COSEWIC
Status Appraisal Summary

on the

Salamander Mussel
Simpsonaias ambigua

in Canada

ENDANGERED
2011

COSEWIC
Committee on the Status
of Endangered Wildlife
in Canada

COSEPAC
Comité sur la situation
des espèces en péril
au Canada

COSEWIC status appraisal summaries are working documents used in assigning the status of wildlife species suspected of being at risk in Canada. This document may be cited as follows:

COSEWIC. 2011. COSEWIC status appraisal summary on the Salamander Mussel *Simpsonaias ambigua* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xv pp. (www.sararegistry.gc.ca/status/status_e.cfm).

Production note:
COSEWIC would like to acknowledge Todd J. Morris for writing the status appraisal summary on the Salamander Mussel, *Simpsonaias ambigua*, in Canada. This status appraisal summary was overseen and edited by Dwayne Lepitzki, Co-chair of the COSEWIC Molluscs Specialist Subcommittee. Other names previously used by COSEWIC or synonyms: Mudpuppy Mussel

For additional copies contact:

COSEWIC Secretariat
c/o Canadian Wildlife Service
Environment Canada
Ottawa, ON
K1A 0H3

Tel.: 819-953-3215
Fax: 819-994-3684
E-mail: COSEWIC/COSEPAC@ec.gc.ca
http://www.cosewic.gc.ca

Également disponible en français sous le titre Sommaire du statut de l'espèce du COSEPAC sur la mulette du Necture (*Simpsonaias ambigua*) au Canada.

Catalogue No. CW69-14/2-18-2011E-PDF
ISBN 978-1-100-19152-2

COSEWIC
Assessment Summary

Assessment Summary – May 2011

Common name
Salamander Mussel

Scientific name
Simpsonaias ambigua

Status
Endangered

Reason for designation
This freshwater mussel was reported from two rivers in southern Ontario in 1998. Surveys since the original COSEWIC assessment (2001) have found live individuals still along the Sydenham River. Despite extensive additional sampling, the half–shell found in 1998 is the only evidence of this species along the Thames River. Habitat quality continues to decline from intense agriculture, urban development, and pollution from point and non–point sources. In addition, this mussel only uses the Mudpuppy, a salamander, as its host; threats to the salamander are also threats to the mussel.

Occurrence
Ontario

Status history
Designated Endangered in May 2001. Status re-examined and confirmed in May 2011.

COSEWIC
Status Appraisal Summary

Simpsonaias ambigua
Salamander Mussel — Mulette du Necture
Jurisdictions: ON

Current COSEWIC Assessment:

Status category:
☐ XT ☒ E ☐ T ☐ SC

Date of last assessment: May 2001

Reason for designation at last assessment:
Declines in extent of occurrence and area of occupancy; total population extremely fragmented, all 3 extant sites in one river (Sydenham River); entire population could be eliminated by a single upstream catastrophic event. Habitats already exposed to high silt loading from agricultural practices, pollution from point and non-point sources; mudpuppy mussel* is host specific, using only the mudpuppy as host. Any threats to mudpuppy are also threats to mussels.

[*Note: there has been a change in the common name of this mussel from Mudpuppy Mussel to Salamander Mussel]

New reason for designation (only if different from above):
This freshwater mussel was reported from two rivers in southern Ontario in 1998. Surveys since the original COSEWIC assessment (2001) have found live individuals still along the Sydenham River. Despite extensive additional sampling, the half-shell found in 1998 is the only evidence of this species along the Thames River. Habitat quality continues to decline from intense agriculture, urban development, and pollution from point and non-point sources. In addition, this mussel only uses the Mudpuppy, a salamander as its host; threats to the host are also threats to the mussel.

Criteria applied at last assessment:
Criteria applied at last assessment not specified but would most likely have been B(1)(2)c with B meaning small distribution and decline or fluctuation with the EO or AO below thresholds of < 5,000 km^2 or < 500 km^2, respectively, (1) meaning either severely fragmented or found at ≤ 5 locations and (2)c meaning a continuing decline at any rate for area, extent, or quality of habitat.

If earlier version of criteria was applied1, provide correspondence to current criteria:
The current equivalent would be B1ab(iii) + 2ab(iii).

If different criteria are proposed based on new information, provide explanation:
B1ab(iii) + 2ab(iii) is still valid because the species is found at ≤ 5 locations.

If application of current specific criteria is not possible, provide explanation:
Application of current specific criteria is possible.

