Compilation of Avian, Chiropteran, and Amphibian Presence on the Cochrane Ecological Institute Property in Relation to the Habitat Stewardship Program for Species at Risk

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Introduction

The loss of biodiversity and keystone species has become an ever-increasing reality in today's world, as the effects of climate change and anthropogenicactivities continue to intensify. To help mitigate these destructive losses to the ecological web, the Government of Canada, through its Environmental Conservation and Protection programs, provides funding to organizations capableof developing and implementing projects that protect species at risk and support the recovery of ecologically significant wildlife(Government of Canada, 2025).

The Cochrane Ecological Institute (CEI) is a wildlife rehabilitation and research centre located on a quartersection in southern Alberta. The property represents an undisturbed foothills ecosystem that has never been farmed, logged, or burned in recorded history, making it a valuable reference site for studyingthe representative population of endemic species and natural ecological processes.

Since its establishment in 1997 (formally known as the Wildlife Reserve of Western Canada), CEI has been active in education and research programs for students from K-12 through post-secondary levels, including diploma, B.Sc., M.Sc., and Ph.D. projects. These students are participating in research of intern programs relating to their field of study and have to complete research programs ranging from three months to two years in duration. CEI has a documented interest in developing and testing non-intrusive monitoring techniques and has extensive experience with the developing and testing of these methods. Staff and students have employed a range of wildlife monitoring tools, including track plates for species identification, hair traps for DNA sample collection, acoustical voice printing for the identification of individuals, and camera traps for species identification and population estimates. More recently, advanced technologies such as neural networks and machine learning have been applied for wildlife identification, counting, and tracking. Drone technology has been integrated into research for aerial monitoring, while ultrasonic recorders are used to collect population and biological data on bat species and populations. With over 70 research project reports in their 58-year history, CEI has collected an impressive collection of wildlife data on the area of the institute. This report is an attempt to present this data in an organized and concise format to demonstrate the importance of reliable monitoring data, and the importance of relatively small undisturbed land holdings on endangered species conservation.

This report compiles bird, bat, and frog records from the CEI property to evaluate their alignment with the Habitat Stewardship Program (HSP) for Species at Risk. Reports, acoustic data, and online records were analyzed to identify naturally occurring wildlife species on the property. These records were cross-referenced with eligible species under the Species at Risk Act (SARA) (Government of Canada, 2025), the Species at Risk Public Registry (Government of Canada, 2025), and designations by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). The findings contribute to understanding how CEI's habitat supports species at risk and may help demonstrate the property's eligibility for HSP funding.

Methods

This project focused on documenting the presence of mammal, amphibian, avian, and reptile species on the property of Cochrane Ecological Institute. To establish which species are currently or have previously been present on the property, multiple data sources were consulted, including past reports on CEI, eBird Canada records, and recent audio recordings. Over the years, students and interns have facilitated and contributed to this knowledge base by collecting data and authoring reports using a variety of methods, such as audio recordings (Cochrane Ecological Institute, 2023; Dieuzaide and Armani, 2021; MacArthur, 2025; Zamrykut, 2025), camera traps(Andre, 2018), transect surveys (Andre, 2018) and direct observation (Meynhardt, 2017). For this study, data on bird and bat species were compiled from reports that were deemed relevant, due to their discussion of species located on the CEI property. An additional key resource was NatureCounts, which houses eBird Canada data documenting bird presence on CEI property dating back to 1984. To ensure that bird records corresponded specifically to the CEI property, the polygon function in the eBird Canada map view was used to delineate the property boundary (see Figure 1). All records of birds observed within this polygon, regardless of the year, were included. In addition, recent audio recordings from the North Pond (Zamrykut, 2025) on the property were analyzed using cluster analysis in Kaleidoscope Pro v. 5.6.8 to group similar sounds. Each cluster was then processed through the Merlin Bird ID mobile app v. 3.7.1 to identify bird calls, if any, within the recordings, and the Frog Spot mobile app to identify frog vocalizations.

