

**Ontario Species at Risk Evaluation Report for  
Peregrine Falcon**

**Faucon pèlerin anatum/tundrius  
(*Falco peregrinus anatum/tundrius*)**

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

Assessed by COSSARO as Special Concern

October 2020

## Faucon pèlerin (*Falco peregrinus anatum/tundrius*)

Le faucon pèlerin est une espèce emblématique de la protection et du rétablissement des espèces en péril. Disparue biologiquement de l'Ontario à un certain moment, l'espèce a vu son statut s'améliorer grandement grâce à des activités provinciales, nationales et internationales soutenues pour son rétablissement, échelonnées sur plusieurs décennies. La population de faucon pèlerin vivant en Ontario se compose entièrement de la sous-espèce *anatum/tundrius*.

Malgré des enregistrements historiques de reproduction épars et incomplets, l'espèce était possiblement présente dans la quasi-totalité du bassin versant des Grands Lacs où elle avait accès à un habitat de nidification convenable. La population se répartit actuellement de la rivière Rainy et à l'ouest du lac Supérieur en allant vers l'est, le long du littoral nord des lacs Supérieur et Huron jusqu'à la vallée de la rivière des Outaouais, et du sud au sud-ouest de l'Ontario, sur le littoral nord du lac Ontario et à l'est de l'Ontario. L'habitat de nidification historique du centre-sud de l'Ontario, à l'est de la baie Georgienne, enregistré auparavant, reste en majeure partie inoccupé. Le faucon pèlerin niche sur les bords d'escarpement élevés du nord de l'Ontario et sur certains escarpements, mais a une prédilection pour les structures élevées érigées par l'homme, dans les centres urbains du sud de l'Ontario. La population de faucon pèlerin de l'Ontario représente une très faible proportion de la population mondiale et nationale. Malgré cette amélioration du statut, les individus matures de la population de faucon pèlerin de l'Ontario se chiffrant à moins de 1 000 répondent encore à la désignation des espèces menacées, selon le critère D. Toutefois, l'effet d'immigration est plausible puisque le statut de l'espèce s'améliore également dans toutes les provinces voisines et tous les États limitrophes. Et l'histoire récente de rétablissement de l'espèce dans la province témoigne de l'énorme potentiel de rétablissement (c.-à-d. passant d'aucun territoire occupé en 1985 à plus de 150 en 2015). Le calculateur de menaces indique aussi l'existence d'une menace inconnue mais généralement faible pesant sur l'espèce au Canada.

Le faucon pèlerin répond aux critères des espèces menacées en Ontario, en raison de sa faible population, un résultat des menaces antérieures que constituaient les pesticides. Le statut a toutefois été modifié pour passer à celui d'espèce préoccupante en raison du potentiel de l'effet d'immigration en provenance des provinces et des États des environs. Le statut de l'espèce ne concorde pas avec la désignation des espèces non en péril du COSEPAC (2018) parce que la population de l'Ontario est relativement petite et toujours en train de se rétablir, comparativement au reste du Canada.

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## Executive summary

The Peregrine Falcon (*Falco peregrinus anatum/tundrius*) is an emblematic symbol of species at risk conservation and recovery. At one time biologically extirpated in Ontario, the species' status has improved dramatically as a result of sustained provincial, national and international recovery efforts over several decades. The Peregrine Falcon occurring in Ontario was originally considered to be the American Peregrine Falcon, *Falco peregrinus anatum*, distinct from the more northerly-nesting *F. p. tundrius*. Recent genetic analysis has confirmed that the two subspecies are not genetically distinct, and the two subspecies are now considered as one entity by both COSEWIC and COSSARO.

While historical breeding records are sparse and incomplete, the species likely occurred throughout most of the Great Lakes watershed where suitable nesting habitat was available. The population is currently distributed from Rainy River and western Lake Superior eastward along the north shore of lakes Superior and Huron to the Ottawa River valley, and south to southwestern Ontario, the north shore of Lake Ontario, and eastern Ontario. Much of the former documented historical nesting habitat in southcentral Ontario east of Georgian Bay has not been recolonized. The Peregrine Falcon nests on high steep cliffs in northern Ontario, and some cliffs but mostly tall anthropogenic structures in urban centers in southern Ontario. Ontario's Peregrine Falcon population represents a very small proportion of the global and national population.

