

# Patterns of species **loss** and **recovery** in Ontario

**Latonnell Conservation Symposium**

October 18, 2022

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@NatureDanimal  
@WCS\_Canada

# Square-stemmed Rose Gentian (*Sabatia angularis*)



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Also known as Rosepink, this showy wildflower has not been seen in Canada since 1865 when it was collected from Hamilton by botanist Kate Crooks. It grows along moist sandy shores and in dune swales. These habitats have been lost in the Hamilton area and it is unlikely to be rediscovered.

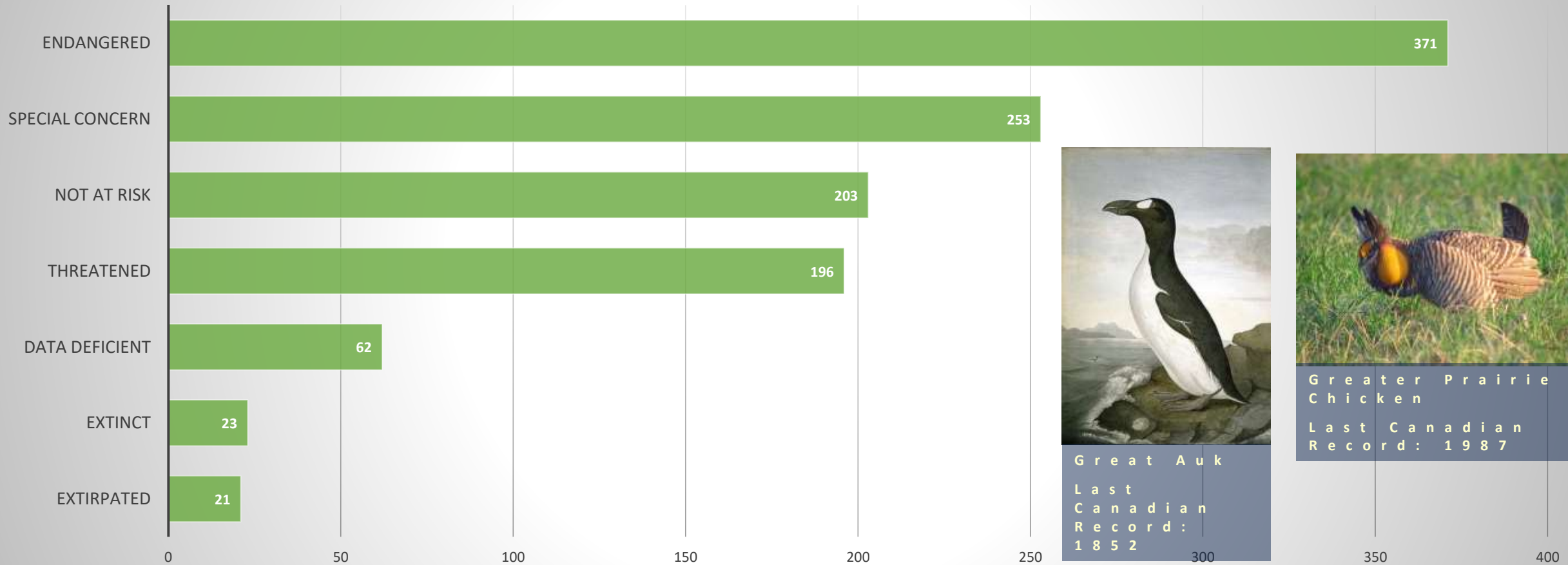
# Ontario Endangered Species Act, 2007

## SCHEDULE 1 EXTIRPATED SPECIES

Column 1 Item	Column 2 Species Grouping	Column 3 Common Name	Column 4 Scientific Name
1.	Mosses	Incurved Grizzled Moss	<i>Ptychomitrium incurvum</i>
2.	Vascular Plants	Illinois Tick-trefoil	<i>Desmodium illinoense</i>
3.	Vascular Plants	Spring Blue-eyed Mary	<i>Collinsia verna</i>
4.	Insects	American Burying Beetle	<i>Nicrophorus americanus</i>
5.	Insects	Eastern Persius Duskywing	<i>Erynnis persius persius</i>
6.	Insects	Frosted Elfin	<i>Callophrys irus</i>
7.	Insects	Karner Blue	<i>Plebejus samuelis</i>
8.	Fishes	Gravel Chub	<i>Erimystax x-punctatus</i>
9.	Fishes	Paddlefish	<i>Polyodon spathula</i>
10.	Amphibians	Blanchard's Cricket Frog	<i>Acris blanchardi</i>
11.	Amphibians	Eastern Tiger Salamander	<i>Ambystoma tigrinum</i>