All data on birds, bats and frogs on the CEI property were consolidated into a single spreadsheet, where species were alphabetized, grouped, and colour-coded by project for ease of comparison. The compiled list was then cross-referenced with the COSEWIC database and Schedule 1 of the Species at Risk Act (SARA). COSEWIC status was obtained from the Species at Risk Public Registry, filtered for Alberta to ensure regional relevance. Schedule 1 of the SARA represents the List of Wildlife Species at Risk that are legally protected, while Schedules 2 and 3 include species pending further assessment (Government of Canada, 2020). Species meeting the criteria for the Habitat Stewardship Program for Species at Risk Eligibility were bolded. As outlined by the HSP guidelines, eligibility applies to wildlife present on the property that adhere to one or more of the following program's defined criteria:

> (A) are included in their regional wildlife priorities for the season.
>
> (B) are indicated in Schedule 1 of the SARA (but not listed as extirpated).
>
> (C) are listed as Endangered, Threatened or Special Concern by COSEWIC, but are not included in Schedule 1 of the SARA.

Results

CEI Property Description

The 140-acre property has previously been studied and its forest and vegetative cover classified by Salle (2015) (subsequent mapping measured the property at 143 acres). A comprehensive species list of plants and lichens is provided in Table 1.

The property is composed of several habitat types, including white spruce (*Picea glauca*) forest, trembling aspen (*Populus tremula*) forest, mixed aspen-spruce forest, wetlands, and permanent water bodies. Figure 1 illustrates the spatial distribution of these ecosystems as well as the location of sampling quadrants.

Vegetation Survey in 20-Acer Pen Area

The results of large-pen mapping and habitat-type distribution assessments (Stephens and Etemadi, 1994) are shown in Figure 2. Species relative abundance exhibited both spatial and temporal variation, with apparent zonation patterns observed across habitats throughout June, July, and August. Distinct seasonal changes were also noted in dominant vegetation within each habitat type.

In the grass/shrub areas, early-season vegetation was dominated by grasses such as *Agropyron* spp., *Koelaria macrantha*and *Elymus* spp., accompanied by flowering species including *Achillea millefolium, Geum triflorum*, *Sisyrinchium angustifolium* and *Dodecatheon pauciflorum*. Later in the season, these were gradually replaced by *Poa canbyi, Puccinellianuttalliana*and *Bromus* spp. along with flowering plants such as *Potentilla fruticosa, Ranunculus* spp., *Lilium montanum, Zizia aptera, Zygadenus elegans,* and *Galium boreale*. Toward the end of the study period, grass/shrub zones were primarily dominated by *Phleum pratense*, members of the Leguminosae, and several Compositae species, notably *Aster*and *Erigeron*.The primary shrubs present throughout the study were *Betula glandulosa* and *Salix* species.

In the aspen stands, vegetation was dominated by *Populus tremuloides*, with an understory consisting mainly of *Danthonia intermedia, Deschampsia* spp.*, Achillea millefolium,* and *Hippuris vulgaris* early in the season. Later*, Agrostis* spp., *Festuca rubra, Potentilla fruticosa* and *Castilleja* spp., and members of the Leguminosae became more prevalent.

The spruce-dominated areas consisted primarily of *Picea glauca* and *Picea mariana*. The forest floor beneath these stands was densely covered with fallen needles and received minimal sunlight, resulting in very limited understory growth. In the more open portions of the spruce forest, however, grasses such as *Danthonia intermedia* and *Elymus* spp. were present, along with *Hippuris vulgaris*. Toward the end of the study period, an increase in fungal growth was also observed within these spruce habitats.

Although several zones were classified as bog, much of this habitat had dried considerably during July, August, and September. These areas were largely dominated by the shrubs *Betula glandulosa*and *Salix* spp. throughout the study period. The wetter zones and bog centres supported dense stands of reeds, although these species were not identified.

A subsequent vegetation and lichen survey was later conducted on the property by Salle (2015). The overall vegetation distribution for the CEI property is illustrated in Figure 1.

In the grassland, it was challenging to extrapolate data from the 100m transect to the entire region due to the irregular distribution of lichens. Their presence appeared to be strongly influenced by localized disturbance, particularly trampling and grazing intensity. However, the survey clearly indicated that the species of the genus *Peltigera* were predominant across the grassland habitats.

