

## Alaska - Yukon Arctic Ecoregional Assessment Update #5: Conservation Targets



### Representing Biodiversity

Conservation targets are the species and ecological systems selected to represent an ecoregion's biodiversity in an ecoregional assessment. This update describes the methods used to select conservation targets in the Alaska-Yukon Arctic ecoregion.

Because of the vast number of species comprising the biological diversity of the Alaska-Yukon Arctic, it is impractical to assess and plan for *each* individual biological element. We narrow the number of elements we must analyze in the assessment using the coarse filter/fine filter approach (Groves et al., 2000). In the coarse filter/fine filter approach, ecological systems (the coarse filter) provide habitat context for many elements of biological diversity, while inclusion of selected species (the fine filter) provides assurances that important species are accounted for. The coarse filter/fine filter approach is designed to strike a balance between manageability of information about biodiversity and insurance that key elements of biodiversity are included in the assessment.

#### **Coarse Filter**

The coarse filter is a broad-level conservation strategy whereby ecological system types are used as surrogates to represent habitats, constituent species, and ecological processes, without having to account for each element individually. Because previous updates (Nos. 2 and 4) describe the development of the terrestrial and freshwater coarse filters, and a future update will describe the nearshore coarse filter, the remainder of this update will address the development of the fine filter.



#### **Fine Filter**



The fine filter complements the coarse filter, drawing attention to certain species that cannot be reliably represented by the coarse filter. The fine filter includes elements such as small-patch plant and animal community types, and wide-ranging species; these elements may either fall through the cracks of the coarse filter, or overwhelm it by requiring multiple ecological system types in vast home ranges. Other species may be considered fine filter targets due to factors such as global rarity, degree of imperilment or endemism. Additionally, some species may be included as fine filter species because they are members of recurrent communities, such as breeding or feeding aggregations.

## Target Criteria

Selection criteria helped us determine which species should be included as fine filter conservation targets. We began with criteria outlined in *Designing a Geography of Hope*, The Nature Conservancy's guide to ecoregional assessment (Groves et al., 2000). Several *Geography of Hope* criteria pertain to a species' vulnerability or risk of extinction. We added additional criteria to acknowledge the cultural importance of subsistence species, to address the needs of species that utilize a large and diverse amount of the Arctic landscape, and to include the expertise of local biologists and other organizations familiar with the ecoregion. Using these selection criteria (Table 1), we compiled a lengthy list of birds, fish, mammals, and vascular plants as potential fine filter conservation targets for the Alaska-Yukon Arctic ecoregional assessment.

**Table 1.** Species Target Selection Criteria

<b>Criteria</b>	<b>Definition</b>
<b>imperiled</b>	Species that are rare, of limited distribution, or vulnerable to elimination (NatureServe, 2003b); species that could become rare or endangered if traded (CITES, 2003); or species that are particularly sensitive to human activities or natural events (NatureServe, 2003a)
<b>threatened or endangered</b>	Species that face a high to extremely high risk of extinction in the wild (IUCN 2003) or are listed or proposed as threatened or endangered under Federal Endangered Species Act (USFWS, 2003)
<b>agency or other group priority</b>	Species identified by an agency or organization as a priority, including State of Alaska species of special concern (ADFG, 1998), Audubon watchlist (Audubon, 2002), and Partners in Flight priority species (BPIF, 1999)
<b>documented declining</b>	Species that exhibit significant declines in part of their range, are subject to a high degree of threat in multiple seasons, or have unique habitat or behavioral requirements that expose them to great risk (Groves et al., 2000)
<b>limited distribution</b>	Species that are endemic (e.g., majority of species occurs in this ecoregion), limited (occurs in only a few ecoregions), peripheral (at edge of their range in this ecoregion), or disjunct (geographically isolated) in their distribution (Groves et al., 2000)
<b>vulnerable</b>	Species with some aspect of their life history that makes them susceptible to species-level declines (Groves et al., 2000)
<b>important for subsistence</b>	Species in the ecoregion known to be important to Alaska Natives for subsistence
<b>umbrella</b>	Species whose home range habitat is large and diverse. By including this species, habitat needs for other species will likely be represented
<b>aggregation</b>	Species concentration areas that are unique, irreplaceable, or critical to the conservation of a certain species or suite of species (Groves et al., 2000)