[1] An earlier version of the quantitative criteria was used by COSEWIC from October 1999 to May 2001 and is available on the COSEWIC website: . http://www.cosewic.gc.ca/eng/sct0/original_criteria_e.cfm

Recommendation: Update to the status report NOT required (wildlife species' status category remains unchanged)

Reason:
☒sufficient information to conclude there has been no change in status category
☒not enough additional information available to warrant a fully updated status report

Evidence (indicate as applicable):

Wildlife species:

Change in eligibility, taxonomy or designatable units: yes ☐ no ☒

Explanation:

The accepted English common name for this species is Salamander Mussel (Turgeon *et al.* 1998; ITIS 2010) not Mudpuppy Mussel.

Range:

Change in Extent of Occurrence (EO): yes ☐ no ☒ unk ☐
Change in Area of Occupancy (AO) : yes ☐ no ☒ unk ☐
Change in number of known or inferred current locations: yes ☐ no ☒ unk ☐
Significant new survey information yes ☒ no ☐

Explanation:

Since the last report (COSEWIC 2001), extensive quantitative sampling with quadrat excavations has occurred in the Sydenham River throughout the range of *S. ambigua* (15 sites: Metcalfe-Smith *et al*. 2007). Live animals (11 in total) have been found at four sites in the Sydenham River including the three sites reported in the original COSEWIC status report. The only new collection site falls between two sites where live animals were reported earlier. In addition to the quantitative sampling reported above, informal sampling in this stretch of the Sydenham River associated with graduate theses and the Ontario Freshwater Mussel Identification Workshop has produced additional live animals through targeted sampling (1 live animal near Croton and 16 at a site near Florence).

Despite extensive additional sampling in the Thames River (timed searches at 37 sites and quadrat excavations at 5 sites) no further evidence of a Thames River population has been found. These efforts should be interpreted with caution as the methods for general surveys of unionids do not specifically target *Simpsonaias* habitat (i.e., underneath large rocks). However, although probably underestimating the true distribution, these general surveys (e.g., in the Sydenham River) have typically produced some evidence (shells and a few live animals) of the species when present.

EO: At the last assessment, *Simpsonaias ambigua* was known live only from three sites on the Sydenham River. An additional four sites (3 beyond the range of live animals) produced fresh shells likely indicative of extant individuals. From these data the original report authors estimated an EO of 5 km^2 (assuming an occupied reach of 50 km covering all collections of live animals and fresh shells) but the methodology was not stated. A single fresh shell had also been reported from the Thames River in London although the authors appear to have not included this record in either the EO or AO calculations in the original report.

The current EO is 93 km^2 and reflects the 50 km stretch of the Sydenham River cited in the original report. Following the methods of the original report, the Thames River record has not been included in this estimate. If the Thames record is included the EO increases to 357 km^2.

Index of AO (IAO): IAO has been calculated applying a grid size of both 1 km x 1 km and 2 km x 2 km. Using these methods the IAO is 69 km^2 (1 km method) or 136 km^2 (2 km method).

Biological AO (AO): The original report indicated an AO of 1.25 km^2 (50 km length of occupied reach x 0.025 km width).

The current biological AO for the Sydenham River remains at 1.25 km^2. It is difficult to determine an appropriate AO for the Thames River record as it represents a single point sample although the contribution to the overall AO would likely be very small.

Locations: At most there could be two current locations in Canada (one location for each river based on threats) although only one (Sydenham River) was considered in the original report (Figure 1). The Thames River location is based entirely upon the single valve collected in 1998.

Population Information:

Change in number of mature individuals:	yes ☐ no ☐ unk ☒
Change in total population trend:	yes ☐ no ☐ unk ☒
Change in severity of population fragmentation:	yes ☐ no ☒ unk ☐
Change in trend in area and/or quality of habitat:	yes ☐ no ☒ unk ☐
Significant new survey information	yes ☐ no ☒

Explanation:

Number of mature individuals: Only 59 live animals have ever been sampled in ON with 34 of these from a site at Florence on the Sydenham River. Metcalfe-Smith *et al*. (2007) estimate an average density for the Sydenham River population of 0.035 animals/m^2 which when combined with the AO (1.25 km^2) yields a population estimate of approximately 45,000 individuals. However, given the extremely low sample sizes on which this estimate is based (only 11 animals in total) little confidence can be attributed beyond a coarse estimate of population size. No estimate of population size was provided in the initial report.

