

**COSSARO Candidate Species at Risk Evaluation**  
**for**  
**Eastern Musk Turtle (*Sternotherus odoratus*)**

**Committee on the Status of Species at Risk in Ontario (COSSARO)**

**Assessed by COSSARO as SPECIAL CONCERN**

**January 2013**

**Final**

## **Tortue musquée (*Sternotherus odoratus*)**

La tortue musquée est une petite tortue d'eau douce se trouvant de la Floride à l'Ontario et au Québec et vers l'ouest jusqu'au Wisconsin et au centre du Texas. Elle secrète une odeur musquée, ce qui lui vaut parfois le nom de *stinkpot* en anglais. En Ontario, elle se trouve le long du bord sud du Bouclier canadien, sur les rives des lacs Huron, Érié et Ontario et vers le nord, jusqu'aux régions de Sudbury et de Pembroke. Comme cette espèce est crépusculaire et qu'elle quitte rarement l'eau, il est rare de l'apercevoir. Elle habite les eaux peu profondes des lacs, rivières et étangs. Bien que les tendances de population ne soient pas bien comprises, l'espèce a apparemment connu un déclin considérable dans le sud-ouest de l'Ontario. Cependant, des relevés ont récemment permis de découvrir plusieurs nouvelles populations dans l'est de l'Ontario. Parmi les menaces les plus importantes qui pèsent sur l'espèce, il y a les prises accidentelles lors des pêches commerciales (surtout avec l'utilisation de verveux) et la destruction et la perturbation de l'habitat (aménagement des rives, barrages, dragage et assèchement des terres humides). Parmi les autres causes de mortalité, il y a la pêche, la collision avec les bateaux à moteur, la mortalité sur les routes et la prédation de la part des ratons laveurs et autres prédateurs subventionnés. La tortue musquée accuse un retard de développement et a un faible taux de reproduction avec une nichée de petite taille. La tortue musquée est désignée comme étant une espèce **préoccupante**.

*Cette publication hautement spécialisée « Ontario Species at Risk evaluation report prepared under the Endangered Species Act, 2007 by the Committee on the Status of Species at Risk in Ontario », n'est disponible qu'en anglais conformément au Règlement 671/92, selon lequel il n'est pas obligatoire de la traduire en vertu de la Loi sur les services en français. Pour obtenir des renseignements en français, veuillez communiquer avec le ministère des Richesses naturelles par courriel à [recovery.planning@ontario.ca](mailto:recovery.planning@ontario.ca).*

## **PART 1**

### **CURRENT STATUS AND DISTRIBUTION**

#### **Current Designations:**

**GRANK – G5** (Assessed 23/10/1996) (NatureServe, accessed 17/01/2013)

**NRANK Canada – N3** (Assessed 10/09/2011) (NatureServe, accessed 17/01/2013)

**COSEWIC – Special Concern** (COSEWIC, November 2012)

**SARA – Threatened** (Schedule 1) (Environment Canada, accessed 17/01/2013)

**ESA 2007 – Threatened** (Ministry of Natural Resources, accessed 17/01/2013)

**SRANK – S3** (NHIC/NatureServe, accessed 17/01/2013)

#### **Distribution in Ontario:**

Eastern Musk Turtle is found in southern Ontario, particularly along southern edge of the Canadian Shield and on the shores of lakes Huron, Erie, and Ontario. It ranges north to the Sudbury and Parry Sound areas and along the Ottawa River to Pembroke.

#### **Distribution and Status Outside Ontario:**

Eastern Musk Turtle ranges from Florida, north to Ontario and Québec, and west to Wisconsin, eastern Kansas, and central Texas.

## **PART 2**

### **ELIGIBILITY FOR ONTARIO STATUS ASSESSMENT**

#### **2.1 APPLICATION OF ELIGIBILITY CRITERIA**

##### **Taxonomic Distinctness**

**Yes**

Universally accepted as a distinct species (despite a long history of nomenclature changes).

##### **Designatable Units**

Single designatable unit. Despite an apparent natural disjunction between southwestern Ontario populations and those farther north, there is no genetic or morphological data to support more than one DU (COSEWIC 2012)

##### **Native Status**

**Yes**

Ontario occurrences date back to the 1850s. There is no reason to suspect it is nonnative.

##### **Presence/Absence**

**Present**

#### **2.2 ELIGIBILITY RESULTS**

1. The putative taxon or DU is valid. **Yes**
2. The taxon or DU is native to Ontario. **Yes**
3. The taxon or DU is present in Ontario, extirpated from Ontario or extinct? **Present**

## **PART 3**

### **ONTARIO STATUS BASED ON COSSARO EVALUATION CRITERIA**

#### **3.1 APPLICATION OF PRIMARY CRITERIA (Rarity and Declines)**

##### **1. Global Rank**

###### **Not in any category**

G5. Apparently common through most of its range in the northeastern US. COSEWIC (2012).

##### **2. Global Decline**

###### **Not in any category**

No evidence of a global decline, although some local declines have apparently occurred due to habitat alteration (Ernst and Lovich 2009).