12.	Amphibians	Spring Salamander	<i>Gyrinophilus porphyriticus</i>
13.	Reptiles	Eastern Box Turtle	<i>Terrapene carolina</i>
14.	Reptiles	Timber Rattlesnake	<i>Crotalus horridus</i>
15.	Birds	Eskimo Curlew	<i>Numenius borealis</i>
16.	Birds	Greater Prairie-Chicken	<i>Tympanuchus cupido</i>



### Status of Species Assessed by COSEWIC (July 2022)





COSEWIC  
Committee on the  
Status of Endangered  
Wildlife in Canada



NatureServe  
A Network Connecting Science With Conservation



Rose Pink

Last Canadian Record:  
1865



Oregon Lupine

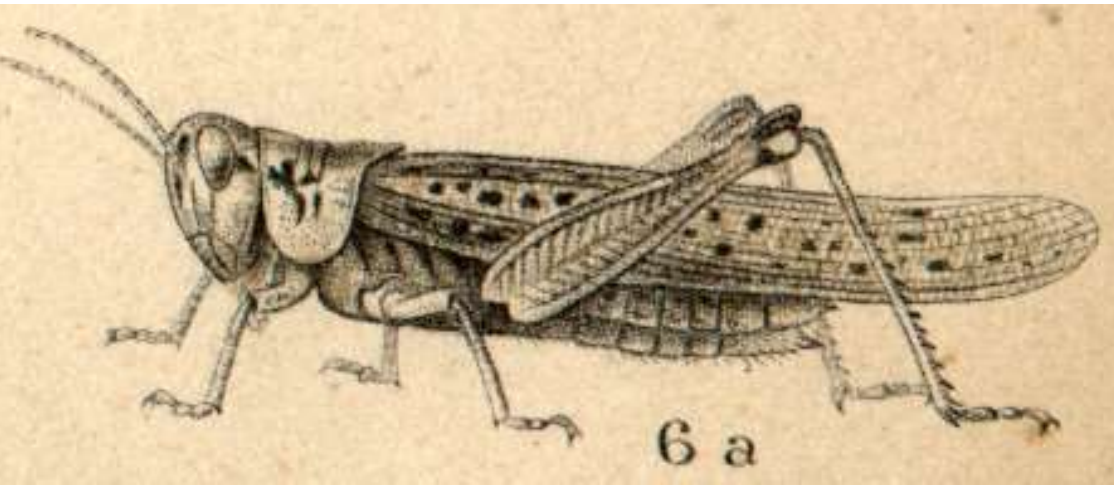
Last Canadian Record:  
1929



Eskimo Curlew

Last Canadian Record:  
1963?

# 1. How many species have we lost from Canada?



## 2. How many species have we saved in Canada?

Distribution, timing, causes?

Lessons for species conservation today?





*There is an urgent need for international partners to **halt and reverse the alarming loss of biodiversity** worldwide. Canada will continue to advocate for international collaboration on an ambitious post-2020 global biodiversity framework, targeting 30 percent of lands and oceans conserved by 2030.*

Steven Guilbeault, Minister of Environment and Climate Change of Canada



# Methods: Missing Species

- Combined data on extinct, extirpated and historical species from COSEWIC, IUCN, NatureServe & literature.
- Included species and infraspecies.
- Verified last records through database searches (e.g., GBIF, BOLD Systems).



