

**COSSARO Candidate Species at Risk Evaluation**  
**for**  
**Mottled Duskywing, *Erynnis martialis***

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

**Assessed by COSSARO as Endangered**

## Hespérie tachetée (*Erynnis martialis*)

L'hespérie tachetée fait partie de la famille de papillons des *Hesperiidae* (aussi connus sous le nom de sauteurs). Son aire de répartition se prolonge de l'Ontario et du Manitoba vers le sud jusqu'en Géorgie et l'est et le centre du Texas. Elle vit dans des endroits aux sols secs ou sablonneux, à l'habitat au stade pionnier et où elle trouve ses plantes hôtes, le céanothus à feuilles ovées (*Ceanothus herbaceus*) ou le thé du New Jersey (*Ceanothus americanus*). L'hespérie tachetée a connu des déclinés généralisés dans la majorité de son aire de répartition connue et a disparu de beaucoup de ses endroits historiquement connus dans l'ensemble de l'Ontario au cours des 20 dernières années. Bien qu'on ignore ses nombres précis, par conséquent, l'envergure de son déclin ne peut être précisément quantifié, presque tous les endroits actuels où se trouve l'espèce font face à une ou plusieurs menaces, dont l'aménagement urbain, la succession naturelle, des incendies prescrits incompatibles, l'épandage pour la suppression de la spongieuse, l'inondation et la plantation de pins gris. Ces menaces, jumelées aux récents déclinés et la perte des populations, font en sorte que l'hespérie tachetée est désignée comme espèce **en voie de disparition** en Ontario.

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## **PART 1**

### **CURRENT STATUS AND DISTRIBUTION**

#### **Current Designations:**

**GRANK – G3** (NatureServe, accessed 21/12/2012)  
**NRANK Canada –N2N3** (NHIC, accessed 23/01/2013)  
**COSEWIC – Endangered** (COSEWIC, November, 2012)  
**SARA – No Schedule, No Status** (Environment Canada, 2012)  
**ESA 2007 – No status**  
**SRANK – S2** (NHIC, accessed 21/12/2012)

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

Scattered populations occur throughout southern Ontario in alvars, prairies and sand dunes. Extant populations exist in the Burlington and Oakville metapopulations. The Pinery metapopulation is considered largely extirpated with the exception of the population at the Karner Blue Sanctuary. The population at Marmora is extant (observed in 2012; James Kamstra, pers. comm.). Isolated populations are believed extant at Camp Borden, and Alderville and possibly extant in the Stirling and Niagara areas.

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

Mottled Duskywing occupies areas in the eastern United States from Pennsylvania to Minnesota, south to Georgia and eastern and central Texas (NatureServe 2008). In Canada it extends into southeastern Manitoba and southern Ontario. It has been extirpated from southwestern Quebec (COSEWIC, 2012). It is generally rare throughout its range and has been extirpated from several states in the USA.

## PART 2

### ELIGIBILITY FOR ONTARIO STATUS ASSESSMENT

#### 2.1 APPLICATION OF ELIGIBILITY CRITERIA

##### Taxonomic Distinctness

**Yes** *Erynnis martialis* (Scudder, 1870) is the current accepted name for a valid taxon (Opler and Warren, 2002; Pelham, 2008) that has been recognized since 1870. No infraspecific taxa are recognized.

##### Designatable Units

**No. There are two DUs in Canada, but only one in Ontario.** The range of this species in Canada is disjunct, with extant populations in southern Ontario and SE Manitoba. The distances between populations in Ontario are sufficiently large that dispersal between them is deemed impossible. In addition, the species inhabits woodland clearings in Manitoba and dry savannah areas in Ontario. However, there is no evidence of more than one DU in Ontario (COSEWIC, 2012).

##### Native Status

**Yes** (Campbell et al., 1990; Holmes et al., 1992)

##### Presence/Absence

**Present.** In Ontario there are two remaining metapopulations and several remaining isolated populations (COSEWIC, 2012).

#### 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

**Threatened.** G3

##### 2. Global Decline

**Endangered.** The Mottled Duskywing's area of occupancy and numbers have decreased by 90-100% in much of the range, and global range has been reduced by at least 30%. (NatureServe 2012)

##### 3. Northeastern North America Ranks

**Endangered.** S1, S2, SH, or SX in 76% of jurisdictions in northeastern North America.

##### 4. Northeastern North America Decline

**Endangered.** This species is now rare, very rare, seriously imperiled, historic, or extirpated from about the eastern 40% of its range and is not common anywhere. Its area of occupancy and numbers have decreased by 90-100% in much of the range. Mottled Duskywing is now extirpated from Ohio and Pennsylvania and considered critically imperiled in New York.

##### 5. Ontario Occurrences

**Threatened.** Twelve element occurrences have been observed since 2000 (NHIC, accessed January, 2013), although there are likely fewer than these remaining, e.g. the Ottawa population has not been observed since 2008 despite extensive search (COSEWIC, 2012). . The most recent observations of Mottled Duskywing in Ontario have been made in a few scattered sites across the southern portion of the province, and in most instances the species was observed as a single individual or in small numbers (COSEWIC, 2012).