## Primary Targets

From a list of potential fine filter target species, we selected a subset, called *primary* targets, based on the availability of credible spatial data that *comprehensively* depicts the locations of habitats, life-cycle stages, or ranges of the species across the ecoregion<sup>1,2</sup>. The resulting 85 primary target species are summarized in Table 2, and individually listed in Table 4.

**Table 2.** Primary target summary

Primary target	#
Birds	16*
Fish	9
Marine mammals	5
Terrestrial mammals	4
Vascular plants	51
<b>Total</b>	<b>85</b>

\* includes 2 bird aggregations

To spatially analyze primary target species, we incorporated information about life-cycle stages rather than simply relying on total distribution or range information. For instance, we considered each caribou herd separately, rather than lumping all caribou together. Furthermore, when possible, we depicted known life-cycle stages such as calving areas, wintering areas, insect relief areas, etc. Similarly, when data permitted, we considered bird breeding areas separate from molting areas.<sup>3</sup>

## Secondary Targets

The limited availability of comprehensive spatial data on many Arctic species restricted our list of primary targets to 85 species, over half of which are vascular plants. To incorporate additional information about the distributions of Arctic species, we created a *secondary* targets list. Although comprehensive spatial data *specific* to these species was unavailable, we were able to model species habitat preferences or map known ranges. Over 550 secondary targets were selected based primarily on availability of information, rather than on whether the species met the criteria in Table 1. We grouped secondary targets into three main categories, and developed "richness" maps for birds, terrestrial mammals, and vascular plants (Table 3):

**Table 3.** Methods for analyzing secondary targets

Secondary targets	Method for creating "richness" map
birds	model: linked preferred habitats to terrestrial ecosystem types
terrestrial mammals	overlay: digitized and overlaid range maps
vascular plants	overlay: digitized and overlaid range maps

## Richness Maps

The richness maps indicate which parts of the ecoregion support a greater number of target species<sup>4</sup>. As a measure of conservation priority, richness alone is insufficient and sometimes misleading; representation is equally, if not more important. Our assessment relegates richness to a minor role in identifying areas of conservation significance--we use richness as one of several

<sup>1</sup> Although much credible spatial data on species distributions and habitat use exists for localized areas within the ecoregion, such as Prudhoe Bay, they are incompatible with the scale of this assessment.

<sup>2</sup> Data were drawn primarily from published borough, state, and federal agency data sets; some data sets—particularly older and coarser information-- were modified by expert review for this assessment.

<sup>3</sup> Maps of primary targets and data source documentation are available July 2004.

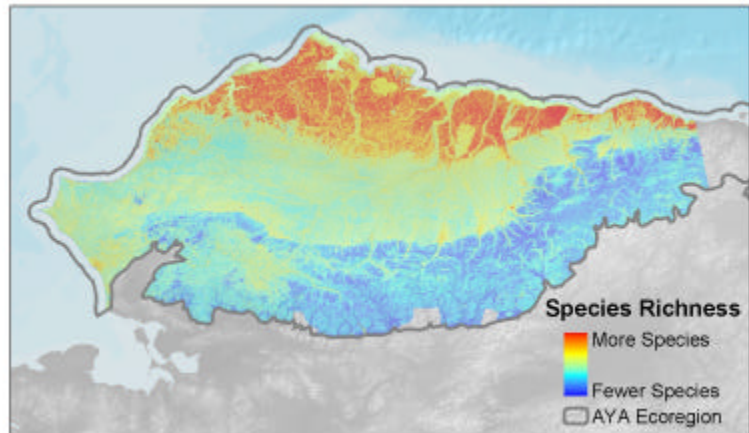
<sup>4</sup> Because we could not model or map every species, these maps are not true species richness maps, but richness maps for the species we targeted.

factors in a cost suitability index which indicates the relative likelihood of successful biodiversity conservation across the landscape<sup>5</sup>.

