

# 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 v4.0

v4.0 maps released June 2010, Document updated May 2010

Note: New information contained in this release:

1. Delineated areas for 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 June, 2011.**

**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 320,000 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.

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. (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 7 fishes in Ontario. 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 and often requiring 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, First Nation land claims 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. 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. 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. 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. 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; 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.