as Special Concern on **Schedules 1 and 3** of SARA, and newly assessed as Special Concern but awaiting formal addition to Schedule 1. The prohibitions of SARA (Sections 32, 33 and 58) do not apply to species designated as Special Concern; however, management plans will be developed for these species and should be consulted prior to project approvals to determine the appropriate course of action to ensure adequate protection of these species. In addition, it is important to note that although Schedule 1 SAR of Special Concern are not afforded protection under SARA, they must be considered in any reviews conducted under the *Canadian Environment Assessment Act* (CEAA). For proposed projects within the purple segments, consult with your local CA or DFO designated biologist if the project is under CEAA review; otherwise the normal referral process will be followed. DFO does not need to be contacted if the project activities will not cause any harm to Special Concern SAR.

**For projects proposed within blue (non-coloured) segments:**

DFO does not need to be contacted for projects located within the blue segments unless the project activities have the potential to cause harm to aquatic SAR as described below.

Proposed projects in segments that are blue (i.e., not colour-coded) will not require DFO review under SARA unless:

- The impacts of any proposed project activities located within a blue stream segment extend upstream and/or downstream into a red, orange or purple stream segment, or a 'salmon' coloured critical habitat section. For example, sediment mobilized during construction is released into upstream or downstream stream segments that are colour-coded red, orange or purple. Under these circumstances, potential impacts of proposed project activities to SAR must be considered in the impact assessment review of the project. Guidance provided in each section above on red, orange, and purple segments,

- would apply to all projects proposed in blue stream segments that fit this description.
- Site observations indicate that SAR are likely present in the stream segment. For example, mussel SAR shells are found on the banks of the stream segment.
  - The project is proposed in between two red segments and there is likelihood that Endangered and/or Threatened SAR are present in the stream segment due to the proximity of the site to red segments located upstream and/or downstream of the site.
  - New data which have not yet been entered into the mapping tool database confirms SAR were caught in the stream segment.

### **SARA Permits**

SAR permits may be required when Extirpated, Endangered or Threatened fishes or mussels on Schedule 1 of SARA are affected by a proposed project activity. The following scenarios are examples of when a SAR permit should be obtained prior to the initiation of any project construction activities:

- Project activities that may cause incidental harm to a SAR, in particular the contravention of any one of the 3 SARA prohibitions (Sections 32, 33 and 58)
- Field surveys to detect fish or mussel SAR including any monitoring programs for SAR. Fish sampling and mussel relocation protocols are available at:  
Fish: [www.dfo-mpo.gc.ca/CSAS/Csas/Publications/ResDocs-DocRech/2008/2008\\_026\\_e.htm](http://www.dfo-mpo.gc.ca/CSAS/Csas/Publications/ResDocs-DocRech/2008/2008_026_e.htm)  
Mussels: [www.dfo-mpo.gc.ca/Library/332071.pdf](http://www.dfo-mpo.gc.ca/Library/332071.pdf)
- SAR mussel relocations (i.e., mitigation strategy)
- Fish salvage operations where there is potential harm to a SAR

If you suspect that a SAR permit may be needed for your project, contact your DFO designated biologist or refer to the SARA registry at [www.sararegistry.gc.ca](http://www.sararegistry.gc.ca) for more information on the permitting process. Please note that additional permits may be required under Ontario's Endangered Species Act 2007; additional time may be required for the permitting process, please contact your local OMNR office for more information.

For more information on SAR in Canada, refer to the Government of Canada's COSEWIC website at [www.cosewic.gc.ca](http://www.cosewic.gc.ca), or contact your local DFO biologist.

An atlas of maps containing colour-coded segments are available at the following website (by Conservation Authority) [www.conservation-ontario.on.ca/projects/DFO.html](http://www.conservation-ontario.on.ca/projects/DFO.html). GIS shapefiles (ESRI ® format) containing the colour-coded segments are also included in the compressed (zipped) package, please read the metadata for more info.

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## References

Metcalf-Smith, J.L., S.K. Staton, G.L. Mackie, and N.M. Lane, 1998. *Changes in the Biodiversity of Freshwater Mussels in the Canadian Waters of the Lower Great Lakes Drainage Basin Over the Past 140 Years*. J. Great Lakes Res. 24(4):845-858.