### **Bird Target Richness**

To create the bird target richness map, we researched the habitat affinities of 89 bird species that are known to occur in the ecoregion (Table 5) and linked their habitat affinities to the 36 terrestrial ecosystems we described and mapped.<sup>6</sup> The results show that for these birds, there is greater use of habitats in the coastal plain than in the foothills or mountains (Figure 1). Additional information about methods used to create this map are available upon request.

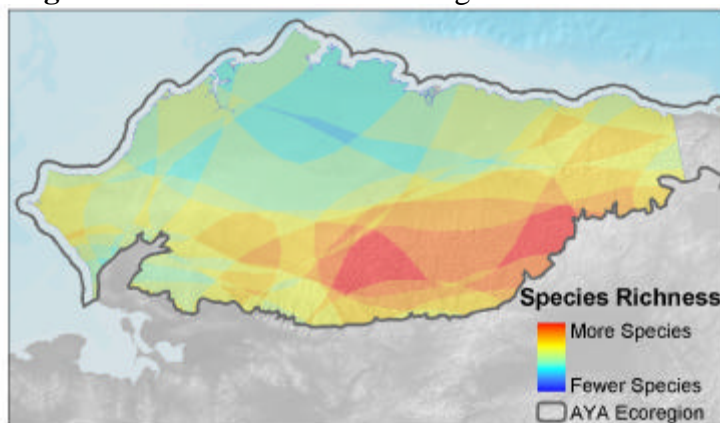
**Figure 1.** Bird Target Richness



### **Terrestrial Mammal Target Richness**

We created a richness index for terrestrial mammals by digitizing range maps for 29 species commonly found in this ecoregion<sup>7</sup> (Table 6). Range maps were digitized from *Distribution of Alaskan Mammals* (Manville and Young, 1965). The results reveal that for these terrestrial mammals, there is greater species richness in the mountains than in the foothills or coastal plain. This is likely due to the fact that the ranges of few terrestrial mammals are restricted to the foothills or coastal plain; most that occur there also extend into the Brooks Range, with the notable exception of the musk ox. On the other hand, several species that inhabit the mountains are not found in the foothills or coastal plain, such as red squirrel and marten.

**Figure 2.** Terrestrial Mammal Target Richness



Many terrestrial mammals in this ecoregion are habitat generalists, wide-ranging, and/or widely dispersed. These characteristics dissuaded us from modeling terrestrial mammal habitat preferences as we did for birds. The coarseness of this overlay map, however, suggests the need for updated and more refined range maps for terrestrial mammals in this ecoregion.

### **Vascular Plant Target Richness**

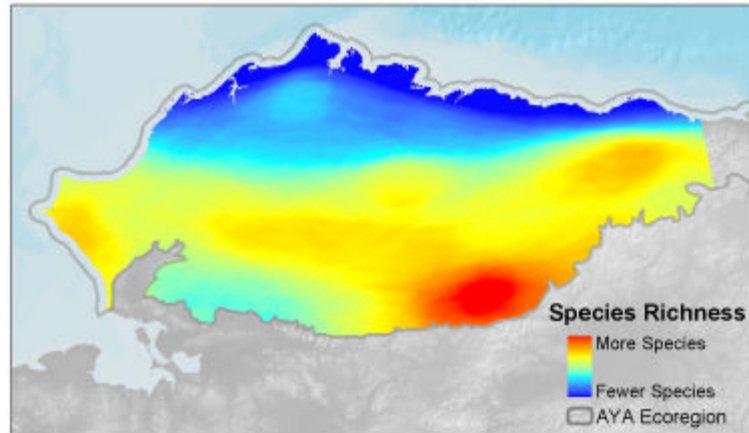
<sup>5</sup> A future update will provide more information about the cost suitability index.