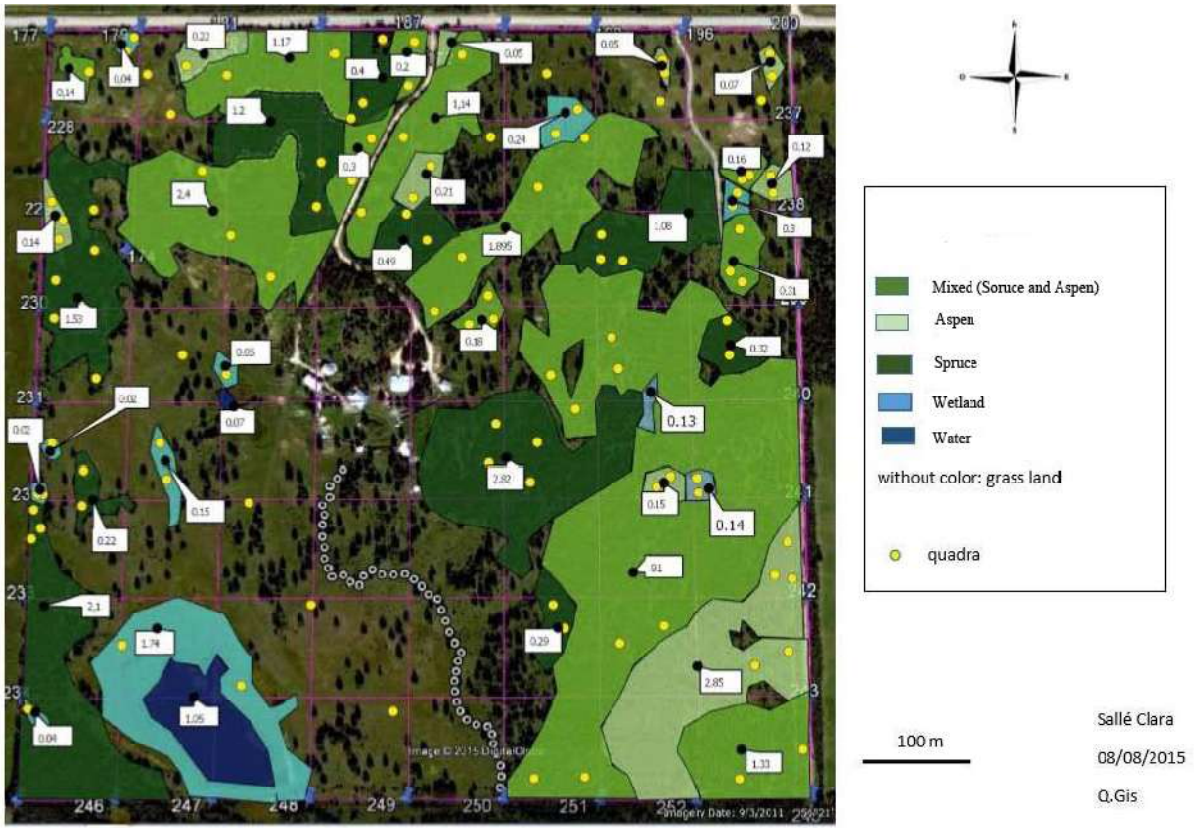

Figure 1. Location of different plant communities on the CEI property (Salle, 2015).