As of 2010, the Ontario population was continuing to recover and increase in the presence of ongoing and looming threats such as toxic chemicals, climate change, and severe weather events. Ontario's population has apparently continued to increase since 2010, but because Ontario did not participate in the 2015 national quinquennial survey quantitative comparisons with previous survey results cannot be made. Despite this improving population status, with fewer than 1000 mature individuals in the province Ontario's Peregrine Falcon population still meets the Threatened designation under Criterion D. However, rescue effect is likely as the species' status is also improving in all adjacent jurisdictions. and the recent past recovery of the species in the province demonstrates strong recovery potential (i.e., from no occupied territories in 1985 to over 150 in 2015). The threats calculator has also indicated that there is an unknown but low overall threat for the species in Canada.

*anatum/tundrius* Peregrine Falcon meets the criteria for Threatened in Ontario, based on its small population – a result of previous threats from pesticides. However, the status has been modified to Special Concern based on the potential for rescue effect from surrounding jurisdictions. The status of this species is not consistent with the designation of Not at Risk by COSEWIC (2018) because of Ontario's relatively small and still recovering population, compared to the rest of Canada.

# 1. Eligibility for Ontario status assessment

## 1.1. Eligibility conditions

### 1.1.1. Taxonomic distinctness

*Falco peregrinus* has been recognized as a distinct taxonomic entity for many centuries. It is most closely related to the Prairie Falcon (*F. mexicanus*). The Peregrine Falcon occurring in Ontario was originally considered the American Peregrine Falcon, *Falco peregrinus anatum*, distinct from the more northerly-nesting *F. p. tundrius*. However, recent genetic analysis has indicated that the *anatum* and *tundrius* subspecies are not genetically distinct (Brown *et al.* 2007; Johnson *et al.* 2010). COSEWIC (2017) considers the two subspecies as one entity.

### 1.1.2. Designatable units

COSEWIC (2017) recognizes two designatable units in Canada, the Pealei Peregrine Falcon (*F. p. pealei*) and the formerly recognized *anatum* and *tundrius* subspecies, *F. p. anatum/tundrius*. Only one designatable unit, *F. p. anatum/tundrius*, occurs in Ontario.

### 1.1.3. Native status

The Peregrine Falcon is native to Ontario and had some traditional, cultural significance. It first documented in western science by Louis Agassiz in 1848. Historical breeding records are rare and no doubt incomplete; a total of 48 historical (suspected + confirmed pre-population collapse, i.e., prior to 1964) cliff eyries have been documented (Ratcliff and Armstrong 2002).

### 1.1.4. Occurrence

Peregrine Falcon currently occurs in Ontario as a migrant, breeding bird and wintering bird.

## 1.2. Eligibility results

Peregrine Falcon (*Falco peregrinus*)<sup>1</sup> is eligible for status assessment in Ontario.

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<sup>1</sup> Because *F. peregrinus anatum/tundrius* is the only taxa is this species in Ontario, it is referred to in the balance of this report as Peregrine Falcon.

## 2. Background information

### 2.1. Current designations

- GRANK: G4T4 (NatureServe, 2020)
- IUCN: Least Concern (Last assessed: October 2016)
- NRANK Canada: N3N4B (NatureServe, 2020)
- COSEWIC: Not at risk (November 2017)
- SARA: Special Concern (Schedule 1)
- ESA 2007: Special Concern (evaluated by COSSARO December 2011)
- SRANK: S3B (ranked in 2009)

### 2.2. Distribution in Ontario

The Peregrine Falcon was originally sparsely distributed across the Great Lakes watershed from northwestern Ontario south to the Bruce Peninsula and Niagara Escarpment, and eastward from Georgian Bay through southcentral and eastern Ontario (Figure 1). The population is currently distributed from Rainy River and western Lake Superior eastward along the north shore of lakes Superior and Huron to the Ottawa River valley, and south to southwestern Ontario, the north shore of Lake Ontario, and eastern Ontario. Much of the area of southcentral Ontario east of Georgian Bay where many of the previously documented historical nesting sites were located has not yet been recolonized (Chikoski and Nyman 2011). Peregrine Falcons now nest on anthropogenic infrastructure (e.g. tall buildings) in urban areas of Ontario (e.g. Middlesex to Essex counties, London, Toronto, Ottawa) where they previously did not occur because of lack of natural breeding habitat, as well as an anthropogenic structure in the Rainy River District west of Lake Superior (B. Ratcliff pers. comm.). They are also reported relying on cliff faces in a limestone quarry facility in eastern Ontario.

COSEWIC (2017) noted that the number of locations is very difficult to determine for a wide-ranging subspecies such as the Peregrine Falcon, and that given the diverse nature of Canada's breeding populations, there are undoubtedly far more than 10 locations across Canada. This same rationale would appear to apply within Ontario, where the species is widely distributed and occurring in a diversity of breeding habitats. However, as noted by COSEWIC (2017), "some of the highest probability threats, such as toxic chemicals and heavy metals, organochlorine pesticides, climate change and severe weather can potentially affect a very large component of the population in breeding, migratory and wintering areas". The Area of Occurrence was estimated at 497,301 km<sup>2</sup> (Figure 2). There are 44 extant element occurrences, excluding three with poor estimated viability, and an additional 40 historical EOs.