<sup>6</sup> See Update 2 for the terrestrial systems described and mapped for the Alaska-Yukon Arctic Ecoregion.

<sup>7</sup> We did not include terrestrial mammals whose ranges were limited to the south side of the Brooks Range, reasoning that they are more indicative of boreal systems than of the Alaska-Yukon Arctic ecoregion.

The methods used to create the plant richness map are akin to those used for the terrestrial mammal richness map—species range overlays. Here, 438 species range maps from *Flora of Alaska and Neighboring Territories: A Manual of the Vascular Plants* (Hulten, 1968) digitized at Alaska Pacific University are overlaid (Dial et al. unpublished data). Like the terrestrial mammals, there is greater species richness in the mountains than in the foothills or coastal plain. This may be influenced by the plant species representative of boreal ecosystems to the south whose ranges extend into the south slope of the Brooks Range.

**Figure 3.** Plant Target Richness



## The Impact of Targets

The outcome of an ecoregional assessment is highly dependent on the selection of target species and systems. The availability of spatial data influences whether a particular species is incorporated as a fine filter target. Data gaps—in documented knowledge as well as gaps in spatial data—for many species in the Alaska-Yukon Arctic ecoregion are significant and prevented some important species from being included in the assessment (Table 7). For example, the Alaska marmot (*Marmota broweri*) is endemic to the ecoregion, but because its specific habitat use has not been mapped, we could not include the species as a primary target. Nor could it be included as a secondary target since it was not included in *Distribution of Alaskan Mammals*.

Lack of information for species endemic to or reliant on the Alaska-Yukon Arctic ecoregion reduces the range of questions that the ecoregional assessment can address. Although good localized spatial data exist for some species, ecoregionally comprehensive data were unavailable for the majority. In addition, due to time and funding constraints we were unable to retrieve datasets for the Canadian portion of the ecoregion; thus, this assessment is focused on the Alaskan Arctic. We hope to integrate information about the Yukon Arctic in the future. We will highlight these and other data gaps in a future update with the aim of encouraging additional research and spatial documentation about species and communities in the ecoregion.

**Table 3. Primary Species Targets**

<b>Scientific name</b>	<b>Common Name</b>	<b>Selection Rationale</b>
<b>Birds</b>		