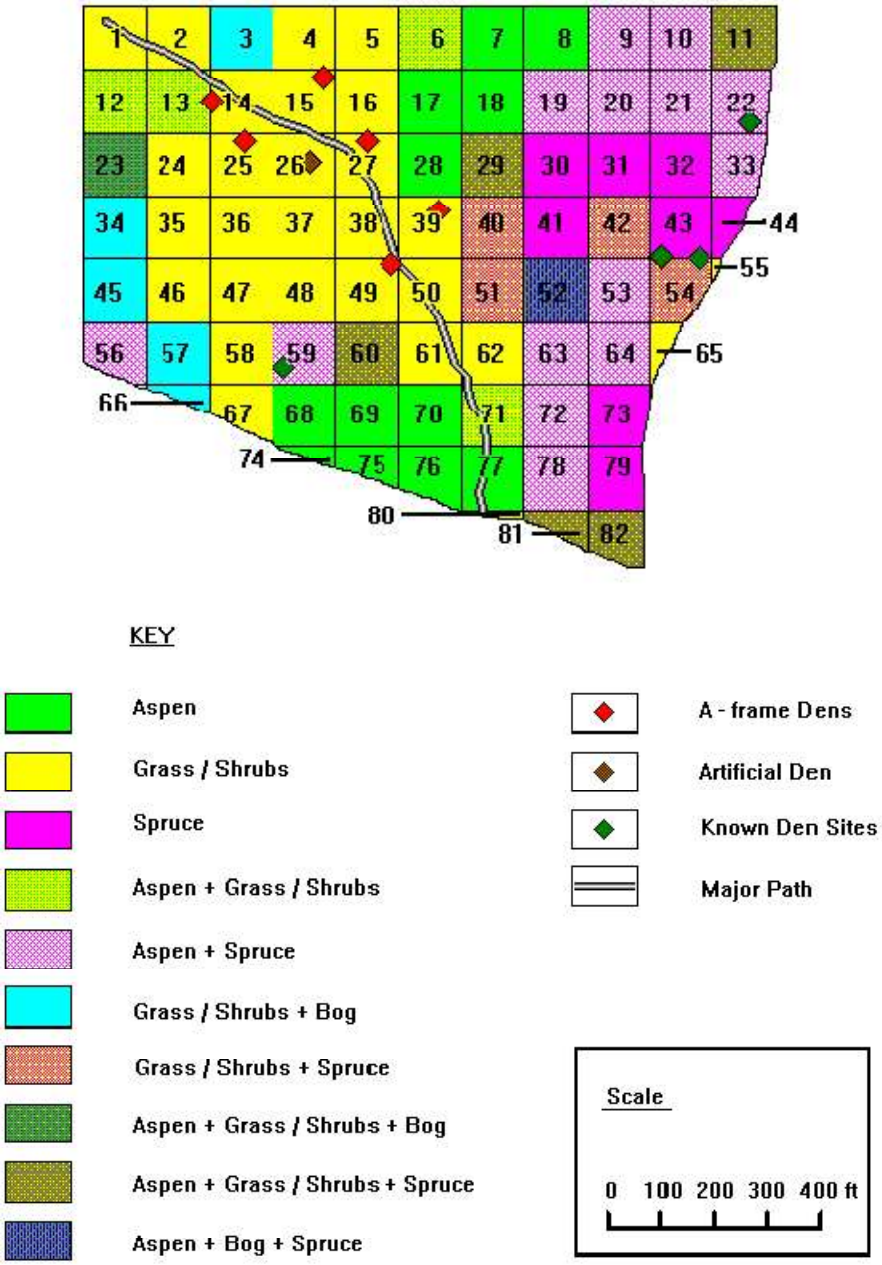

Figure 2. Vegetation survey in 20-acre pen (Stevens & Etemadi, 1994).

Avian Species

Eight bird species recorded on the CEI property are listed as priorities under the Habitat Stewardship Program for Species at Risk for the 2025-2026 season in the Prairie Region, which includes Alberta, Manitoba, and Saskatchewan. These species include aerial insectivores such as the Eastern wood-pewee (*Contopus virens*)(Dieuzaide & Armani, 2021) and Barn swallow

(*Hirundo rustica*) (NatureCounts, 2025), as well as, grassland-associated species such as the Loggerhead shrike (*Lanius ludovicianus*) (Dieuzaide & Armani, 2021).

Additional avian species documented on CEI property that are listed under Schedule 1 of the Species at Risk Act, not considered extirpated, and confirmed as present include: those of Special Concern, such as the Evening grosbeak (*Coccothraustes vespertinus*) (Dieuzaide & Armani, 2021) and Short-eared owl (*Asio flammeus*) (MacArthur, 2025); and those classified as Threatened, including the Barn swallow (*H. rustica*).

Table 1. Avian Species of Concern found on CEI Property.