##### **3. Northeastern North America Ranks**

###### **Not in any category**

Ranked as SX, SH, S1, or S2 in 3 jurisdictions (14%) at the north (QB, VT) and west (IA) edges of its range (NatureServe 2013).

##### **4. Northeastern North America Decline**

###### **Not in any category**

See Global Decline.

##### **5. Ontario Occurrences**

###### **Not in any category**

NHIC (2013) reports 127 element occurrences in Ontario. COSEWIC (2012) recognizes over 70 recent (post 1986) "locations" in Ontario.

##### **6. Ontario Decline**

###### **Special Concern**

COSEWIC (2012) reported a suspected range reduction of about 30% based on inferred declines and lack of recent records, especially in southwestern Ontario and the Golden Horseshoe. Of the 29 census divisions in Ontario that have recorded sightings, eight (28%) have not reported sightings since 1986 (COSEWIC 2012), despite searches and a large human population as potential observers. Therefore, it is reasonable to infer that the species has been extirpated or become nonviable in these areas. Furthermore, 36 of the 109 identified 'populations' (33 %) of Eastern Musk Turtles in Ontario are based solely on sightings reported prior to 1986. The discovery of 33 new Ontario populations since about 2002 is due to increased survey effort rather than a population increase or range expansion (COSEWIC 2012). Eastern Musk Turtle may be extirpated in some areas (particularly some of the historical sites on the north shore of Lake Erie) where none have been observed since 1986 despite intensive

survey efforts.

## **7. Ontario's Conservation Responsibility**

### **Not in any category**

About 5% of the global range is in Ontario (COSEWIC 2012).

## **3.2 APPLICATION OF SECONDARY CRITERIA (Threats and Vulnerability)**

### **8. Population Sustainability**

#### **Insufficient information**

No Population Viability Analyses has been completed. Direct evidence of reproductive or recruitment failure is lacking.

### **9. Lack of Regulatory Protection for Exploited Wild Populations**

#### **Not in any category**

Eastern Musk Turtle is listed as a “specially protected reptile” under Schedule 9 of the Fish and Wildlife Conservation Act (FWCA) (Bill 139, Chapter 41, Statutes of Ontario, 1997). The FWCA prohibits this species from being hunted or trapped in Ontario. It is listed as Threatened under Ontario's Endangered Species Act, 2007.

### **10. Direct Threats**

#### **Special concern**

The most significant threats include commercial fisheries bycatch (especially hoop nets) and habitat destruction and alteration (shoreline development, dams, dredging, and draining of wetlands). Hoop nets are used for commercial fishing in some lakes and rivers in southeastern Ontario where Eastern Musk Turtles occur. Although the incidence of Eastern Musk Turtle bycatch is unknown, experimental hoop net sets caught 52 Eastern Musk Turtles in 45 trap sets in the spring (numbers were slightly lower in the fall) (Larocque 2011, Larocque *et al.* 2012). Mortality rates of up to 33% of turtles (all species combined) occurred even when nets were modified to provide an air breathing space. Quantitative data on habitat destruction and alteration are unavailable, but shoreline development, dredging, and increased recreational use are on-going threats (COSEWIC 2012). Additional sources of mortality include the illegal pet trade, angling bycatch, collisions with power boats, road kills, and subsidized predators such as Raccoons, which eat turtle eggs (COSEWIC 2012).

### **11. Specialized Life History or Habitat-use Characteristics**

#### **Special Concern**

Like other turtles, this species has low adult recruitment due to delayed sexual maturity, and high mortality of juveniles (COSEWIC 2012). As a result, even slight increases in mortality can result in population declines. On the other hand, the aquatic life style and cryptic nature may make it less vulnerable to road kill and illegal collection than other turtles. It inhabits rivers, lakes, ponds and marshes, which are common throughout the

Ontario range. Its limited reproductive capacity qualifies it for Special Concern.

### **3.3 COSSARO EVALUATION RESULTS**

#### **1. Criteria satisfied in each status category**

Number of primary and secondary criteria met in each status category:

ENDANGERED – [0/0]  
THREATENED – [0/0]  
SPECIAL CONCERN – [1/2]

Ontario-specific criteria met in each status category (primary criteria 5, 6 and 7):

ENDANGERED – [0]  
THREATENED – [0]  
SPECIAL CONCERN – [1]

#### **2. Data Deficiency**

**No.**

Adequate data on the species status and threats are available.

#### **3. Status Based on COSSARO Evaluation Criteria**

The application of COSSARO evaluation criteria suggests that **Eastern Musk Turtle** is **Special Concern** in Ontario.

## PART 4

### ONTARIO STATUS BASED ON COSEWIC EVALUATION CRITERIA

#### 4.1 APPLICATION OF COSEWIC CRITERIA

##### Regional (Ontario) COSEWIC Criteria Assessment

###### Criterion A – Decline in Total Number of Mature Individuals

###### **Insufficient information**

Not applicable. Declines have probably occurred over the past three generations (40+ years), but there are inadequate data to estimate the size of the decline precisely. However, the lack of records from 28% of census divisions in less than 2 generations suggest that the species is close to meeting threatened under this criterion.