# Methods: Missing Species

- Bruce Bennett (Yukon Conservation Data Centre)
- Syd Cannings (Canadian Wildlife Service)
- Sheila Colla (York University)
- Dave Fraser (Committee on the Status of Endangered Wildlife in Canada)
- Chris Friesen (Manitoba Conservation Data Centre)
- Nathan Hentze (BC Conservation Data Centre)
- Damien Joly (BC Conservation Data Centre)
- Alex Kittle (Delaware Museum of Natural History)
- Colin Jones (Ontario Natural Heritage Information Centre)
- Troy McMullin (Canadian Museum of Nature)
- James Miskelly (Natural Resources Canada)
- Randi Mulder (Yukon Conservation Data Centre)
- Mike Oldham (retired) (Ontario Natural Heritage Information Centre)
- Steve Paiero (University of Guelph)
- Jenifer Penny (BC Conservation Data Centre)
- Andrew Smith (Canadian Museum of Nature)



Long-spined Jerusalem  
Cricket

Last Canadian Record: 1888

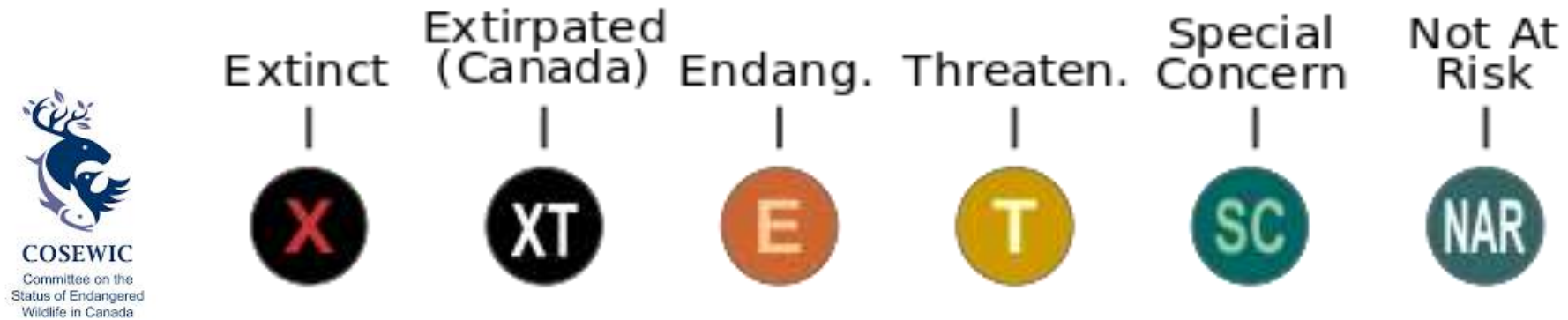
Photo: Juan Cruzado Cortés (inaturalist)

# Confidence codes assigned to Canada's extinct, extirpated and historical species

Code	Description
L	<b>Lower confidence.</b> These species may have recently become historical. They may also occur in remote regions of Canada or be difficult to survey or be abundant in adjacent areas of the US. While they appear to no longer occur in Canada, there is a reasonable chance they could still occur and be rediscovered. Includes species that are difficult to identify, have low search effort, uncertain origin or taxonomical issues. Examples: Muir's Fleabane, Long-spurred Meadow Katydid
M	<b>Medium confidence.</b> These species are very likely to no longer occur in Canada. Based on the date of last record, taxonomical changes or habitat availability they could potentially still occur. Examples: Piper's Anemone, Regal Fritillary
H	<b>High confidence.</b> There has been sufficient time since the last record or extensive searches for these species. If still extant, they would have been detected and it is highly unlikely to ever be found again in Canada. Examples: Great Auk, Rose Pink

# Methods: Recovering Species

- Identify species with 'improved' COSEWIC status
- Include both 'de-listed' and 'down-listed' species



- Determine if change in status is 'genuine' or 'non-genuine'

## Genuine reasons

*Genuine reasons represent a measurable improvement in the conservation status of the species. This genuine improvement results when conservation actions successfully improved the status of the species enough to down-list it to a risk lower category.*

### **REASON CODE:**

- Protected Areas
- Stewardship
- Harvest Management
- Legal Protection
- Translocation
- Other Threat Abatement
- Rescue