<i>Anser frontalis</i>	White-fronted goose	Important subsistence species
<i>Aquila chrysaetos</i>	Golden eagle	Distribution
<i>Brachyramphus brevirostris</i>	Kittlitz's murrelet	Agency or Other Group Priority
<i>Branta bernicla nigricans</i>	Black brant	Documented declining
<i>Cephus grylle</i>	Black guillemot	Distribution
<i>Clangula hyemalis</i>	Long-tailed duck	Documented declining
<i>Falco peregrinus-- tundrius</i>	Arctic peregrine falcon	Imperiled, Distribution
<i>Gavia adamsii</i>	Yellow-billed loon	Agency / Other Group priority
<i>Nyctea scandiaca</i>	Snowy owl	Agency or Other Group Priority
<i>Polysticta stelleri</i>	Steller's eider	T&E, Agency or Other Group Priority
<i>Somateria fischeri</i>	Spectacled eider	T&E, Agency or Other Group Priority
<i>Somateria mollissima</i>	Pacific common eider	Imperiled
<i>Tryngites subruficollis</i>	Buff-breasted sandpiper	Agency or Other Group Priority
<i>Xema sabini</i>	Sabine's gull	Important subsistence species
n/a	Seabird colonies	Aggregations
n/a	Shorebirds	Aggregations
<b>Fish</b>		
<i>Coregoninae family</i>	Whitefish	Important subsistence species
<i>Oncorhynchus gorbuscha</i>	Pink	Important subsistence species
<i>Oncorhynchus keta</i>	Chum	Important subsistence species
<i>Oncorhynchus kisutch</i>	Coho	Important subsistence species
<i>Oncorhynchus nerka</i>	Sockeye	Important subsistence species
<i>Oncorhynchus tshawytscha</i>	King	Important subsistence species
<i>Salvelinus malma</i>	Dolly varden	Important subsistence species
<i>Salvelinus alpinus</i>	Arctic char	Important subsistence species
<i>Stendous leucichthys nelma</i>	Sheefish	Important subsistence species
<b>Marine Mammals</b>		
<i>Balaena mysticetus</i>	Bowhead whale	T&E, Agency or Other Group Priority
<i>Delphinapterus leucas</i>	Beluga whale	T&E, Imperiled
<i>Odobenus rosmarus</i>	Pacific walrus	Imperiled, Aggregations
<i>Phoca largha</i>	Spotted seal	Important subsistence species
<i>Ursus maritimus</i>	Polar bear	Imperiled
<b>Terrestrial Mammals</b>		
<i>Alces alces</i>	Moose	Documented declining
<i>Ovibos moschatus</i>	Muskoxen	Distribution
<i>Rangifer tarandus</i>	Caribou	Umbrella Species
<i>Ursus arctos</i>	Brown bear	Umbrella Species
<b>Vascular Plants</b>		
<i>Amerorchis rotundifolia</i>		Imperiled
<i>Aphragmus eschscholtzianus</i>		Imperiled
<i>Arenaria longipedunculata</i>		Imperiled
<i>Artemisia comata</i>		Imperiled
<i>Aster pygmaeus</i>		Imperiled
<i>Aster yukonensis</i>		Imperiled
<i>Astragalus nutzotinensis</i>		Imperiled
<i>Cardamine microphylla ssp. blaisdellii</i>		Imperiled
<i>Carex atherodes</i>		Imperiled
<i>Carex atosquama</i>		Imperiled
<i>Carex eburnea</i>		Imperiled
<i>Carex eleusinoides</i>		Imperiled