Population trend: Given the lack of repeated, standardized sampling it is not possible to estimate a population trend or to determine if there are extreme fluctuations in the number of mature individuals.

Fragmentation: Although the original report considered the population to be severely fragmented this would not be supported by the current application of this term. The total population can not be severely fragmented because the only location where multiple and live animals have been observed is the Sydenham River so more than 50% of the individuals or occupied habitat is not in non-viable habitat patches.

Habitat trends: The original report (COSEWIC 2001) indicated habitat threats as the major threats for this species, and recent COSEWIC assessments for other unionids in the Sydenham River (COSEWIC 2010a, b) have indicated continuing declines inferred in habitat quality for this river. There is nothing to indicate this habitat trend is different for the Salamander Mussel.

New information: Although substantial effort has been expended since the last assessment (discussed above) very few individuals have been located resulting in little interpretive power.

Threats:

Change in nature and/or severity of threats: yes ☐ no ☒ unk ☐

Explanation:

No additional data since previous assessment. Two recent COSEWIC assessments (COSEWIC 2010a,b) indicate that freshwater mussel habitat in the Sydenham River, an area of intensive agriculture and urban development, is subject to declining quality from siltation and pollution but there is no evidence that the magnitude or severity of this threat has changed since the original assessment.

The Salamander Mussel is unique in that it uses an amphibian, the Mudpuppy (*Necturus maculosus*), as a host while all other freshwater mussels use fishes. Threats to the host are also threats to the mussel. Although the Mudpuppy salamander has been assessed as Not at Risk by COSEWIC (2000) over its entire range in Canada which includes southern Quebec, Ontario, and Manitoba, significant limiting factors include habitat loss from severe siltation and environmental contamination, particularly from lampricides. There are only five records of the Mudpuppy salamander from the Sydenham River (Gendron 2000), and because there have not been any systematic surveys, population levels of the Mudpuppy in the Sydenham River are uncertain (COSEWIC 2001).

Protection:

Change in effective protection: yes ☒ no ☐

Explanation:

As of June 2003, *S. ambigua* is listed as Endangered on Schedule 1 of the Canadian *Species at Risk Act* and as such it is currently illegal to kill, harm, harass, capture or take individuals. SARA also provides protection for the residence and critical habitat of listed species however, at this time, neither a residence nor critical habitat have yet been identified for this species (Morris and Burridge 2006).

Effective June 2008, *S. ambigua* is protected under the Ontario *Endangered Species Act*. Under the ESA individuals are protected from harm and there is immediate protection provided for the species' general habitat based on the definition in the Act which will be further refined once a specific habitat regulation is developed.

Rescue Effect:

Evidence of rescue effect: yes ☐ no ☒

Explanation:

No additional data since previous assessment.

Quantitative Analysis:

Change in estimated probability of extirpation: yes ☐ no ☐ unk ☒

Details:

No additional data since previous assessment.

Summary and Additional Considerations: [e.g., recovery efforts]

The Salamander Mussel is now protected under the Canadian *Species at Risk Act* as well as the Ontario *Endangered Species Act* which provide protection against harm to individuals and varying degrees of habitat protection. In addition to the protection provided under SARA and the provincial ESA, *Simpsonaias ambigua* is included in a SARA multi-species recovery strategy for five mussels (Morris and Burridge 2006) as well as the watershed recovery strategy for the Sydenham River completed under the RENEW process prior to SARA (Dextrase *et al*. 2003). These strategies outline research and monitoring; management; stewardship; and outreach priorities for the recovery of the Salamander Mussel as well as the other aquatic species addressed within. These strategies, for example, outlined the need for the quantitative monitoring network that is responsible for most of the new data on this species. In addition stewardship initiatives promoted by these strategies, including riparian planting, livestock fencing and wetland creation, have occurred throughout the Sydenham River watershed with nearly 600 projects completed over the last 7 years.

Despite extensive new survey and monitoring work throughout the known range of the Salamander Mussel, there is very little new specific information available since the last assessment. A few new individuals have been collected from the previously known occupied reach in the Sydenham. No new individuals (live or shells) have been made outside this area.

No new information is available on the Thames River location which remains represented by a single fresh valve collected in 1998.

There is no new information on Threats, Rescue Effect or Quantitative Analysis.

No Aboriginal Traditional Knowledge was available at the time this report was prepared.