Species	Scientific Name	Source	Status
Barn swallow	*Hirundo rustica*	eBird Canada	Threatened
Evening grosbeak	*Coccothraustes vespertinus*	Dieuzaide& Armani	Special Concern
Northern saw-whet owl	*Aegolius acadicus*	CEI unpublished data	Endangered Canada
Short-eared Owl	*Asio flammeus*	MacArthur	Special Concern
Eastern wood-peewee	*Contopus virens*	Dieuzaide& Armani	Special Concern
Loggerhead shrike	*Lanius ludovicianus*	Dieuzaide& Armani	Endangered Canada
White-throated sparrow	*Zonotrichia albicollis*	Zamrykut	Candidate List COSEWIC

Mammalian Species

Mammalian species (excluding bats) observed on the CEI property are summarized in Table 2. These records include species documented by Stephens and Etemadi (1994) as well as those identified through trail camera footage, general wildlife monitoring, and incidental observations collected during rehabilitation and ecological studies conducted on the property. Although much of this information remains unpublished, it provides valuable insight into the understanding of local mammal diversity, habitat use, and the ecological integrity of the Cochrane Ecological Institute. The consistent presence of both large and small mammals highlights the site's role as an undisturbed refuge within the foothills ecosystem.

Table 2. Mammalian species sampled at CEI and their status.

Common Name	Scientific Name	Status
Skunks	*Mephitis mephitis*	
Coyotes	*Canis latrans*	
Red fox	*Vulpes vulpes*	
Northern flying squirrel	*Glaucomys sabrinus*	
Red squirrel	*Tamiasciurus hudsonicus*	
American elk	*Cervus canadensis*	
Pine martin	*Martes americana*	
Richardson ground squirrel	*Urocitellus richardsonii*	
Moose	*Alces alce*	
White tailed deer	*Odocoileus virginia*	
Mule deer	*Odocoileus hemionus*	
Common muskrat	*Ondatra zibethicus*	
North American porcupine	*Erethizon dorsatum*	
White-tailed jack rabbit	*Lepus townsendii*	
House mouse	*Mus musculus*	
Field mouse	*Apodemus sylvaticus*	
Meadow vole	*Microtus pennsylvanicus*	
Long-tailed vole	*Microtus longicaudus*	
Arctic shrew	*Sorex arcticus*	
Pygmy shrew	*Sorex hoyi*	
Dusky shrew	*Sorex monticolus*	

Chiropteran Species

Eleven bat species were recorded on the CEI property (Table 3) and include the (Cochrane Ecological Institute, 2023); Pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), Big brown bat (*Eptesicus fuscus*), Western small-footed bat (*Myotis ciliolabrum*), California myotis (*Myotis californicus*), Long-legged myotis (*Myotis volans*), Little brown myotis (*Myotis lucifugus*), Northern myotis (*Myotis septentrionalis*), Hoary bat (*Lasiurus cinereus*), Eastern red bat (*Lasiurus borealis*) and Silver-haired bat (*Lasionycteris noctivagans*). Several of these species are listed by COSEWIC as Endangered, Threatened or of Special Concern, though not all are currently included under Schedule 1 of the SARA.

Specifically, the Eastern red bat, Hoary bat, and Silver-haired bat are designated as Endangered (Table 3). Data were collected and reported in 2024 at CEI using ultrasonic acoustic monitoring to assess species presence and activity patterns. These findings emphasize the importance of CEI as a monitoring site for migratory and resident bat populations within Alberta's foothills.

Table 3. Chiropteran species sampled at CEI and their status.

Common Name	Scientific Name	Status
Pallid bat	*Antrozous pallidus*	Threatened Canada
Townsend's big-eared bat	*Corynorhinustownsendii*	
Big brown bat	*Eptesicus fuscus*	
Silver-haired bat	*Lasionycterisnoctivagans*	Endangered Canada
Eastern red bat	*Lasiurus borealis*	Endangered Canada
Hoary bat	*Lasiurus cinereus*	Endangered Canada
California myotis	*Myotis californicus*	
Western small-footed myotis	*Myotis ciliolabrum*	Sensitive Alberta
Little brown bat	*Myotis lucifugus*	Endangered Alberta
Long-legged myotis	*Myotis volans*	
Northern myotis	*Myotis septentrionalis*	Endangered Alberta

Amphibian Species

Amphibian species documented on the CEI property (Table 4) include the Boreal chorus frog (*Pseudacris maculata*), Wood frog (*Lithobates sylvaticus*), Spring peeper (*Pseudacris crucifer*), Northern leopard frog (*Lithobates pipiens*), and Tiger salamander (*Ambystoma tigrinum*). These species were detected through acoustic recordings, visual observations, and incidental records collected during ecological monitoring.