**Table 3. cont.**

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Scientific name	Common Name	Selection Rationale
<b>Vascular Plants</b>		
<i>Carex holostoma</i>		Imperiled
<i>Carex leptalea</i>		Distribution
<i>Carex livida</i>		Distribution
<i>Claytonia porsildii</i>		Imperiled
<i>Colpodium vahlianum</i>		Imperiled
<i>Corispermum ochotense</i> var. <i>alaskanum</i>		Imperiled
<i>Cryptogramma stelleri</i>		Imperiled
<i>Cypripedium guttatum</i>		Imperiled
<i>Cypripedium parviflorum</i> s. <i>lat</i>		Imperiled
<i>Cypripedium passerinum</i>		Imperiled
<i>Draba capitata</i>		Imperiled
<i>Draba micropetala</i>		Imperiled
<i>Draba pauciflora</i>		Imperiled
<i>Draba porsildii</i>		Imperiled
<i>Erigeron acris</i> var. <i>kamtschaticus</i>		Imperiled
<i>Erigeron grandiflorus</i>		Imperiled
<i>Erigeron muirii</i>		Imperiled
<i>Erigeron yukonensis</i>		Imperiled
<i>Eritrichium splendens</i>		Imperiled
<i>Gastrolychnis ostenfeldii</i>		Imperiled
<i>Lomatogonium rotatum</i>		Imperiled
<i>Mertensia drummondii</i>		Imperiled
<i>Monolepis nuttalliana</i>		Imperiled
<i>Montia bostockii</i>		Imperiled
<i>Oxygraphis glacialis</i>		Imperiled
<i>Oxytropis arctica</i> var. <i>barnebyana</i>		Imperiled
<i>Oxytropis kokrinensis</i>		Imperiled
<i>Papaver gorodkovii</i>		Imperiled
<i>Papaver walpolei</i>		Imperiled
<i>Pedicularis hirsuta</i>		Imperiled
<i>Phlox richardsonii</i>		Imperiled
<i>Pleuropogon sabinei</i>		Imperiled
<i>Poa hartzii</i> ssp. <i>alaskana</i>		Imperiled
<i>Poa pseudoabbreviata</i>		Imperiled
<i>Polystichum lonchitis</i>		Imperiled
<i>Populus balsamifera</i>		Distribution
<i>Potentilla rubricaulis</i>		Imperiled
<i>Potentilla stipularis</i>		Imperiled
<i>Primula anvilensis</i>		Imperiled
<i>Puccinellia arctica</i> s. <i>str.</i>		Imperiled
<i>Puccinellia wrightii</i>		Imperiled
<i>Pulsatilla patens</i> ssp. <i>multifida</i>		Imperiled
<i>Rumex krausei</i>		Imperiled
<i>Saxifraga aizoides</i>		Imperiled
<i>Smelowskia calycina</i> var. <i>media</i>		Imperiled
<i>Smelowskia calycina</i> var. <i>porsildii</i>		Imperiled
<i>Smelowskia johnsonii</i>		Imperiled
<i>Stellaria alaskana</i>		Imperiled
<i>Stellaria dicranoides</i>		Imperiled
<i>Thlaspi arcticum</i>		Imperiled
<i>Trisetum sibiricum</i> ssp. <i>litorale</i>		Imperiled