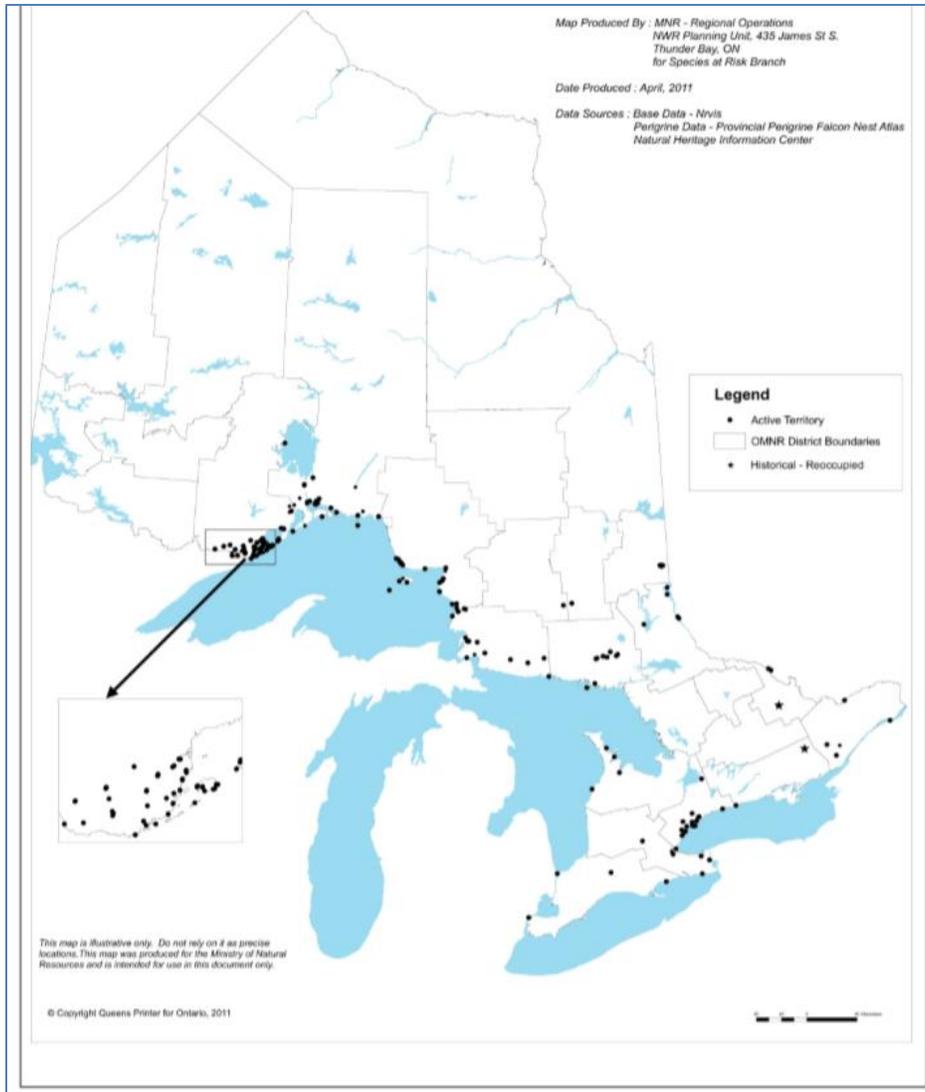


Figure 1. Current distribution of known Peregrine Falcon territories in Ontario (n=119), 2010 (from Chikoski and Nyman 2011).