List of authorities contacted to review the status appraisal and feedback:

Canadian Wildlife Service: Angela McConnell and Ken Tuininga. Canadian Wildlife Service, Environment Canada, 4905 Dufferin Street, Downsview ON M3H 5T4 , (416) 739-5715, angela.mcconnell@ec.gc.ca and ken.tuininga@ec.gc.ca. Contacted 26 April 2010 – no additional data.

Federal Biodiversity Information Partnership (chaired by Canadian Museum of Nature): Lynn Gillespie and Jennifer Doubt. Research Scientist and Chief Collection Manager – Botany, Canadian Museum of Nature, P.O. Box 3443 - Station D, Ottawa ON K1P 6P4. (613) 364-4075 and (613) 364-4076. lgillespie@mus-nature.ca and jdoubt@mus-nature.ca Contacted 26 April 2010 – redirected to Andre Martel, no additional data.

Fisheries and Oceans Canada: Simon Nadeau and Christie Whelan. Senior Advisor and Science Advisor, Fish Population Science, Fisheries and Oceans Canada. 200 Kent St. Government of Canada, Ottawa ON K1A 0E6. (613) 991-6863 and (613) 993-1809. simon.nadeau@dfo-mpo.gc.ca and christie.whelan@dfo-mpo.gc.ca. Contacted 26 April 2010 – redirected to Ray Ratynski, no additional data.

Parks Canada: Patrick Nantel and Gilles Seutin. Species Assessment Specialist Ecological Integrity Branch and Coordinator Species at Risk Program. Parks Canada, 4th Floor - 25 Eddy Street, Gatineau QC K1A 0M5. 819-953-4781 and (819) 994-3953. patrick.nantel@pc.gc.ca and gilles.seutin@pc.gc.ca. Contacted 26 April 2010 – no information.

Ontario: Alan Dextrase. Senior Species at Risk Biologist, Species at Risk Section, Fish & Wildlife Branch, Natural Resource Management Division, Ontario Ministry of Natural Resources, P.O. Box 7000, Peterborough ON K9J 8M5. (705) 755-1786. alan.dextrase@ontario.ca. Contacted 26 April 2010 – redirected to Don Sutherland, no additional data.

Ontario Natural Heritage Information Centre: Michael Oldham. Ministry of Natural Resources 300 Water Street, 2nd Floor, North Tower, Peterborough, Ontario K9J 8M5. (705) 755-2159. michael.oldham@ontario.ca. Contacted 26 April 2010 – no additional data

Mollusc SSC ATK advisors: Dan Benoit (lead), Jason Harquail, Sue Chiblow. Dan and Jason contacted by e-mail bwg@nts.net and jharquail.timber@nbapc.org. 26 April 2010. Conversations with Dan, Jason, Sue, and Dwayne Lepitzki (responsible Mollusc SSC co-chair) 2 and 3 October 2010 - No Aboriginal Traditional Knowledge was available at the time this report was prepared.

Recovery Team: Status Appraisal Summary writer is Chair of the Ontario Freshwater Mussel Recovery Team. Other members contacted 3 May 2010: Dave Zanatta (CMU), Daelyn Woolnough (CMU), Daryl McGoldrick (EC), Shawn Staton (DFO), Kelly McNichols (U of Guelph), Patty Gillis (EC). No additional data.

Molluscs SSC of COSEWIC: Draft appraisal summary reviewed and discussed at the Mollusc SSC Annual Meeting 18-19 September 2010; comments incorporated.

Wildlife Management Board: Not applicable.

Community Knowledge (CK) contacts: Not applicable.

Sources of information:

COSEWIC. 2000. (unpublished report). COSEWIC assessment and status report on the Mudpuppy *Necturus maculosus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. v + 89 pp.

COSEWIC. 2001. COSEWIC assessment and status report on the Mudpuppy Mussel *Simpsonaias ambigua* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 45 pp.

COSEWIC. 2010a. COSEWIC assessment and status report on the Northern Rifflesheell *Epioblasma torulosa rangiana* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 47 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

COSEWIC. 2010b. COSEWIC assessment and status report on the Rayed Bean *Villosa fabalis* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 40 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

Dextrase, A.J., S.K. Staton, and J.L. Metcalfe-Smith. 2003. National recovery strategy for species at risk in the Sydenham River: an ecosystem approach. National Recovery Plan No. 25. Recovery of Nationally Endangered Wildlife (RENEW). Ottawa, Ontario. 73 pp.