##### 6. Ontario Decline

**Endangered.** Extent of historical occurrence in Ontario was approximately 145,800 km<sup>2</sup>, and is currently around 24,500 km<sup>2</sup>, which is a reduction of >70%% (COSEWIC, 2012). The area of occupancy (IAO), historically 192 km<sup>2</sup> in Ontario, is now 44 km<sup>2</sup>, which is a decline of >70%.

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

**Not in any category.** A small proportion of the species' North American distribution reaches into Canada (COSEWIC, 2012). The species' Ontario range does not comprise

≥10% of the global geographic range. Although the proportion of the species' total Ontario population has not been quantified, it is very unlikely to comprise ≥10% of the global population.

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

#### **8. Population Sustainability**

**Endangered.** The extent of area of occupancy in Ontario was historically 192km<sup>2</sup>, and is currently 44km<sup>2</sup> (COSEWIC, 2012). The population is severely fragmented in Ontario and, based on known threats, there is an inferred and projected continuing decline in extent of occurrence, area of occupancy, numbers of populations, and area, extent and quality of habitat (COSEWIC, 2012). A quantitative analysis has not been performed, but experts in the regions involved suspect that the extinction risk is high in general and imminent in Ontario (COSEWIC, 2012). Furthermore, little is known about the metapopulation dynamics of this species, but the persistence of isolated populations (i.e. those that no longer exist within a metapopulation) may be unlikely. Three other butterflies that occupy similar habitat types (savannahs and prairies) are now extirpated from Ontario: Eastern Persius Duskywing (*Erynnis persius persius*), Karner Blue (*Lycaeides melissa samuelis*) and Frosted Elfin (*Callophrys irus*). Each of these species occurred in scattered, declining populations in Ontario prior to their extirpation.

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

**Not in any category.** Not protected by ESA.

#### **10. Direct Threats**

**Endangered.** Considered to be at risk of disappearance or severe decline at >75% of element occurrences in Ontario due to demonstrated threats that include habitat fragmentation; habitat loss or degradation due to development, natural succession, fire suppression and fire treatment, extensive deer browsing, and herbicide spraying; and direct impacts on population due to insecticide use, fire treatment, construction, and flooding. Of the remaining populations tentatively classified as extant, one has not been observed since 2008, and the others are exceedingly small (COSEWIC 2012).

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

**Threatened.** Mottled Duskywing is found only where its host plants, Prairie Redroot (*Ceanothus herbaceus*) or New Jersey Tea (*Ceanothus americanus*) occur. Although *Ceanothus* populations are considered secure (NHIC 2000a, 2000b), both New Jersey Tea and Prairie Redroot are declining throughout much of the eastern portion of their ranges, and populations of these larval food plants and adult nectaring plants are becoming smaller (COSEWIC, 2012). In Ontario *Ceanothus* is mostly restricted to habitats such as savannas, alvars, granite barrens, sand barrens and sand dune, that have been well documented as rare and declining (COSEWIC 2012).

### **3.3 COSSARO EVALUATION RESULTS**

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

*Number of primary and secondary criteria met in each status category.*

ENDANGERED – [4/2]  
THREATENED – [2/1]  
SPECIAL CONCERN – [0/0]

*Number of Ontario-specific criteria met in each status category.*

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

## **2. Data Deficiency**

No.

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

The application of COSSARO evaluation criteria suggests that **Mottled Duskywing** is **Endangered** 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.** Decline is expected based upon threats at almost all sites. Substantial decline in total population is expected based upon known and expected threats; however, the values for total population decline are not known with sufficient precision to warrant use of A3 even though the authorities in the field believe that the species meets predictions for this criterion.

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

**Endangered.** Small distribution and general decline in populations. Meets endangered B2ab ii, iii, iv, v because: at most IAO is 132km<sup>2</sup>, much less than the 500-km<sup>2</sup> threshold. The species meets severely fragmented (a) as it seems to be barely surviving in small isolated populations with large areas of uninhabited and largely uninhabitable land between them; the species persists in scattered metapopulations and some isolated populations that are much further apart than the species' dispersal distances, and habitat patches are smaller than would be required to support a viable population. Habitat quality is clearly declining at all Ontario sites. The Ontario locations are considered completely isolated from those in the adjacent United States. A decline is predicted in IAO, quality of habitat, number of locations and number of mature individuals. Threats and fragmentation effects are likely to be similar for any as yet undiscovered population, though the chances of any undiscovered populations being sustainable, even in the short term, is considered vanishingly small.

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

**Insufficient Information.** Total population size is small, and the number of sites it occupies is declining. Accurate population estimates are not available.

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

**Insufficient information.** Restricted Distribution. Population size unknown, though small, and number of locations >5.