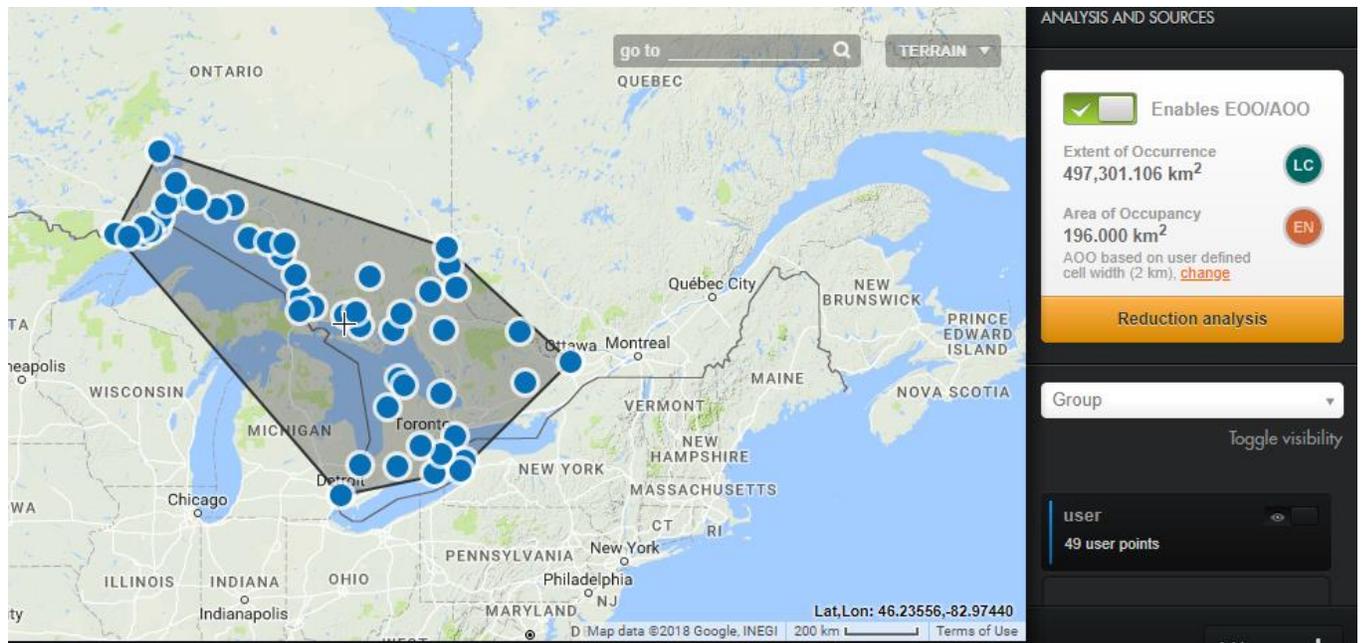


Figure 2. Current estimated Peregrine Falcon Extent of Occurrence in Ontario. Created from Geocat (website accessed April 2018).

### 2.3. Distribution, status and the broader biologically relevant geographic range outside Ontario

The Peregrine Falcon is one of the most widely distributed birds globally, occurring on every continent except Antarctica. The *anatum/tundrius* Peregrine Falcon breeds across northern North America from interior Alaska across northern Canada to Greenland, and south to northern Mexico (White *et al.* 2002). It is considered classified as Least Concern by the IUCN Red List, and Apparently Secure by NatureServe (G4: *Falco peregrinus*, T4: *anatum/tundrius* population).

Over 60% of the North American range of the *anatum/tundrius* Peregrine Falcon occurs in Canada (COSEWIC 2017). It breeds in all Canadian provinces and territories except Prince Edward Island and the island of Newfoundland. Populations of *anatum/tundrius* Peregrine Falcons are increasing in most North American jurisdictions. Although generally increasing in Canada, northern-nesting<sup>2</sup> Peregrine Falcon populations have shown more variability across jurisdictions and years, and have not increased as markedly as populations in much of southern Canada (COSEWIC 2017).

Ontario Peregrine Falcons are part of a larger meta-population that extends into adjacent states and provinces and beyond, and this can be considered the species' Broader Biologically Relevant Range. Almost 50% of known-origin breeding birds in 1993–2006 originated from outside of the province (Gahbauer *et al.* 2015a). Populations

<sup>2</sup> Generally north of 54<sup>th</sup> parallel in YK, NWT, NU, northern AB and Labrador.

are increasing in adjacent jurisdictions, but it is still generally considered to be vulnerable or imperiled. However, if current recovery trajectories continue in eastern North America, and number increase in Ontario, this Peregrine Falcon is likely to be assessed as not at risk in the next 5-10 years.

Table 1. Condition of the Species in Adjacent Jurisdictions and Broader Biologically Relevant Geographic Range

