

Reference Guide for Fish and Mussel Species at Risk Distribution Maps

A Referral Review Tool for Projects Affecting Aquatic Species at Risk

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2007

Maps and document valid until June, 2008.

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 map. 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 400,000 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 8200 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 new 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 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. It is important to note that not all ALIS segments have been sampled for fishes and mussels, nor have all the sampled segments been surveyed recently or using 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.

Map Interpretation – Referral process for projects proposed within 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 Species at Risk found within the boundaries of the Conservation Authority watershed. The map is made up of several base layers, including railways, major highways and roads, water bodies, wetlands, 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 species at risk distributions are colour-coded red, orange or purple on the maps.

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 *Species at Risk Act* (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. For more information on the SARA prohibitions and other sections of the Act, visit 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 in 2007-2009. 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 in 2007-2009. 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.

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 the 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 the 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 has not yet been entered into the mapping tool database confirms SAR were caught in the stream segment.

SAR Permits

SAR permits may be required when Extirpated, Endangered or Threatened fishes or mussels on Schedule 1 of the 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
- 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 for more information on the permitting process.

For more information on Species at Risk in Canada, refer to the Government of Canada's COSEWIC website at www.cosewic.gc.ca, or contact your local DFO biologist.

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

valid from June 2007 until June 2008

Table 1: Ontario Schedule 1 Aquatic Species At Risk for 2007-2008

Scientific Name	Common Name	COSEWIC Status*	SARA Schedule	DFO - OGLA District Office							
				London	Burlington	Thunder Bay	Parry Sound	Peterborough	Prescott	SSM	Sudbury
FISHES											
1 <i>Erimystax x-punctatus</i>	gravel chub	EXT	1	Y							
2 <i>Polyodon spathula</i>	paddlefish	EXT	1								
3 <i>Salvelinus fontinalis timagamiensis</i>	Aurora trout	END	1								Y
4 <i>Notropis anogenus</i>	pugnose shiner	END	1	Y	Y				Y		
5 <i>Noturus stigmosus</i>	northern madtom	END	1	Y							
6 <i>Ammocrypta pellucida</i>	eastern sand darter	THR	1	Y	Y						
7 <i>Erimyzon sucetta</i>	lake chubsucker	THR	1	Y	Y						
8 <i>Lepisosteus oculatus</i>	spotted gar	THR	1	Y					Y		
9 <i>Percina copelandi</i>	channel darter	THR	1	Y				Y	Y		
10 <i>Esox americanus vermiculatus</i>	grass pickerel	SC	1	Y	Y	Y	Y	Y	Y		
11 <i>Fundulus notatus</i>	blackstripe topminnow	SC	1	Y							
12 <i>Lepomis gulosus</i>	warmouth	SC	1	Y							
13 <i>Macrhybopsis storeriana</i>	silver chub	SC	1	Y							
14 <i>Minytrema melanops</i>	spotted sucker	SC	1	Y							
15 <i>Notropis bifrenatus</i>	bridle shiner	SC	1						Y		
16 <i>Opsopoeodus emiliae</i>	pugnose minnow	SC	1	Y							
MUSSELS											
1 <i>Epioblasma torulosa rangiana</i>	northern riffleshell	END	1	Y							
2 <i>Epioblasma triquetra</i>	snuffbox	END	1	Y							
3 <i>Lampsilis fasciola</i>	wavyrayed lampmussel	END	1	Y	Y						
4 <i>Obovaria subrotunda</i>	round hickorynut	END	1	Y							
5 <i>Pleurobema sintoxia</i>	round pigtoe	END	1	Y	Y						
6 <i>Ptychobranchius fasciolaris</i>	kidneyshell	END	1	Y	Y						
7 <i>Simpsonaias ambigua</i>	mudpuppy mussel	END	1	Y							
8 <i>Villosa fabalis</i>	rayed bean	END	1	Y							
Total Species at Risk per district				21	7	1	1	2	5	0	1

Table 2: Earliest anticipated Ontario Schedule 1 Aquatic Species At Risk for 2007-2008