The Northern leopard frog and Tiger salamander are each listed as species of Special Concern in Alberta, reflecting regional declines and ongoing habitat pressures. The Boreal chorus frog, while widespread, is considered Threatened. These records highlight the ecological value of the CEI property as a refuge for amphibians that depend on intact wetland and riparian habitats.

Table 4. Amphibian species sampled at CEI and their status.

Common Name	Scientific Name	Status
Boreal chorus frog	*Pseudacris maculata*	Threatened
Wood frog	*Lithobates sylvaticus*	
Spring peeper	*Pseudacris crucifer*	
Northern leopard frog	*Lithobates pipiens*	Special Concern Alberta
Tiger salamander	*Ambystoma tigrinum*	Special Concern Alberta

Reptiles

Reptile diversity on the CEI property is limited, with only one species documented (Table 5): the Terrestrial garter snake (*Thamnophis elegans*). This species is considered Sensitive in Alberta, primarily due to its dependence on specific microhabitats for overwintering and thermoregulation. Observations were recorded incidentally during rehabilitation and ecological surveys. The presence of this species on-site suggests that the property may provide suitable

habitat conditions, including undisturbed ground cover and prey availability, that support small reptile populations.

Table 5. Reptile species sampled at CEI and their status.

Common Name	Scientific Name	Status
Terrestrial garter snake	*Thamnophis elegans*	Sensitive Alberta

Species Identified on Property

Approximately 100 species of birds, mammals, amphibians, and reptiles have been identified on the CEI property through aforementioned monitoring methods.Of these, 10 species are classified asEndangered or Sensitive under the federal Species at Risk Act (SARA) or Alberta'sSpecies at Risk listings.

Each species record includes a reference to the project and year in which said species was observed, corresponding to when the associate study or dataset was completed. Notably, the Little brown myotis, Loggerhead shrike, Northern myotis, and Northern saw-whet owl are among those listed as Endangered. In total, all10 identified species found on the CEI property align with the eligibility criteria for the Habitat Stewardship Program, reinforcing the CEI property's ecological value and its potential for funding consideration under species recovery and habitat protection initiatives.

Discussion

During surveys on the CEI property the following number of species were found by phylum.

Table 6. Total number of species on the CEI property by phylum.

Phylum	Number of Species	Listed Species
Avians	85	7
Mammals	31	7
Lichens	6	0
Plants	60	0
Reptiles	1	1
Amphibians	5	3
Total	**188**	**18**

The Habitat Stewardship Programfor Species at Risk provides funding for Canadian projects that protect and recover species listed under the Species at Risk Act (Government of Canada, 2025). The Cochrane Ecological Institute (CEI) meets multiple eligibility criteria outlined by the program. Specifically:

> (A) a Canadian non-governmental organization, consistent with the HSP's definition of eligible recipients.

(B) the property consists of privately owned land, qualifying under the program's 'Geographic location' criteria.

(C) ten species identified on the CEI property are listed as eligible under HSP priorities, eight of whichare designated as priority species for the 2025-26 funding cycle.

(D) CEI already engages in several eligible activities, including(i) species and habitat threat abatement, (ii) conservation planning, (iii) surveys, inventories, and monitoring, and (iv) outreach and education.

The HSP further notes that while its focus is on target species, conservation actions benefitting one species often provide cascading benefits to others. CEI's high biodiversity – demonstrated by its meta-analysis of avian, amphibian, and chiropteran (bat) species– reflects a healthy and interconnected ecological web where protection of one species inherently supports many others.

Given the Cochrane Ecological Institute's fulfillment of all four main eligibility requirements and its existing commitment to research, rehabilitation, and community education, the institute is well positioned for the HSP funding consideration.Although the current application cyclehas closed, CEI's documented biodiversity, long-term monitoring record, and stewardship activities strongly support its prioritization for future HSP opportunities.