<b>Adjacent Jurisdictions</b>	<b>Biologically Relevant to Ontario (n/a, yes, no)</b>	<b>Status &amp; Trends</b>	<b>Condition</b>	<b>Notes &amp; Sources</b>
Quebec	Yes	Increasing S3S4 S3 S3 S3S4B	Excellent	<i>Falco peregrinus</i> * <i>Falco peregrinus anatum</i> † <i>Falco peregrinus tundrius</i> ‡ <i>Falco peregrinus anatum/tundrius</i> population§
Manitoba	Yes	Increasing S1B S1B S1B S1B	Fair	<i>Falco peregrinus</i> * <i>Falco peregrinus anatum</i> † <i>Falco peregrinus tundrius</i> ‡ <i>Falco peregrinus anatum/tundrius</i> population§
Michigan	Yes	Increasing S3	Good	<i>Falco peregrinus</i> *
Minnesota	Yes	Increasing S3B	Good	<i>Falco peregrinus</i> *
Nunavut	Yes	Increasing S4B SNR SNR SNR	Excellent	<i>Falco peregrinus</i> * <i>Falco peregrinus anatum</i> † <i>Falco peregrinus tundrius</i> ‡ <i>Falco peregrinus anatum/tundrius</i> population§
New York	Yes	S3B Increasing	Good	<i>Falco peregrinus</i> *
Ohio	Yes	S3 Increasing	Good	<i>Falco peregrinus</i> *
Pennsylvania	Yes	Increasing S1BS1N	Fair	<i>Falco peregrinus</i> *
Wisconsin	Yes	Increasing S1S2B SX SNA	Fair	<i>Falco peregrinus</i> * <i>Falco peregrinus anatum</i> † <i>Falco peregrinus tundrius</i> ‡

\* (NatureServe 2020b)

† (NatureServe 2020c)

‡ (NatureServe 2020d)

§ (NatureServe 2020a)

## 2.4. Ontario conservation responsibility

Ontario represents only a small portion of the global range of *anatum/tundrius* Peregrine Falcons (i.e., <<5%). Ontario's known breeding population similarly represents a very small proportion of the continental population (<1%)<sup>3</sup>.

## 2.5. Direct threats

The Threats Calculator indicated that the overall threat was unknown. Most threat categories were evaluated to have negligible effects on Peregrine Falcons. Exposure to threats such as toxic chemicals, climate change, and severe weather ranged from minimal to pervasive; however, increasing populations suggest that these threats currently are insufficient to cause overall population declines (COSEWIC 2017).

The collection of Peregrine Falcons from the wild is not currently permitted in Ontario, but is allowed on a controlled basis in other jurisdictions. The collection of birds from the wild, either legally or illegally, is not considered a significant threat at the current time (COSEWIC 2017).

## 2.6. Specialized life history or habitat use characteristics

Peregrine Falcons traditionally nested only on steep cliff faces in Ontario. Breeding density thus appears to be limited by the availability of suitable cliff nesting habitat (Ratcliffe 1962). Urban habitats represent a novel source of new breeding habitat for urban-nesting birds, although Peregrine Falcons nesting in urban habitats were typically reared in urban habitats (Holroyd and Banasch 1990).

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<sup>3</sup> The minimum estimate of 468 mature individuals in Ontario (see 3.1.3) represents 0.8% of the estimated North American population of 60,000 (Franke 2016, COSEWIC 2018 in press).

### 3. Ontario status assessment

#### 3.1. Application of endangered/threatened status in Ontario

##### 3.1.1. Criterion A – Decline in total number of mature individuals

Does not apply. The Ontario population increased rapidly between 1990–2010 (Chikoski and Nyman 2011) (Figure 3). The population was not monitored provincially in 2015 but was known to have grown by at least 37 territories (31%) between 2010 and 2015 (OMNRF 2015). The second Ontario Breeding Bird Atlas revealed a major increase in distribution and abundance, “from three squares with breeding evidence in the first Atlas (1980-1984) to 96 in the second (2001–2005)” (Armstrong 2007). There has been a statistically significant annual rate of increase of 0.6 nesting attempts per year in southern Ontario (1995–2006,  $p < 0.001$ ) and 2.0 nesting attempts per year in northern Ontario (1991–2006,  $p < 0.001$ ) (Gahbauer *et al.* 2015a). This continued population growth and the documentation of at least 156 Ontario nesting territories in 2015 (COSEWIC 2017) indicate that the population is still increasing and is not yet at carrying capacity. This evidence does not concur with a recent study that estimated the population carrying capacity in the province to be 115 territorial pairs based upon regression analysis of population growth rates and numbers over time (Janssens 2014).