## Non-genuine reasons

*Non-genuine reasons for down-listing a species into a lower risk category occur when the status of the species has not been improved by conservation actions, but is a result of new information or approaches to assessing the species.*

### **REASON CODE:**

- New Information
- Taxonomic Revision
- Uncertainty/ Error
- New Criteria

*Based on IUCN, 2022. Reasons for Changing Category.*

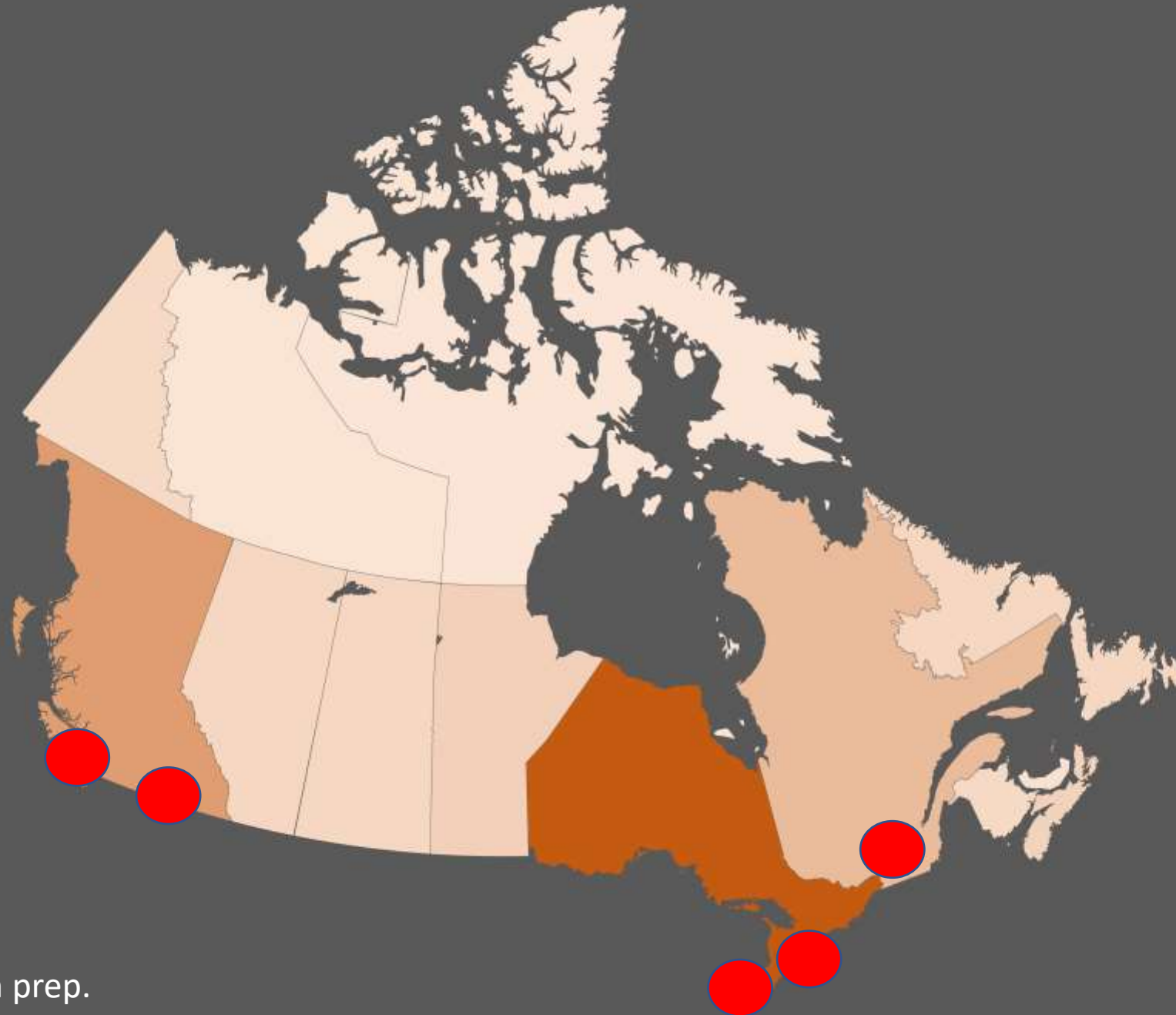


# Species lost from Canada, by decade



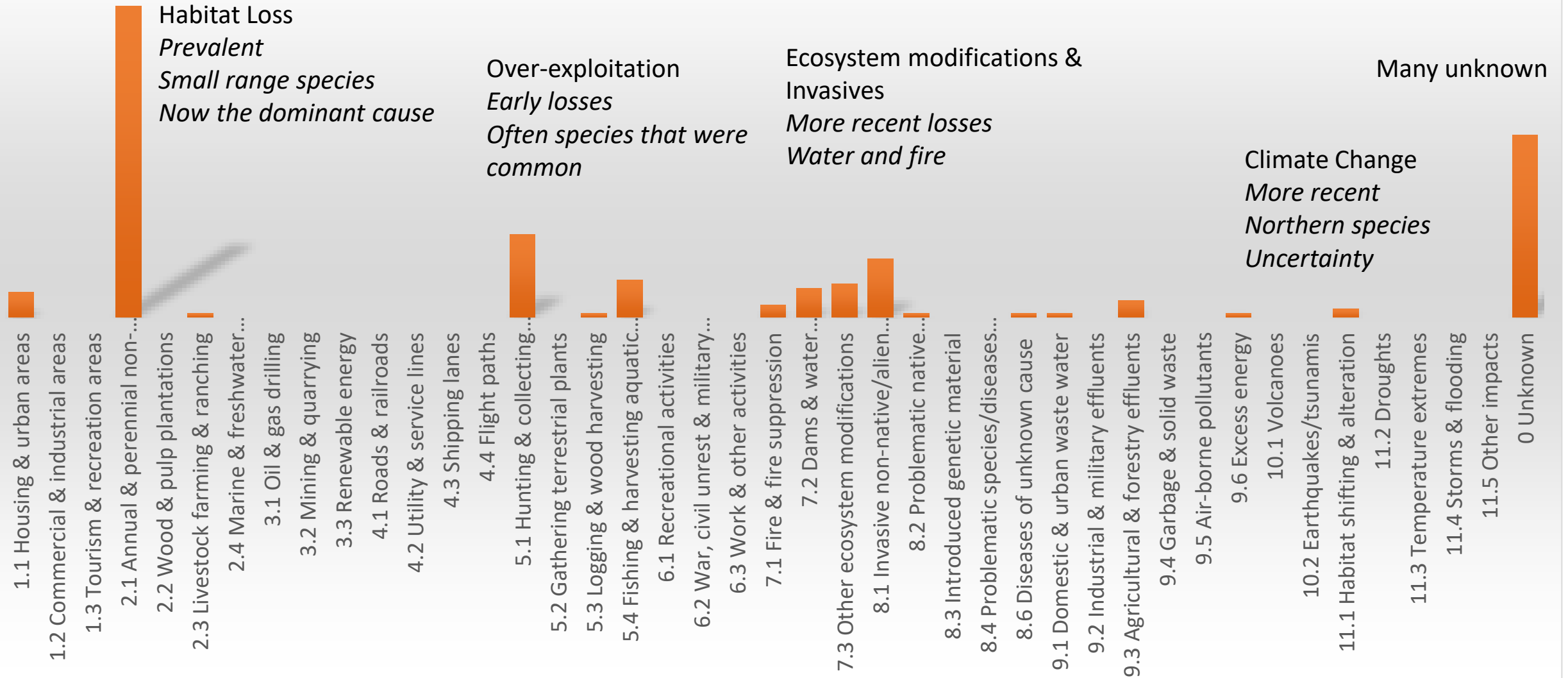
Kraus et. al in prep.