Recommendations

While a substantial number of species have been documented on the CEI property, the limited availability of recent and relevant reports and datasets may have contributed to an underestimate of the number of individual species on the property. Some existing records, particularly older observations, should be revisited to confirm current presence and relevance.For example, a Northern saw-wet owl (*Aegolius acadicus*) was recorded on the property in 1984, which is an eligible species under HSP, but its absence from recent data suggests the need for updated surveys to verify its ongoing presence. Targeted monitoring programs, such as a dedicated Northern saw-wet owl survey, could provide stronger evidence to support CEI in their application. Expanding research to include updated inventories and seasonal surveys would help refine estimates of species abundance and habitat use. This, in turn, would improve the accuracy of CEI's biodiversity baseline and strengthen future funding applications by demonstrating measurable conservation outcomes and long-term monitoring capacity.

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Appendix 1: Summary of reports and species data for avians.

Species	Source	Status
Alder flycatcher	eBird Canada	
American crow	MacArthur	
American goldfinch	eBird Canada	
American kestrel	Dieuzaide& Armani	
American robin	MacArthur	
Ash-throated flycatcher	Dieuzaide& Armani	
Bald eagle	Dieuzaide& Armani	
Barn swallow	eBird Canada	Threatened
Bewick's wren	Dieuzaide& Armani	
Black-billed magpie	Andre	
Black-capped chickadee	MacArthur	
Blue jay	MacArthur	
Blue-winged teal	eBird Canada	
Boreal chickadee	MacArthur	
Brown creeper	MacArthur	
Brown-headed cowbird	Zamrykut	
Brown-headed tit	Dieuzaide& Armani	
Canada goose	MacArthur	
Canada jay	MacArthur	
Chestnut-backed chickadee	Dieuzaide& Armani	
Chipping sparrow	Zamrykut	
Clay-coloured sparrow	MacArthur	
Common raven	Andre	
Dark-eyed junco	Andre	
Downy woodpecker	Dieuzaide& Armani	
Eastern kingbird	Dieuzaide& Armani	
Eastern peewee	Dieuzaide& Armani	Special Concern
Eastern phoebe	Zamrykut	
European starling	MacArthur	
Evening grosbeak	Dieuzaide& Armani	Special Concern
Golden crowned wren	Dieuzaide& Armani	
Golden-crowned kinglet	MacArthur	
Goldfinch	Dieuzaide& Armani	
Gray jay	Dieuzaide& Armani	
Gray-blue gnatcatcher	Dieuzaide& Armani	
Great Blue heron	eBird Canada	
Great gray owl	eBird Canada	
Great horned owl	Dieuzaide& Armani	
Greater yellowlegs	MacArthur	
Hairy woodpecker	Andre	
House sparrow	Dieuzaide& Armani	
House wren	Dieuzaide& Armani	
Killdeer plover	Dieuzaide& Armani	
Least sandpiper	Dieuzaide& Armani	

Lincoln sparrow	Dieuzaide& Armani	
Loggerhead shrike	Dieuzaide& Armani	Special Concern
Long-billed dowitcher	MacArthur	
Mallard duck	Dieuzaide& Armani	
Merlin	MacArthur	
Mountain bluebird	eBird Canada	
Mountain chickadee	Andre	
Northern flicker	Dieuzaide& Armani	
Northern harrier	eBird Canada	
Northern hawk owl	MacArthur	
Northern saw-whet owl	CEI unpublished data	Endangered
Osprey	Dieuzaide& Armani	
Pectoral sandpiper	MacArthur	
Pine grosbeak	eBird Canada	
Pine siskin	MacArthur	
Red-breasted nuthatch	MacArthur	
Redpoll (flammea)	eBird Canada	
Redpoll (Hoary)	eBird Canada	
Red-tailed hawk	MacArthur	
Red-winged blackbird	MacArthur	
Ruby-crowned kinglet	MacArthur	
Ruby-throated hummingbird	Dieuzaide& Armani	
Sandhill crane	Zamrykut	
Savannah sparrow	Dieuzaide& Armani	
Savannah sparrow	MacArthur	
Short-eared owl	MacArthur	Special Concern
Song sparrow	MacArthur	
Swainson's hawk	Meynhardt	
Swamp sparrow	Zamrykut	
Tree swallow	Dieuzaide& Armani	
Tufted titmouse	Dieuzaide& Armani	
Western meadowlark	eBird Canada	
Western peewee	Dieuzaide& Armani	
White-breasted nuthatch	eBird Canada	
White-crowned sparrow	MacArthur	
White-throated sparrow	MacArthur	
White-winged crossbill	eBird Canada; Dieuzaide& Armani	
Wilson's snipe	Dieuzaide& Armani	
Yellow warbler	eBird Canada	
Yellow-rumped warbler	MacArthur	