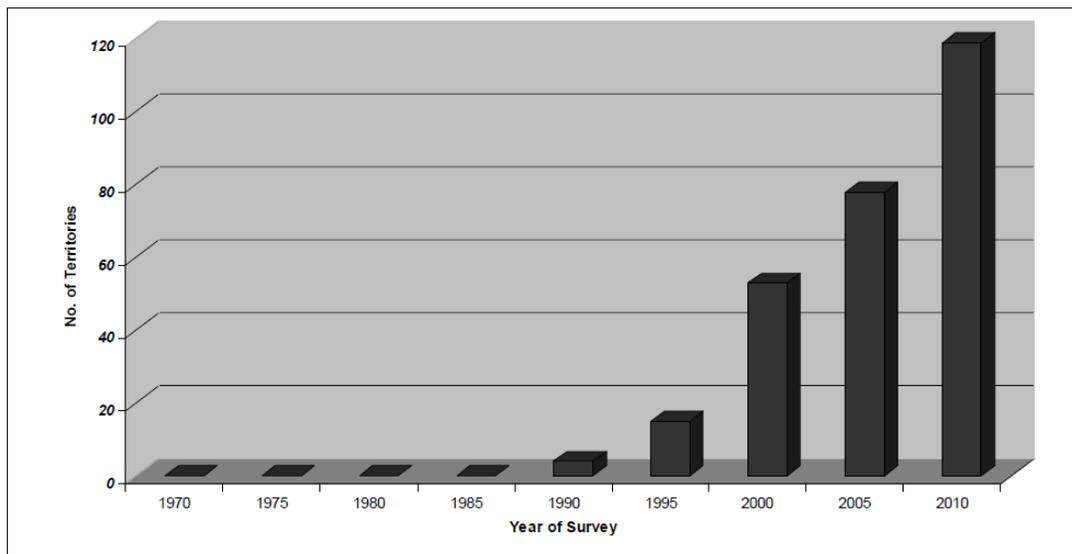


Figure 3. Trends in the number of Peregrine Falcon territories in Ontario based on 5-year surveys, 1970–2010. There was no province-wide survey in 2015.

##### 3.1.2. Criterion B – Small distribution range and decline or fluctuation

Does not apply. Population has a large distribution range, and is not in decline.

### 3.1.3. Criterion C – Small and declining number of mature individuals

Does not apply. Ontario's population is estimated at a minimum of 468 mature individuals in 2015, based upon 119 confirmed territories in 2010 (Chikoski and Nyman 2011), an additional minimum of 37 territories since 2010 (OMNRF 2015), plus a conservative estimate of 50% nonbreeders or floaters (COSEWIC 2017), and assuming a pair at each occupied territory. While this meets the Endangered threshold for a small population (i.e., < 2,500), the population is clearly neither observed nor inferred to be in decline but is continuing to increase (Chickoski and Nyman 2011, COSEWIC 2017).

### 3.1.4. Criterion D – Very small or restricted total population

Meets the criteria for Threatened, D1. Ontario's Peregrine Falcon population is estimated as fewer than 1000 mature individuals.

The absence of province-wide surveys since 2010 makes it difficult to calculate a robust population estimate for Peregrine Falcon in Ontario. However, even with the assumptions that the population has continued to increase, the proportion of nonbreeding birds was underestimated, and some individuals were missed in the most recent (i.e., 2010) province-wide survey, there is considerable reason to doubt that there are more than 1000 mature individuals in the province. Two approaches to extrapolating the 2020 population size from the available data, described below, both provide estimates well below the 1000 individual threshold.

Method 1: following the methodology used in section 3.1.3. If breeding territories in the 2015–2020 period increased at the same rate as the minimum increase of 37 for 2010–2015 (OMNRF 2015), a new population estimate would be 579 individuals.

Method 2: using current NHIC data. NHIC records of approximately 300 'recently active' eyries for Peregrine Falcon in Ontario (D. Sutherland pers. comm.), approximately 80% of territories are expected to be occupied each year (B. Ratcliff pers. comm.), leaving 240. Assuming two individual per territory, and an additional 50% for nonbreeders and floaters gives a population estimate of 720. However, observational data suggest that approximately 16% of occupied territories have only a single bird, and not a breeding pair (Chickoski and Nyman 2011, COSEWIC 2017), which would result in approximately 202 breeding pairs which, with the same 50% allowance for nonbreeders and floaters, would provide a population estimate of 606.

Additional survey data, ideally in the form of direct observations and counts of breeding territories, would better inform these population estimates.

### 3.1.5. Criterion E – Quantitative analysis

Does not apply. Not conducted for Canadian populations. A population viability analysis of a recovered population in Sweden suggested that carrying capacity would be reached within 30 years without further manipulation, and the probability of extirpation was 0% (Ebenhard 2000).

## 3.2. Application of Special Concern in Ontario

Applicable. The Ontario population of Peregrine Falcons meets the Threatened threshold under Criterion D. However, there is a clearly demonstrated potential for rescue effect based upon recovering/increasing populations in adjacent jurisdictions, and the recent past recovery of the species in the province (i.e., from no occupied territories in 1985 to over 150 in 2015). The Threats Calculator has also indicated a low overall threat for the species in Canada.