Scientific Name	Common Name	COSEWIC Status*	Anticipated Schedule 1	DFO - OGLA District Office							
				London	Burlington	Thunder Bay	Parry Sound	Peterborough	Prescott	SSM	Sudbury
FISHES											
<i>Acipenser fulvescens</i>	lake sturgeon (DU 5, 8)	END/THR	2008/9	Y	Y	Y	Y	Y	Y	Y	Y
<i>Clinostomus elongatus</i>	redside dace	END	2008/9	Y	Y			Y		Y	
<i>Coregonus reighardi</i>	shortnose cisco	END	2007		Y	Y			Y		
<i>Coregonus nigripinnis</i>	blackfin cisco	THR	2008/9			Y					Y
<i>Coregonus zenithicus</i>	shortjaw cisco	THR	2008/9	Y		Y	Y	Y		Y	Y
<i>Moxostoma duquesnei</i>	black redhorse	THR	2007	Y	Y						
<i>Salmo salar (Lake Ontario population)</i>	Atlantic salmon	EXT	2007/8		Y			Y	Y		Y
<i>Acipenser fulvescens</i>	lake sturgeon (DU 4, 6, 7)	SC	2008/9			Y				Y	Y
<i>Anquilla rostrata</i>	American eel	SC	2007/8	Y	Y	Y	Y	Y	Y	Y	Y
<i>Coregonus kiyi</i>	kiyi	SC	2007		Y	Y	Y	Y	Y	Y	Y
<i>Ichthyomyzon fossor</i>	northern brook lamprey	SC	2008/9	Y	Y	Y	Y		Y	Y	Y
<i>Moxostoma carinatum</i>	river redhorse	SC	2007	Y	Y			Y	Y		
<i>Myoxocephalus thompsonii</i>	deepwater sculpin	SC	2007	Y	Y	Y	Y	Y	Y		Y
MUSSELS											
<i>Ligumia nasuta</i>	eastern pondmussel	END	2008/9	Y	Y				Y		
<i>Villosa iris</i>	rainbow	END	2007/8	Y	Y			Y	Y		
<i>Quadrula quadrula</i>	mapleleaf	THR	2007/8	Y	Y						
Total Species at Risk per district				11	13	9	6	9	10	7	8

*COSEWIC releases updated Status Reports May of each year
 NOTE: Y= species present in the district, NR = Not Ranked

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SARA Tips while reviewing under the habitat sections of the Fisheries Act

- The SARA prohibitions that DFO - OGLA are concerned about are:
 - Section 32 which prohibits the killing, harming, harassing, possessing buying or selling of an Extirpated, Endangered or Threatened Schedule 1 species.
 - Section 33 which prohibits the damage or destruction of residences of Extirpated, Endangered or Threatened Schedule 1 species.
 - Section 58 which prohibits the destruction of critical habitat of any Extirpated, Endangered or Threatened Schedule 1 species.
- EXT = Extirpated, END = Endangered, THR = Threatened, SC= Special concern.
- SARA prohibitions (Sections 32, 33 & 58) apply only to Schedule 1 EXT, END and THR species, not SC species.
- Concern over *extirpated species* should only occur when there is a recommendation for the reintroduction of the species into Canada via a SARA compliant Recovery Strategy, which is yet to happen.
- Within a SARA review, concern over *critical habitat* should only occur when a SARA compliant Recovery Strategy or Action Plan clearly defines the critical habitat of the species in question. Recovery Strategies are being developed and when completed are available at www.sararegistry.gc.ca.
- To date, most typically accepted methodologies to mitigate the killing or harming of fishes should satisfy the needs of Section 32 of 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, then any issues regarding the SARA prohibitions should also have been mitigated by that same advice.
- Level one and two Conservation Authorities (CA's) have no obligations under SARA with respect to our partnership agreements.
- Level three 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 where the in-water work timelines extend into the following year, consider aquatic SAR in Table 2 as well. The SARA prohibitions will apply to Table 2 species if successfully added to Schedule 1.
- If issuing a *Fisheries Act* authorization where the in-water work timelines extend beyond the current date, consult the Long Term Recovery Planning Framework table for the legal listing decision deadline dates in order to determine potential species that may be added to Schedule 1. This framework can be located at http://oceans.nrc.dfo-mpo.gc.ca/habitat/sara/orient_e.asp
- If issuing a *Fisheries Act* authorization and the *Canadian Environmental Assessment Act* (CEAA) is triggered, the CEAA review must consider the impacts of the project on all listed wildlife species and their critical habitat. This includes all Schedule 1 EXT, END, THR and SC species. During the CEAA review of a project, all adverse effects of the project on a listed species and its critical habitat must be identified. If the project is carried out, measures must be taken that are consistent with any applicable Recovery Strategy or Action Plan to avoid or lessen those effects (mitigation measures) and to monitor those effects (See section 79 of SARA).
- Environment Canada is the SARA lead for non-aquatic SAR, and as such, has their own notification and review process in Ontario for areas that concern them. In Ontario, non-aquatic SAR include all wildlife species with the exception of freshwater fish and mussels as defined under the *Fisheries Act*.
- If you become aware of a non-aquatic SAR in the proposal site area, there are two options, 1] suggest that the proponent contact Environment Canada if DFO is issuing a letter of advice, or 2] send a notification letter to Environment Canada as required under a CEAA review if DFO is issuing a *Fisheries Act* authorization.
- Issuing SARA permits as a component of a *Fisheries Act* authorization involves a series of strict preconditions as laid out in section 73 of SARA which must be met. Additional mitigation measures, if needed, should be incorporated into a *Fisheries Act* authorization in order to be in compliance with the SARA prohibition Sections 32, 33 and 58.
- 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 SAR posters.
- Further information on SARA can be found at: http://oceans.nrc.dfo-mpo.gc.ca/habitat/sara/home_e.asp, www.sararegistry.gc.ca/, www.speciesatrisk.gc.ca/, www.on.ec.gc.ca/speciesatrisk.
- Discuss any questions/comments/concerns regarding aquatic SAR 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