# Species lost from Canada, by province & territory



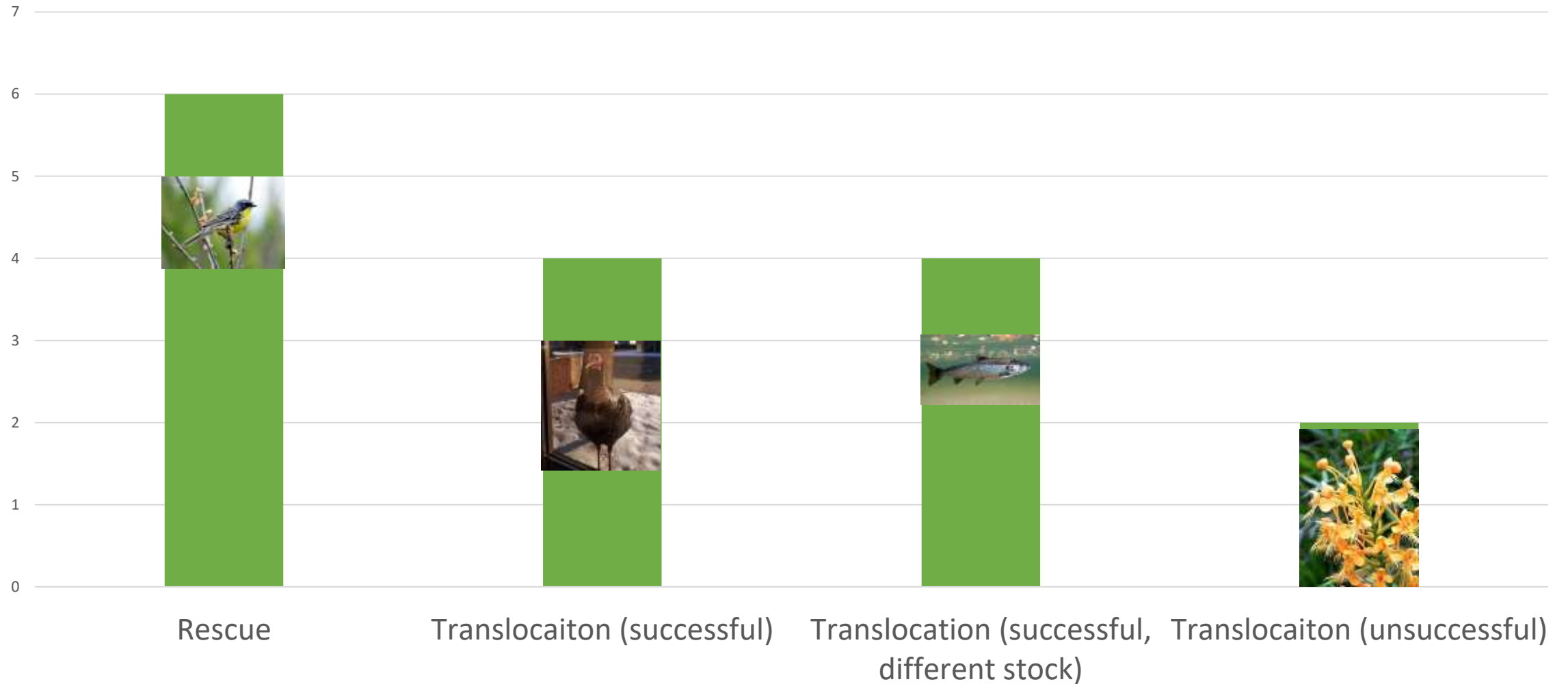
Kraus et. al in prep.

# Causes of Species Loss



# Lost & Found

## Species lost from Canada that have returned



Photos: Jeol Trick (USFWS), CBC news, lavire (iNaturalist), Shannon Sharp (USFWS)

# Historical saves

- Over 80 species that were historically reported as being rare or near extinction.
- Over 50 'recovered' before formal species assessments started in Canada
- 25 still assessed as at risk





*"Being shot at all seasons of the year they are becoming very scarce and are **likely to be exterminated before long.**"*

Grinnell, 1901



***"..would shortly be extinct..."***

Taverner, 1928



*"There is a certain smack of encouragement when, through the vicissitudes of persecution, **a species on the verge of extinction** begins increase, and the arrow on the census tabulation reaches a point reasonable safety in numbers. Such is the case with the North Elephant Seal*