###### Criterion B – Small Distribution Range and Decline or Fluctuation

###### **Not in any category**

Not applicable. Index of Area of Occupancy is less than 2000 km<sup>2</sup> but populations are not severely fragmented nor do they undergo extreme fluctuations.

###### Criterion C – Small and Declining Number of Mature Individuals

###### **Not in any category**

Not applicable. Population is declining but probably exceeds 10,000 mature individuals.

###### Criterion D – Very Small or Restricted Total Population

###### **Not in any category**

Population size is greater than the thresholds.

###### Criterion E – Quantitative Analysis

###### **Insufficient information**

No population viability analyses have been conducted for the species in Ontario.

###### Rescue Effect

###### **Yes.**

Possible from New York and Michigan where there are populations close to the border and the species is ranked as S5 (Secure).

###### Special Concern Status

###### **Yes**

Eastern Musk Turtle has declined substantially in the southern third of its Ontario range and there it is now restricted to a few scattered populations. This species is vulnerable to fisheries by-catch, shoreline development, and recreational boating. It has a low reproductive rate and is vulnerable to increased mortality.

## **4.2 COSEWIC EVALUATION RESULTS**

### **1. Criteria satisfied in each status category**

*Indicate whether or not a criterion is satisfied in each of the status categories.*

ENDANGERED – [no]

THREATENED – [no]

SPECIAL CONCERN – [yes]

### **2. Data Deficiency**

No

### **3. Status Based on COSEWIC Evaluation Criteria**

The application of COSEWIC evaluation criteria suggests that **Eastern Musk Turtle** is **Special Concern** in Ontario.

## **PART 5**

### **ONTARIO STATUS DETERMINATION**

#### **5.1 APPLICATION OF COSSARO AND COSEWIC CRITERIA**

COSSARO and COSEWIC criteria give the same result. **Yes**

#### **5.2 SUMMARY OF STATUS EVALUATION**

**Eastern Musk Turtle** is classified as **Special Concern** in Ontario.

Eastern Musk Turtle is a small freshwater turtle ranging from Florida to Ontario and Quebec and west to Wisconsin and central Texas. It secretes a musky odour and is sometimes known as “Stinkpot”. In Ontario, it occurs along southern edge of the Canadian Shield, on the shores of lakes Huron, Erie, and Ontario, and north to the Sudbury and Pembroke areas. The species is crepuscular and rarely leaves the water, and is therefore seldom seen. It inhabits shallow waters of lakes, rivers, and ponds. Although population trends are not well understood, the species has apparently declined substantially in southwestern Ontario. However, recent surveys have discovered several new populations in eastern Ontario. The most significant threats include commercial fisheries bycatch (especially hoop nets) and habitat destruction and alteration (shoreline development, dams, dredging, and draining of wetlands). Added sources of mortality include angling, collisions with power boats, road kills, and nest predation by Raccoons and other subsidized predators. The species has delayed maturity and a low reproductive rate with a small clutch size. Eastern Musk Turtle is classified as Special Concern.

## Information Sources

### 1. Literature Cited

COSEWIC 2012. COSEWIC Status Report on Eastern Musk Turtle *Sternotherus odoratus* in Canada.

Ernst, C.H. and J.E.Lovich 2009. Turtles of the United States and Canada. Johns Hopkins University Press.

Larocque, S.M. 2011. Occurrence and mitigation of freshwater turtle bycatch and mortality associated with inland commercial hoop net fisheries. MSc thesis, Carleton University, Ottawa.

Larocque, S.M., A.H. Colotelo, S.J. Cooke, G. Blouin-Demers, T. Haxton, and K.E. Smokorowski. 2012. Seasonal patterns in bycatch composition and mortality associated with a freshwater hoop net fishery. *Animal Conservation* 15: 53-60.

NHIC. 2012. Ontario Ministry of Natural Resources Natural Heritage Information Centre. Peterborough, ON.

## APPENDIX 1

### NORTHEASTERN NORTH AMERICA STATUS RANK AND DECLINE

	Subnational Rank	Sources	Decline	Sources
CT	S4	NatureServe	See section 3.1	NatureServe
DE	S5			
IL	S5			
IN	S4			
IA	S2			
LB	Not Present			
KY	S5			
MA	S4S5			
MB	Not Present			
MD	S5			
ME	S3			
MI	S5			
MN	Not Present			
NB	Not Present			
NF	Not Present			
NH	S5			
NJ	S5			
NS	Not Present			
NY	S5			
OH	SNR			
ON	S3			
PA	S4			
PE	Not Present			
QC	S1			
RI	S4			
VA	S5			
VT	S2			
WI	S4			
WV	S5			

Occurs as a native species in 22 of 29 northeastern jurisdictions  
 Srank or equivalent information available for 21 of 22 jurisdictions = (94%)  
 S1, S2, SH, or SX in 3 of 21 = (14%)