**Table 5.** Bird species included as secondary targets to develop richness index

Common Name <sup>a</sup>	Scientific Name <sup>a</sup>	Common Name	Scientific Name
Red-throated Loon	<i>Gavia stellata</i>	Semipalmated Sandpiper	<i>Calidris pusilla</i>
Pacific Loon	<i>Gavia pacifica</i>	Western Sandpiper	<i>Calidris mauri</i>
Common Loon	<i>Gavia immer</i>	Least Sandpiper	<i>Calidris minutilla</i>
Yellow-billed Loon	<i>Gavia adamsii</i>	White-rumped Sandpiper	<i>Calidris fuscicollis</i>
Red-necked Grebe	<i>Podiceps grisegena</i>	Baird's Sandpiper	<i>Calidris bairdii</i>
Tundra Swan	<i>Cygnus columbianus</i>	Pectoral Sandpiper	<i>Calidris melanotos</i>
Greater White-fronted Goose	<i>Anser albifrons</i>	Dunlin	<i>Calidris alpina</i>
Snow Goose	<i>Chen caerulescens</i>	Stilt Sandpiper	<i>Calidris himantopus</i>
Canada Goose	<i>Branta canadensis</i>	Buff-breasted Sandpiper	<i>Tryngites subruficollis</i>
Brant	<i>Branta bernicla</i>	Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>
Green-winged Teal	<i>Anas crecca</i>	Common Snipe	<i>Gallinago gallinago</i>
Mallard	<i>Anas platyrhynchos</i>	Red-necked Phalarope	<i>Phalaropus tricolor</i>
Northern Shoveler	<i>Anas clypeata</i>	Red Phalarope	<i>Phalaropus lobatus</i>
Northern Pintail	<i>Anas acuta</i>	Pomarine Jaeger	<i>Stercorarius pomarinus</i>
American Wigeon	<i>Anas americana</i>	Parasitic Jaeger	<i>Stercorarius parasiticus</i>
Greater Scaup	<i>Aythya marila</i>	Long-tailed Jaeger	<i>Stercorarius longicaudus</i>
Lesser Scaup	<i>Aythya affinis</i>	Glaucous Gull	<i>Larus hyperboreus</i>
Steller's Eider	<i>Polysticta stelleri</i>	Sabine's Gull	<i>Xema sabini</i>
Spectacled Eider	<i>Somateria fischeri</i>	Arctic Tern	<i>Sterna paradisaea</i>
King Eider	<i>Somateria spectabilis</i>	Black Guillemot	<i>Cephus grylle</i>
Common Eider	<i>Somateria mollissima</i>	Kittlitz's Murrelet	<i>Brachyramphus brevirostris</i>
Harlequin Duck	<i>Histrionicus histrionicus</i>	Snowy Owl	<i>Nyctea scandiaca</i>
Long-tailed Duck	<i>Clangula hyemalis</i>	Short-eared Owl	<i>Asio flammeus</i>
Black Scoter	<i>Melanitta nigra</i>	Common Raven	<i>Corvus corax</i>
White-winged Scoter	<i>Melanitta deglandi</i>	American Dipper	<i>Cinclus mexicanus</i>
Surf Scoter	<i>Melanitta perspicillata</i>	Bluethroat	<i>Luscinia svecica</i>
Red-breasted Merganser	<i>Mergus serrator</i>	Northern Wheatear	<i>Oenanthe oenanthe</i>
Northern Harrier	<i>Circus cyaneus</i>	Gray-cheeked Thrush	<i>Catharus minimus</i>
Rough-legged Hawk	<i>Buteo lagopus</i>	Yellow Wagtail	<i>Motacilla flava</i>
Golden Eagle	<i>Aquila chrysaetos</i>	American Pipit	<i>Anthus rubescens</i>
Peregrine Falcon	<i>Falco peregrinus</i>	Northern Shrike	<i>Lanius excubitor</i>
Gyr Falcon	<i>Falco rusticolus</i>	American Tree Sparrow	<i>Spizella arborea</i>
Willow Ptarmigan	<i>Lagopus lagopus</i>	Savannah Sparrow	<i>Passerculus sandwichensis</i>
Rock Ptarmigan	<i>Lagopus mutus</i>	Fox Sparrow	<i>Passerella iliaca</i>
Sandhill Crane	<i>Grus canadensis</i>	White-crowned Sparrow	<i>Zonotrichia leucophrys</i>
Black-bellied Plover	<i>Pluvialis squatarola</i>	Lapland Longspur	<i>Calcarius lapponicus</i>
American Golden-Plover	<i>Pluvialis dominica</i>	Smith's Longspur	<i>Calcarius pictus</i>
Pacific Golden-Plover	<i>Pluvialis fulva</i>	Snow Bunting	<i>Plectrophenax nivalis</i>
Semipalmated Plover	<i>Charadrius semipalmatus</i>	Common Redpoll	<i>Carduelis flammea</i>
Lesser Yellowlegs	<i>Tringa flavipes</i>	Hoary Redpoll	<i>Carduelis hornemanni</i>
Wandering Tattler	<i>Heteroscelus incanus</i>		
Upland Sandpiper	<i>Bartramia longicauda</i>	<b>Total = 89 species</b>	
Whimbrel	<i>Numenius phaeopus</i>		
Bar-tailed Godwit	<i>Limosa lapponica</i>		
Ruddy Turnstone	<i>Arenaria interpres</i>		
Black Turnstone	<i>Arenaria melanocephala</i>		
Surfbird	<i>Aphriza virgata</i>		
Red Knot	<i>Calidris cauntus</i>		
Sanderling	<i>Calidris alba</i>		