Gendron, A.D. 2000. (unpublished report). COSEWIC status report on the Mudpuppy *Necturus maculosus* in Canada *in* COSEWIC assessment and status report on the Mudpuppy *Necturus maculosus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. 1- 89 pp.

ITIS 2010. Integrated Taxonomic Information System. Web site: http://www.itis.gov/. [accessed April 27 2010].

Metcalfe-Smith, J.L., D.J. McGoldrick, D.T. Zanatta, and L. Grapentine. 2007. Development of a monitoring program for tracking the recovery of endangered freshwater mussels in the Sydenham River, Ontario. Environment Canada, Water Science and Technology Directorate, Burlington, Ontario. WSTD Contribution No. 07-510. 40 pp. + appendices

Morris, T.J., and M. Burridge. 2006. Recovery Strategy for the Northern Riffleshell, Snuffbox, Round Pigtoe, Mudpuppy Mussel and Rayed Bean in Canada. *In* Species at Risk Act Recovery Strategy Series. Ottawa. Fisheries and Oceans Canada. x + 76 pp.

Turgeon, D.D., J.F. Quinn, Jr., A.E. Bogan, E.V. Coan, F.G. Hochberg, W.G. Lyons, P.M. Mikkelsen, R.J. Neves, C.F.E. Roper, G. Rosenberg, B.Roth, A. Scheltema, F.G. Thompson, M. Vecchione, and J.D. Williams. 1998. Common and scientific names of aquatic invertebrates from the United States and Canada: Mollusks, 2nd edition. American Fisheries Society Special Publication 26. 526 pp.

TECHNICAL SUMMARY

Simpsonaias ambigua
Salamander Mussel Mulette du Necture
Range of occurrence in Canada (province/territory/ocean): Ontario

Demographic Information

Generation time	Probably < 5 years
Is there an inferred continuing decline in number of mature individuals?	Unknown
Estimated percent of continuing decline in total number of mature individuals within 2 generations	Not applicable (N/A)
Inferred percent increase in total number of mature individuals over the last 3 generations.	N/A
Suspected percent reduction or increase in total number of mature individuals over the next 3 generations.	N/A
Inferred percent reduction in total number of mature individuals over any 3 generations period, over a time period including both the past and the future.	N/A
Are the causes of the decline clearly reversible and understood and ceased?	N/A
Are there extreme fluctuations in number of mature individuals?	Unknown

Extent and Occupancy Information

Estimated extent of occurrence Calculated using a minimum convex polygon of sites with live and fresh shells of *S. ambigua* from 1996 to 2009. Low end of range indicative of estimate excluding the Thames location. High end includes Thames.	93 – 357 km²
Index of area of occupancy using 2 km x 2 km grids. Biological AO calculated by multiplying the length of the occupied reach in each river by the average river width for the reach and then summing across rivers	136 km² (IAO) 1.25 km² (Biological AO)
Is the total population severely fragmented?	No
Number of "locations∗" • Sydenham River • Thames River, persistence uncertain.	2 maximum
Is there an observed continuing decline in extent of occurrence?	No
Is there an observed continuing decline in index of area of occupancy?	No
Is there an observed continuing decline in number of populations?	No
Is there an observed continuing decline in number of locations?	No
Is there an inferred continuing decline in quality of habitat?	Yes
Are there extreme fluctuations in number of populations?	No
Are there extreme fluctuations in number of locations∗?	No
Are there extreme fluctuations in extent of occurrence?	No
Are there extreme fluctuations in index of area of occupancy?	No

∗ See definition of location.

Number of Mature Individuals (in each population)

Population	N Mature Individuals
Sydenham River	45,000 (crude estimate)
Thames River	unknown
Total	45,000 (crude estimate)
All values presented above are for total individuals. Numbers of mature individuals are not known but it can be assumed that virtually all individuals collected during the recent surveys were mature. Therefore these estimates likely closely approximate numbers of mature individuals.	

Quantitative Analysis

Probability of extinction in the wild	Not available

Threats (actual or imminent, to populations or habitats)

From Original Report – no new information available

- Species lives under large rocks but high silt loading from agricultural practices covers/surrounds rocks
- Dams and impoundments separate species from its host (mudpuppy)
- Pollution from point and non-point sources
- Zebra mussels, although not contributing to loss of populations to date, are a potential threat, especially if impoundments are built upstream
- Access to hosts; this mussel is host-specific, using only the mudpuppy as host. Any threats to mudpuppy are also threats to mussels.