Although there are now more documented breeding territories in Ontario (156) than were documented historically, there is no suggestion that the current population exceeds the historical population. Rather, only the more accessible sites and those subject to collections of eggs, young or adults were documented (e.g., see Greene 1978), while the majority of presumed more remote nesting sites were never documented. The vast majority of historically documented nesting sites, primarily located north of Lake Ontario and east of Georgian Bay, have not yet been recolonized. Only 8.3% of historically documented nesting sites are known to have been reoccupied as of 2016 (COSEWIC 2017).

The cessation of quinquennial province-wide surveys in Ontario after the 2010 survey has introduced a level of uncertainty, limiting the ability to estimate current population levels and, if continued, also limiting the ability to understand future population trends.

## 3.3. Status category modifiers

### 3.3.1. Ontario's conservation responsibility

Does not apply. Ontario has a small proportion of the global/continental population and range for Peregrine Falcons.

### 3.3.2. Status modification based on rescue effect or level of risk in broader biologically relevant geographic range

Status modification due to rescue effect applies. Populations are robust and increasing in adjacent jurisdictions, and the Peregrine Falcon has shown itself to be very resilient and able to recover when threats are removed or mitigated (Holroyd and Bird 2012). In Ontario, almost 50% of known-origin breeding birds in 1993–2006 originated from outside of the province (Gahbauer *et al.* 2015a). While most breeding birds dispersed less than 700 km from their natal site, two birds nesting in northern Ontario moved 1540 km from Québec and 1600 km from Nova Scotia respectively from their natal site (Gahbauer *et al.* 2015a).

Status modification due to classifications in the species broader biologically relevant range does not apply. The status of Peregrine Falcon is equal or higher than Special Concern in the relevant range, defined as the broader, trans-jurisdictional meta-population of which the Ontario population is a part (see section 2.3).

### 3.4. Other status categories

#### 3.4.1. Data deficient

Does not apply. This is a data rich species.

#### 3.4.2. Extinct or extirpated

Does not apply.

#### 3.4.3. Not at risk

Does not apply.

## 4. Summary of Ontario status

*anatum/tundrius* Peregrine Falcon (*Falcon peregrinus anatum/tundrius*) is classified as Special Concern in Ontario based on meeting criterion D1 and rescue effect modifier.

The Ontario status differs from the COSEWIC status (Not at Risk) due to the small Ontario population meeting the threshold for criterion D1.

This status of this species is consistent with the definition of status under the Endangered Species Act, 2007.

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# Appendix 1: Technical summary for Ontario

Species: Peregrine Falcon (*Falco peregrinus*)

## Demographic information

Demographic attribute	Value
Generation time. Based on average age of breeding adult: age at first breeding = X year; average life span = Y years.	6 years
Is there an observed, inferred, or projected continuing decline in number of mature individuals?	No based on observations.
Estimated percent of continuing decline in total number of mature individuals within 5 years or 2 generations.	+89%. No continuing decline. Observed increase of 88.7% in the number of occupied territories between 2000 and 2010 (most recent province-wide survey) (10 years, 1.7 generations)
Observed, estimated, inferred, or suspected percent reduction or increase in total number of mature individuals over the last 10 years or 3 generations.	+3233%. No observed, inspected or inferred decline. Number of occupied territories individuals increased over the most recent 20-year period (3.3 generations; 1990-2010) from 3 to 100 (3233%)
Projected or suspected percent reduction or increase in total number of mature individuals over the next 10 years or 3 generations.	+180%. In recent years the southern Canada <i>anatum/tundrius</i> population is increasing by an average of approximately 45% between five-year surveys, or 9% annually (COSEWIC 2017). This would translate to a projected increase of 225 over the next 20 years (3.3. generations).
Observed, estimated, inferred, or suspected percent reduction or increase in total number of mature individuals over any 10 years, or 3 generations, over a time period including both the past and the future.	+177%. If the 88.7% increase in the number of occupied territories between 2000 and 2010 (most recent province-wide

Demographic attribute	Value
	survey) were to extend 10 years onto the future (i.e., 2010-2020), this would suggest a 20 year (3.3. generation) increase of 177%.
Are the causes of the decline (a) clearly reversible, and (b) understood, and (c) ceased?	a. Yes b. Yes c. Yes
Are there extreme fluctuations in number of mature individuals?	No