# OGLA Aquatic Species at Risk - Quick Reference

This file is updated on a regular basis - please contact Dave Balint (DFO) for most up-to-date version; valid from January 2011 until January 2012

**Table 1: Ontario Schedule 1 Aquatic Species At Risk for 2011/2012**

Scientific Name	Common Name	COSEWIC Status*	ESA	DFO - OGLA District Office							
				London	Burlington	Peterborough	Prescott	Parry Sound	SSM	Sudbury	Thunder Bay
<b>FISHES</b>											
1 <i>Erimystax x-punctatus</i>	Gravel Chub	EXP	EXP	y							
2 <i>Polyodon spathula</i>	Paddlefish	EXP	EXP								
3 <i>Salvelinus fontinalis timagamiensis</i>	Aurora Trout	END	END							y	
4 <i>Notropis anogenus</i>	Pugnose Shiner	END	END	y	y		y				
5 <i>Noturus stigmosus</i>	Northern Madtom	END	END	y							
6 <i>Coregonus reighardi</i>	Shortnose Cisco	END	END		y						y
7 <i>Ammocrypta pellucida</i>	Eastern Sand Darter	THR	THR	y	y						
8 <i>Erimyzon sucetta</i>	Lake Chubsucker	THR	THR	y	y						
9 <i>Lepisosteus oculatus</i>	Spotted Gar	THR	THR	y			y				
10 <i>Percina copelandi</i>	Channel Darter	THR	THR	y		y	y				
11 <i>Esox americanus vermiculatus</i>	Grass Pickerel	SC	SC	y	y	y	y	y			
12 <i>Fundulus notatus</i>	Blackstripe Topminnow	SC	SC	y							
13 <i>Ichthyomyzon fossor</i>	Northern Brook Lamprey	SC	SC	y	y		y	y	y	y	y
14 <i>Lepomis gulosus</i>	Warmouth	SC	SC	y							
15 <i>Macrhybopsis storeriana</i>	Silver Chub	SC	SC	y							
16 <i>Minytrema melanops</i>	Spotted Sucker	SC	SC	y							
17 <i>Notropis bifrenatus</i>	Bridle Shiner	SC	SC				y				
18 <i>Opsopoeodus emiliae</i>	Pugnose Minnow	SC	SC	y							
19 <i>Coregonus kiyi</i>	Kiyi (Upper Great Lakes)	SC	SC		y	y	y		y		
20 <i>Myoxocephalus thompsonii</i>	Deepwater Sculpin	SC	-	y	y		y	y		y	y
21 <i>Moxostoma carinatum</i>	River Redhorse	SC	SC	y	y	y	y				
<b>MUSSELS</b>											
1 <i>Epioblasma torulosa rangiana</i>	Northern Riffleshell	END	END	y							
2 <i>Epioblasma triquetra</i>	Snuffbox	END	END	y	y						
3 <i>Lampsilis fasciola</i>	Wavyrayed Lampmussel	END	END	y	y						
4 <i>Obovaria subrotunda</i>	Round Hickorynut	END	END	y	y						
5 <i>Pleurobema sintoxia</i>	Round Pigtoe	END	END	y	y						
6 <i>Ptychobranchus fasciolaris</i>	Kidneyshell	END	END	y	y						
7 <i>Simpsonaias ambigua</i>	Salamander (Mudpuppy) Mussel	END	END	y							
8 <i>Villosa fabalis</i>	Rayed Bean	END	END	y							
<b>Total Species at Risk per district</b>				<b>24</b>	<b>14</b>	<b>4</b>	<b>9</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>3</b>



Species with Proposed or final Critical Habitat

\*COSEWIC releases updated Status Reports May of each year

NOTE:  
Y= species present in the

Version date: April 11, 2011

**SARA points to consider during a Fisheries Act review**

Extinct = EXT, Extirpated = EXP, Endangered = END, Threatened = THR, Special Concern = SC