Rescue Effect (immigration from outside Canada)

Status of outside population(s)? **Global:** G3 **USA:** N3 - Arkansas (S1), Illinois (S1), Indiana (S2), Iowa (SX), Kentucky (S2S3), Michigan (S1), Minnesota (S2), Missouri (S1), New York (SH), Ohio (S3), Pennsylvania (S1?), Tennessee (S1), West Virginia (S1), Wisconsin (S2S3)	
Is immigration known or possible?	No
Would immigrants be adapted to survive in Canada?	Yes
Is there sufficient habitat for immigrants in Canada? Suitable, unoccupied habitat still exists.	Yes
Is rescue from outside populations likely?	No

Current Status

COSEWIC: Designated Endangered in May 2001. Status re-examined and confirmed in May 2011.
Canada SARA: Endangered 2003
Ontario ESA: Endangered 2008

Status and Reasons for Designation

Status:	**Alpha-numeric code:**
Endangered	B1ab(iii) + 2ab(iii)

Reasons for designation:
This freshwater mussel was reported from two rivers in southern Ontario in 1998. Surveys since the original COSEWIC assessment (2001) have found live individuals still along the Sydenham River. Despite extensive additional sampling, the half-shell found in 1998 is the only evidence of this species along the Thames River. Habitat quality continues to decline from intense agriculture, urban development, and pollution from point and non-point sources. In addition, this mussel only uses the Mudpuppy, a salamander, as its host; threats to the salamander are also threats to the mussel.

Applicability of Criteria

Criterion A (Decline in Total Number of Mature Individuals): Not applicable. Only crude estimates of the number of mature individuals are available.
Criterion B (Small Distribution Range and Decline or Fluctuation): Both B1 and B2 are applicable as EO (357 km^2) and IAO (136 km^2) are below the thresholds for Endangered (< 5,000 km^2 and < 500 km^2, respectively). As the species is found at only 2 locations, sub-criterion “a” (no. of locations ≤ 5) is applicable. There is a continuing decline inferred in the quality of habitat so sub-criterion “b(iii)” also is applicable.
Criterion C (Small and Declining Number of Mature Individuals): Not applicable. Population trends can not be determined due to lack of repeated, standardized sampling.
Criterion D (Very Small or Restricted Total Population): Nearly meets the criteria for Threatened D2 as the species is found at fewer than 5 locations but even though it is prone to the effects of human activities (e.g., degraded water quality from agriculture, industrial, and urban activities), these activities are not occurring over a very short time frame in an uncertain future.
Criterion E (Quantitative Analysis): Not applicable. Probabilities for extinction in the wild have not been calculated.