Huey, 1930



1978 1996 2007



1978 1998 2007



1978 1999 2007 2017

# De-listed (no longer in a risk category)

## CANADA

- n=56
- 17 Data Deficient
- 1 Non-active

## **CANADA: 38 Not at Risk**

- 20 genuine (or mixed)
- 18 non-genuine

## **ONTARIO: 18 Not at Risk**

- 11 genuine (or mixed)
- 7 non-genuine



**Eastern Bluebird**

1984: Special Concern

1996: Not at Risk

# Down-listed (moved to a lower risk category)



## CANADA

- n=83
- 28 genuine (or mixed)
- 55 non-genuine

## ONTARIO

- n=33
- 8 genuine (or mixed)
- 25 non-genuine

# Reasons for (Genuine) Recovery

## Genuine Recovery (n=48)

1. Harvest management (30%)
2. Other threat management (30%)
3. Protected areas (12%)
4. Stewardship (12%)
5. Translocation (6%)
6. Legal protection (4%)
7. Rescue (2%)



**Trumpeter Swan**

1978: Rare (Special Concern)

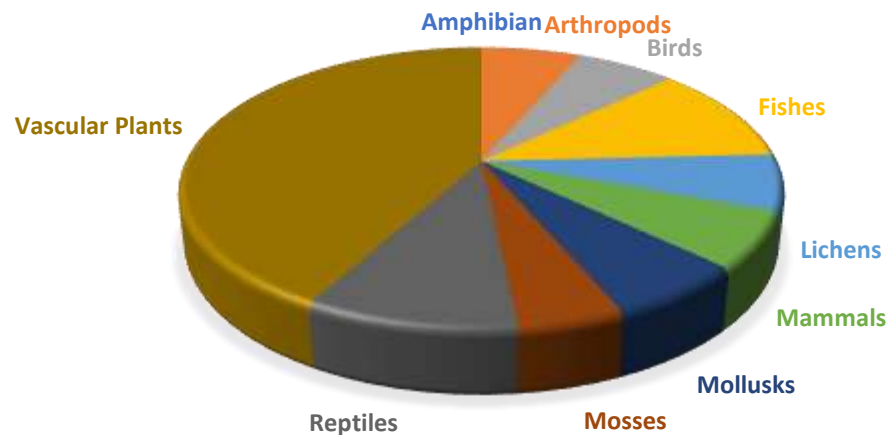
1996: Not at Risk

# Reasons for (Non-genuine) Recovery

## Non-genuine Recovery (n=73)

- New information (85%)
- New criteria (10%)
- Taxonomical revision (5%)

RECOVERY BY DISCOVERY, BY TAXA



## Flooded Jellyskin

2004: Threatened

2010: Special Concern

# Conclusions

1. Canada & Ontario are continuing to lose wildlife.
2. *Species at Risk Act and Endangered Species Act* are having mixed results in meeting their main objective.
3. Few species have been rescued.
4. Protected areas matter for small range and rare species.
5. Need to be cautious when listing cryptic species.



**Townsend's White-tailed  
Jackrabbit  
Last Canadian Record: 1981**

# Applications

- Build the case for stopping species loss in Canada and having an ambitious species conservation target & measure our progress.
- Inform new recovery plans.
- Increase transparency on changes in species status.
- Share more information on recovery (COSEWIC, Species at Risk websites).



Small White Lady's-slipper  
1981: Endangered  
2014: Threatened

- Encourage inventories for ‘missing’ species (including community science).
- Focus actions (and Species at Risk Stewardship Program) on species with small ranges.
- More ambitious translocations and reintroductions.
- Provide content for story-telling about loss and recovery to build support for conservation.



**Cooper's Hawk**  
**1983: (Rare) Special**  
**Concern**  
**1996: Not at Risk**

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# Patterns of species **loss** and **recovery** in Canada

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<https://www.wcscanada.org/>

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OF NATURE

by  **WCS**Canada



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