## Extent and occupancy information in Ontario

Extent and occupancy attributes	Value
Estimated extent of occurrence (EOO). <i>If value in COSEWIC status report is not applicable, then use <a href="http://geocat.kew.org">geocat.kew.org</a>. State source of estimate.</i>	497,301 km <sup>2</sup> (Geocat)
Index of area of occupancy (IAO). <i>If value in COSEWIC status report is not applicable, then use <a href="http://geocat.kew.org">geocat.kew.org</a>. State source of estimate.</i>	196,000 km <sup>2</sup>
Is the total population severely fragmented? i.e., is >50% of its total area of occupancy is in habitat patches that are: (a) smaller than would be required to support a viable population, and (b) separated from other habitat patches by a distance larger than the species can be expected to disperse?	a. No b. No
Number of locations. <i>See Definitions and Abbreviations on COSEWIC and IUCN websites for more information on the term "location". Use plausible range to reflect uncertainty if appropriate.</i>	Unknown, but likely more than 10
Number of NHIC Element Occurrences <i>Request data from MNRF.</i>	44 extant EOs, excluding 3 with poor estimated viability. An additional 40 historical EOs
Is there an observed, inferred, or projected continuing decline in extent of occurrence?	No
Is there an observed, inferred, or projected continuing decline in index of area of occupancy?	No
Is there an observed, inferred, or projected continuing decline in number of sub-populations or EOs?	No

<b>Extent and occupancy attributes</b>	<b>Value</b>
Is there an observed, inferred, or projected continuing decline in number of locations?	No
Is there an observed, inferred, or projected continuing decline in [area, extent and/or quality] of habitat?	No
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

Number of mature individuals in each sub-population or total population (if known)

<b>Sub-population (or total population)</b>		<b>Number of mature individuals</b>
No. territorial pairs in 2010 survey	119	468
<u>No. new territories confirmed since 2010</u>	<u>37</u>	
Subtotal	156	
Equivalent no. mature individuals (2 birds per territory) <u>+50% floater (nonbreeding) population</u>	312	
	<u>156</u>	
Minimum estimated provincial population		

Quantitative analysis (population viability analysis conducted)

Probability of extinction in the wild is unknown.

## Threats

Threats Calculator was prepared (COSEWIC 2017). "Overall threat impact was rated as unknown, based largely on pervasive exposure to pollution but uncertainty about the severity of current and future effects. Other threat categories all have negligible exposure and or severity; this is consistent with the widespread increase in numbers indicating that any existing threats are currently not sufficient to be causing declines" (COSEWIC 2017).

## Rescue effect

<b>Rescue effect attribute</b>	<b>Value</b>
Does the broader biologically relevant geographic range for this species extend beyond Ontario?	Yes
Status of outside population(s) most likely to provide immigrants to Ontario	Increasing in adjacent provinces and states, although S-ranks are S1 to S3 in all adjacent jurisdictions except

<b>Rescue effect attribute</b>	<b>Value</b>
Does the broader biologically relevant geographic range for this species extend beyond Ontario?	Yes
	for Nunavut (S4) and Quebec (S3S4) (see Appendix 2).
Is immigration of individuals and/or propagules between Ontario and outside populations known or possible?	Yes – known. There is some variable genealogy in populations adjacent to Ontario from Peregrine Falcons released in the USA that were not <i>anatum/tundrius</i> (COSEWIC 2017).
Would immigrants be adapted to survive in Ontario?	Yes
Is there sufficient suitable habitat for immigrants in Ontario?	Yes. Most documented historical breeding habitat still unoccupied.
Are conditions deteriorating in Ontario?	No
Is the species of conservation concern in bordering jurisdictions?	No
Is the Ontario population considered to be a sink?	No
Is rescue from outside populations likely?	Yes, highly likely.

## Sensitive species

Yes this is a data sensitive species, but no sensitive data are portrayed in this report.

## Acronyms

COSEWIC: Committee on the Status of Endangered Wildlife in Canada  
COSSARO: Committee on the Status of Species at Risk in Ontario  
ESA: Endangered Species Act  
EO: Element occurrence (as defined by NHIC)  
EOO: extent of occurrence  
GRANK: global conservation status assessments  
IAO: index of area of occupancy  
IUCN: International Union for Conservation of Nature and Natural Resources  
MNRF: Ministry of Natural Resources and Forestry  
NHIC: Natural Heritage Information Centre  
NNR: Unranked  
NRANK: National conservation status assessment  
SARA: Species at Risk Act  
SNR: unranked  
SRANK: subnational conservation status assessment  
S1: Critically Imperiled  
S2: Imperiled  
S3: Vulnerable  
S4: Apparently Secure  
S5: Secure  
IUCN: International Union for Conservation of Nature and Natural Resources  
CDSEPO: Le Comité de détermination du statut des espèces en péril en Ontario