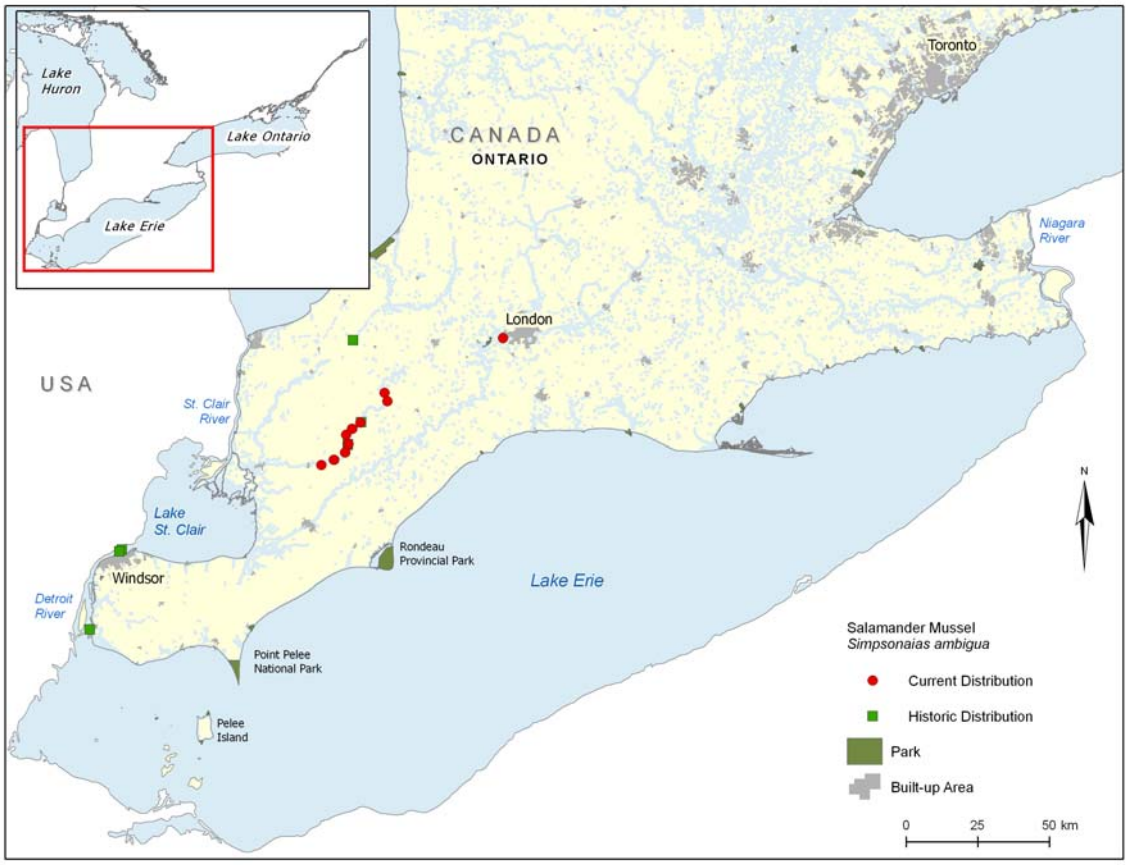

Figure 1. Distribution of *Simpsonaias ambigua* in Canada. Current records represent collections of live animals or fresh shells since 1996.

COSEWIC HISTORY

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) was created in 1977 as a result of a recommendation at the Federal-Provincial Wildlife Conference held in 1976. It arose from the need for a single, official, scientifically sound, national listing of wildlife species at risk. In 1978, COSEWIC designated its first species and produced its first list of Canadian species at risk. Species designated at meetings of the full committee are added to the list. On June 5, 2003, the *Species at Risk Act* (SARA) was proclaimed. SARA establishes COSEWIC as an advisory body ensuring that species will continue to be assessed under a rigorous and independent scientific process.

COSEWIC MANDATE

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assesses the national status of wild species, subspecies, varieties, or other designatable units that are considered to be at risk in Canada. Designations are made on native species for the following taxonomic groups: mammals, birds, reptiles, amphibians, fishes, arthropods, molluscs, vascular plants, mosses, and lichens.

COSEWIC MEMBERSHIP

COSEWIC comprises members from each provincial and territorial government wildlife agency, four federal entities (Canadian Wildlife Service, Parks Canada Agency, Department of Fisheries and Oceans, and the Federal Biodiversity Information Partnership, chaired by the Canadian Museum of Nature), three non-government science members and the co-chairs of the species specialist subcommittees and the Aboriginal Traditional Knowledge subcommittee. The Committee meets to consider status reports on candidate species.

DEFINITIONS
(2011)

Wildlife Species	A species, subspecies, variety, or geographically or genetically distinct population of animal, plant or other organism, other than a bacterium or virus, that is wild by nature and is either native to Canada or has extended its range into Canada without human intervention and has been present in Canada for at least 50 years.
Extinct (X)	A wildlife species that no longer exists.
Extirpated (XT)	A wildlife species no longer existing in the wild in Canada, but occurring elsewhere.
Endangered (E)	A wildlife species facing imminent extirpation or extinction.
Threatened (T)	A wildlife species likely to become endangered if limiting factors are not reversed.
Special Concern (SC)*	A wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.
Not at Risk (NAR)**	A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.
Data Deficient (DD)***	A category that applies when the available information is insufficient (a) to resolve a species' eligibility for assessment or (b) to permit an assessment of the species' risk of extinction.

* Formerly described as "Vulnerable" from 1990 to 1999, or "Rare" prior to 1990.

** Formerly described as "Not In Any Category", or "No Designation Required."

*** Formerly described as "Indeterminate" from 1994 to 1999 or "ISIBD" (insufficient scientific information on which to base a designation) prior to 1994. Definition of the (DD) category revised in 2006.

Environment Canada | Environnement Canada
Canadian Wildlife Service | Service canadien de la faune
Canada

The Canadian Wildlife Service, Environment Canada, provides full administrative and financial support to the COSEWIC Secretariat.