<sup>a</sup> Common and scientific names follow the American Ornithologists' Union *Check-list of North American Birds* (1998) and updates.

**Table 6.** Terrestrial mammal species included as secondary targets to develop richness index

Order – Family	Species	Common Name(s)	Synonyms <sup>a</sup>
INSECTIVORA			
Soricidae	<i>Sorex cinereus</i>	common shrew; masked shrew	<i>S. personatus</i>
	<i>Sorex monticolus</i>	dusky shrew; montane shrew	<i>S. obscurus</i> ; <i>S. vagrans</i>
	<i>Sorex tundrensis</i>	tundra shrew; arctic shrew	<i>S. arcticus</i>
CARNIVORA			
Canidae	<i>Alopex lagopus</i>	arctic fox	
	<i>Canis latrans</i>	coyote	
	<i>Canis lupus</i>	wolf	
	<i>Vulpes vulpes</i>	red fox	<i>V. fulva</i>
Felidae	<i>Lynx canadensis</i>	lynx; Canada or N. Am. lynx	<i>Felis lynx</i>
Mustelidae	<i>Lontra canadensis</i>	river otter; land or N. Am. otter	<i>Lutra canadensis</i>
	<i>Gulo gulo</i>	wolverine	<i>G. luscus</i>
	<i>Martes americana</i>	marten; American or pine marten	
	<i>Mustela erminea</i>	ermine; short-tailed weasel	
Ursidae	<i>Mustela nivalis</i>	least weasel	<i>M. rixosa</i>
	<i>Ursus arctos</i>	brown bear	<i>U. horribilis</i> or <i>richardsoni</i>
ARTIODACTYLA			
Cervidae	<i>Alces alces</i>	moose	<i>A. americana</i>
	<i>Rangifer tarandus</i>	caribou	<i>R. arcticus</i>
Bovidae	<i>Ovibos moschatus</i>	muskox	
	<i>Ovis dalli</i>	Dall's sheep	
RODENTIA			
Sciuridae	<i>Spermophilus parryii</i>	arctic ground squirrel	<i>Citellus</i> or <i>S. undulatus</i>
	<i>Tamiasciurus hudsonicus</i>	red squirrel	
Muridae	<i>Clethrionomys rutilus</i>	northern red-backed vole	<i>C. dawsoni</i> or <i>Evotomys</i>
	<i>Dicrostonyx groenlandicus</i>	collared lemming; varying lemming	<i>D. rubricatus</i> or <i>torquatus</i>
	<i>Lemmus trimucronatus</i>	brown lemming	<i>L. sibiricus</i> or <i>alascensis</i>
	<i>Microtus miurus</i>	singing vole; Alaska vole	
Erethizontidae	<i>Microtus oeconomus</i>	tundra vole; root vole	<i>M. operarius</i>
	<i>Erethizon dorsatum</i>	porcupine	
LAGOMORPHA			
Ochotonidae	<i>Ochotona collaris</i>	collared pika; cony	
Leporidae	<i>Lepus americanus</i>	snowshoe hare; varying hare	
	<i>Lepus othus</i>	tundra hare; Alaska hare	<i>L. arcticus</i> ; <i>L. timidus</i>

<sup>a</sup> May be encountered in older literature and alternative taxonomic arrangements; listing is not exhaustive.

**Table 7.** Species Not Selected as Targets due to Lack of Data

The following species met one or more of the rarity or vulnerability criteria listed in Table 1, but due to a lack of comprehensive spatial data, they could not be used as primary targets in the ecoregional assessment.

<b>Scientific name</b>	<b>Common Name</b>	<b>Selection Rationale</b>	<b>Use in Assessment</b>
<i>Alopex lagopus</i>	Arctic fox	Endemic	Secondary
<i>Balaenoptera acutorostrata</i>	Minke whale	Imperiled	Not included
<i>Eschrichtius robustus</i>	Gray whale	Imperiled	Not included
<i>Gulo gulo</i>	Wolverine	Vulnerable	Secondary
<i>Lepus othus</i>	Alaskan (tundra) hare	Endemic	Secondary
<i>Marmota broweri</i>	Alaska marmot	Endemic	Not included
<i>Numenius tahitiensis</i>	Bristle-thighed curlew	Imperiled, vulnerable	Not included
<i>Numenius borealis</i>	Eskimo curlew	Imperiled	Not included
<i>Phocoena phocoena</i>	Harbor porpoise	Imperiled, vulnerable	Not included

## Contacts

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## Previous Updates on the Alaska-Yukon Arctic Ecoregional Assessment

Update #1: Project Description  
Update #2: Predictive Terrestrial Ecosystem Model  
Update #3: Gap Analysis of Terrestrial Ecosystems  
Update #4: Freshwater Ecosystem Model

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## The Nature Conservancy

The Nature Conservancy is an international non-profit conservation organization that seeks to preserve the plants, animals, and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive. Ecoregional assessments employ a science-based approach to evaluate the biodiversity significance of landscapes. For the Alaska-Yukon Arctic, our goal is to gather sufficient information to identify areas of biological significance and evaluate current and potential threats to biodiversity in order to develop appropriate and constructive conservation strategies.