Appendix 2: List of plant species found on CEI property showing their status according to SARA.

Common Name	Scientific Name	Status
Grass	*Poaceae*	
Yarrow	*Achillea millefolium*	
Vanilla leaf * strawberry/mint	*Achlys triphylla*	
Wheat grass	*Agropyron* spp.	
Grass	*Agrostis* spp.	
Ragweed	*Ambrosia artemisiifolia*	
Everlasting	*Antennaria rosea*	
Heart shape arnica	*Arnica cordifolia*	
Aster	*Aster* spp.	
Siberian aster	*Asteraceae sibiricus*	
Dwarf birch	*Betula glandulosa*	
Brome grasses	*Bromus* spp.	
Plumelessthistle	*Carduus acanthoides*	
Paint brush	*Castilleja* spp.	
Oat grass	*Danthonia intermedia*	
Shrubby cinquefoil	*Dasiphorafruticosa*	
Shooting star	*Dodecatheon pauciflorum*	
Couch grass	*Elymus* spp.	
Horsetail	*Equisetum arvense*	
Fleabane	*Erigeron* spp.	
Redfescue	*Festuca rubra*	
Strawberry	*Fragaria vesca*	
Northern bedstraw	*Galiumboreale*	
Prairie smoke	*Geum triflorum*,	
Oval leaf allanroot	*Heurcheuriacyllindrica*	
Mare's-tail	*Hippuris vulgaris*	
Stair step moss	*Hylocomium splendens*	
St John's wort	*Hypericum perforatum*	
Prairie junegrass	*Koelariamacrantha*	
Tawny milk cap mushroom	*Lactifluusvolemus*	
Vechling	*Lathyrus nissolia*	
Labrador tea	*Ledum glandulosum*	
Prairie lily	*Lilium philadelphicum*	
Honeysuckle	*Lonicera periclymenum*	
Tall lungwort	*Mertensia paniculata*	
Woollygroundsel	*Packeracana*	
Louse wort	*Pedicularis canadensis*	
Timothy grass	*Phleum pratense*	

Hooded rosette lichen	Physciaadscendens
White spruce	*Picea glauca*
Black spruce	*Picea mariana*.
Lodge pole pine	*Pinus contorta*
Broad leaf plantain	*Plantago major*
Bunch grass	*Poa canbyi,*
Trembling aspen	*Populus tremuloides*y
Cinquefoil	*Potentilla fruticosa*
Nuttall's alkaligrass	*Puccinellanuttalliana*
Common pink wintergreen	*Pyrola asarifolia*
Tall buttercup	*Ranunculus acris*
Buttercup	*Ranunculus* spp.
Wild prickly rose	*Rosa acicularis*
Willow	*Salix* spp.
Narrow-leaf blue-eyedgrass	*Sisyrinchium angustifolium*
Dandelion	*Taraxacum officinale*
Meadow rue	*Thalictrum aquilegifolium*
Clover	*Trifolium repens*
Billberry	*Vaccinium myrtillus*
Vetch	*Vicia sativa*
Prairie golden alexanders	*Zizia aptera,*
Alpine death camas	*Zygadenus elegans*

Appendix 3: Lichens found on the CEI property.

Common Name	Scientific Name	Status
Reindeer lichen	*Cladoniarangiferina*	
Hammered shield lichen	*Parmelia sulcata*	
Powdered wrinkle lichen	*Tuckermannopsischlorophylla*	
Hooded rosette lichen	*Physciaadscendens*	
Bristly beard lichen	*Usnea hirta*	
Pin-cushion sunburst lichen	*Xanthoriapolycarpa*	