###### Criterion E – Quantitative Analysis

**Insufficient Information.** Quantitative analysis not available

###### Rescue Effect

**No.** In states adjacent to the eastern DU the butterfly is severely imperiled at best



(Appendix 1). The potential 830 for rescue effect must be considered negligible for the Ontario population (COSEWIC 2012).

**Special Concern Status**

No.

**4.2 COSEWIC EVALUATION RESULTS**

**Criteria satisfied in each status category**

ENDANGERED – [yes]  
THREATENED – [no]  
SPECIAL CONCERN – [no]

**2. Data Deficiency**

**No.** Although accurate measures of population sizes are missing, it has been established that all populations are under threat. One location is predicted to become flooded within 10 years and another four are expected to experience population declines due to planting of Jack Pine over the next 10 years. All locations are at risk of Gypsy Moth control spraying of BtK, the impact of which is unpredictable (depending on control methodology) but expected to be substantial. Any currently undiscovered sites are likely to experience a similar range of threats. The quality of the habitat will decrease at all locations, and insect control methods are expected to be employed in at least some of them in the near future (COSEWIC, 2012).

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

The application of COSEWIC evaluation criteria suggests that **Mottled Duskywing** is **Endangered** 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

**Mottled Duskywing** is classified as **Endangered** in Ontario.

Mottled Duskywing (*Erynnis martialis*) is in the family of butterflies known as the skippers (Hesperiidae). Its range extends from Ontario and Manitoba, south to Georgia and eastern and central Texas. It lives in sites that contain dry or sandy soils, early successional habitat, and the presence of its host plants Prairie Redroot (*Ceanothus herbaceus*) or New Jersey Tea (*Ceanothus americanus*). The Mottled Duskywing has experienced widespread declines across much of its known range, and has disappeared from many of its historically known sites throughout Ontario over the past 20 years. Although precise numbers are unknown, and therefore the extent of the decline cannot be accurately quantified, almost all current sites are facing one or several threats, including urban development, natural succession, incompatible prescribed fires, spraying for Gypsy Moth control, flooding, and planting of Jack Pine. These threats, combined with recent declines and loss of populations, has led to the classification of the Mottled Duskywing as Endangered in Ontario.

## Information Sources

### 1. Literature Cited

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Pelham JP. 2008. A catalogue of the butterflies of the United States and Canada with a complete bibliography of the descriptive and systematic literature. Journal of Research on the Lepidoptera, vol. 40.

### 2. Community and Aboriginal Traditional Knowledge Sources.

There was no known Community or Aboriginal Traditional knowledge on this species.

### 3. Acknowledgements

## APPENDIX 1

### NORTHEASTERN NORTH AMERICA STATUS RANK AND DECLINE

|    | Subnational Rank | Sources          | Decline           |  |
|----|------------------|------------------|-------------------|--|
| CT | SX               | NatureServe 2012 |                   |  |
| DE | SH               | NatureServe 2012 | No data available |  |
| IL | S1               | NatureServe 2012 | No data available |  |
| IN | S2S3             | NatureServe 2012 | No data available |  |
| IA | S3               | NatureServe 2012 | No data available |  |
| LB | Not present      | NatureServe 2012 |                   |  |
| KY | S3               | NatureServe 2012 | No data available |  |
| MA | SX               | NatureServe 2012 |                   |  |
| MB | Not present      | NatureServe 2012 |                   |  |
| MD | SH               | NatureServe 2012 | No data available |  |
| ME | Not present      | NatureServe 2012 |                   |  |
| MI | SU               | NatureServe 2012 | No data available |  |
| MN | SU               | NatureServe 2012 | No data available |  |
| NB | Not present      | NatureServe 2012 |                   |  |
| NF | Not present      | NatureServe 2012 |                   |  |
| NH | SX               | NatureServe 2012 |                   |  |
| NJ | SX               | NatureServe 2012 |                   |  |
| NS | Not present      | NatureServe 2012 |                   |  |
| NY | S1               | NatureServe 2012 | Yes, unquantified | New York Natural Heritage Program, 2013. |
| OH | SH               | NatureServe 2012 | No data available |  |
| ON | S2               | NatureServe 2012 | No data available |  |
| PA | SH               | NatureServe 2012 | No data available |  |
| PE | Not present      | NatureServe 2012 |                   |  |
| QC | SH               | NatureServe 2012 | No data available |  |
| RI | SH               | NatureServe 2012 | No data available |  |
| VA | S1S3             | NatureServe 2012 | No data available |  |
| VT | Not present      | NatureServe 2012 |                   |  |
| WI | S2               | NatureServe 2012 | No data available |  |
| WV | S3               | NatureServe 2012 | No data available |  |

Occurs as a native species in 21 of 29 northeastern jurisdictions  
 Srank or equivalent information available for 21 of 21 jurisdictions = (100%)  
 S1, S2, SH, or SX in 16 of 21 = (76%)