- The SARA prohibitions relating to aquatic species at risk (SAR) are:
  - Section 32 - prohibits the killing, harming, harassing, possessing, buying, or selling of EXP, END, or THR Schedule 1 species.
  - Section 33 - prohibits the damage or destruction of residences of EXP, END, or THR Schedule 1 species.
  - Section 58 - prohibits the destruction of critical habitat of any EXP, END, or THR Schedule 1 species.
- The prohibitions apply to **extirpated species** when there is a recommendation in an associated recovery strategy for the reintroduction of the species back into Canada.
- SARA prohibitions (Sections 32, 33, & 58) apply only to Schedule 1 EXP, END, and THR species, they do not apply to SC species.
- Only after Critical Habitat has been identified in a Recovery Strategy should critical habitat be a concern for Habitat Practitioner during a project review. Recovery Strategies are developed and when complete they can be found at [www.sararegistry.gc.ca](http://www.sararegistry.gc.ca)
- Currently, most accepted mitigation methodologies to prevent the killing or harming of fishes should satisfy the needs of Section 32 in SARA. Further mitigation measures are currently being developed and approved regarding mussels.
- SARA template letters are available in PATH.
- If the impacts to fish habitat can be mitigated through a letter of advice or the activity is covered off by the conditions of an Operational Statement, then issues regarding the SARA prohibitions are likely to be mitigated by that same advice.
- Level 1 and 2 Conservation Authorities (CA's) have no obligations under SARA with respect to our partnership agreements.
- Level 3 CA's should notify DFO early in the proposal review process if a *Fisheries Act* authorization or a review under SARA is needed.
- If issuing a Fisheries Act authorization, if the in-water work timelines and/or the project review extends into the future, consult Table 2 on this document and check on the SARA registry for species that may have been added to Schedule 1 during that time.
- If issuing a *Fisheries Act* authorization and the Canadian Environmental Assessment Act (CEAA) is triggered, the CEAA review must consider the impacts and adverse effects of the project on all listed wildlife species and their critical habitat. This includes all Schedule 1 EXP, END, THR, and SC species. If the project is carried out, measures that are consistent with any applicable Recovery Strategy or Action Plan must be carried out to avoid or to lessen those effects (i.e. mitigation) and monitor those effects (see section 79 of SARA).
- Environment Canada (EC) is the SARA lead for non-aquatic SAR, and as such, has their own notification and review process in Ontario for areas concerning them. In Ontario, non-aquatic SAR include all wildlife species with the exception of freshwater fish and mussels as defined in the *Fisheries Act*.
- If you become aware of a non-aquatic SAR in the proposed development area, there are two potential courses of action: 1) if DFO is issuing a letter of advice or the project falls under the guidelines of the Operational Statement, suggest the proponent notify EC, or 2) if DFO is issuing a *Fisheries Act* authorization, send a notification letter to Environment Canada as required under CEAA.
- Issuing SARA permits as a component of a *Fisheries Act* authorization involves meeting a series of strict preconditions as laid out in Section 73 of SARA. Additional mitigation measures, if needed, should be incorporated into a Fisheries Act authorization to comply with SARA prohibitions Section 32, 33, and 58.
- Various tools to facilitate the implementation of SARA are available, such as the Ontario Aquatic Map Explorer, SAR Fact Sheets, the Baitfish Primer, and various watershed-based posters.
- Additional information on SARA can be found at: [www.dfo-mpo.gc.ca/species-especes](http://www.dfo-mpo.gc.ca/species-especes); [www.cosewic.gc.ca](http://www.cosewic.gc.ca); [www.speciesatrisk.gc.ca](http://www.speciesatrisk.gc.ca); [www.on.ec.gc.ca/speciesatrisk](http://www.on.ec.gc.ca/speciesatrisk)
- There are opportunities for members of the public, industry and NGO's to become activity involved in the protection of species at risk, one way is to direct them towards the Habitat Stewardship Program: [www.cws-scf.ec.gc.ca/hsp-pih](http://www.cws-scf.ec.gc.ca/hsp-pih)
- Discuss any questions, comments, or concerns regarding aquatic species at risk in Ontario with the OGLA SARA Coordinator.

\*\*Please Note: if you have any questions regarding this information please contact your Designated Biologist (CAs and MTO) or your local DFO Office

**Table 2: Earliest anticipated Ontario Schedule 1 Aquatic Species At Risk for 2011-2012**

Scientific Name	Common Name	COSEWIC Status*	ESA	DFO - OGLA District Office							
				London	Burlington	Peterborough	Prescott	Parry Sound	SSM	Sudbury	Thunder Bay
<b>FISHES</b>											
1 <i>Acipenser fulvescens</i>	Lake Sturgeon (Du 4,5)	END	THR								y
2 <i>Acipenser fulvescens</i>	Lake Sturgeon (Du 8)	THR	THR	y	y	y	y	y	y	y	y
3 <i>Clinostomus elongatus</i>	Redside Dace	END	END	y	y	y		y			
4 <i>Coregonus zenithicus</i>	Shortjaw Cisco	THR	THR	y	y			y	y		y
5 <i>Acipenser fulvescens</i>	Lake Sturgeon (Du 6)	SC	THR								y
6 <i>Acipenser fulvescens</i>	Lake Sturgeon (Du 7)	SC	SC						y	y	y
7 <i>Anquilla rostrata</i>	American Eel	SC	END	y	y	y	y	y			y
<b>MUSSELS</b>											
1 <i>Ligumia nasuta</i>	Eastern Pondmussel	END	END	y	y		y				
2 <i>Villosa iris</i>	Rainbow	END	THR	y	y	y	y				
3 <i>Quadrula quadrula</i>	Mapleleaf	THR	THR	y	y						
4 <i>Truncilla domaciformis</i>	Fawnsfoot	END	END	y	y						
<b>Total Species at Risk per district</b>				<b>8</b>	<b>8</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>4</b>	<b>2</b>	<b>6</b>