

**Supplementary material for:
Predicted changes in wildlife habitats in Arctic natural areas of northwest Alaska**

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Plants species mentioned

alder – *Alnus crispa*
aspen – *Populus tremuloides*
birch - *Betula nana*
black spruce – *Picea mariana*
dryas - *Dryas integrifolia*
dwarf birch – *Betula glandulosa*
poplar – *Populus balsamifera*
sagebrush – *Artemisia tridentata* [??]
sedge - *Carex aquatilis*, *Carex bigelowii*, *C. scirpoidea*
tussock sedge – *Eriophorum vaginatum*
white spruce - *Picea glauca*
willow – *Salix* spp.

Birds of the study area

Common Name	Scientific Name
Greater White-fronted Goose	<i>Anser albifrons</i>
Emperor Goose	<i>Chen canagica</i>
Snow Goose	<i>Chen caerulescens</i>
Brant	<i>Branta bernicla</i>
Cackling Goose	<i>Branta hutchinsii</i>
Tundra Swan	<i>Cygnus columbianus</i>
American Wigeon	<i>Anas americana</i>
Mallard	<i>Anas platyrhynchos</i>
Northern Shoveler	<i>Anas clypeata</i>
Northern Pintail	<i>Anas acuta</i>
Green-winged Teal	<i>Anas crecca</i>
Canvasback	<i>Aythya valisineria</i>
Greater Scaup	<i>Aythya marila</i>
Lesser Scaup	<i>Aythya affinis</i>
Steller's Eider	<i>Somateria stelleri</i>
Spectacled Eider	<i>Somateria fischeri</i>
King Eider	<i>Somateria spectabilis</i>
Common Eider	<i>Somateria mollissima</i>
Harlequin Duck	<i>Histrionicus histrionicus</i>
Surf Scoter	<i>Melanitta perspicillata</i>
White-winged Scoter	<i>Melanitta fusca</i>
Black Scoter	<i>Melanitta americana</i>
Long-tailed Duck	<i>Clangula hyemalis</i>
Bufflehead	<i>Bucephala albeola</i>
Common Goldeneye	<i>Bucephala clangula</i>
Common Merganser	<i>Mergus merganser</i>
Red-breasted Merganser	<i>Mergus serrator</i>
Ruffed Grouse	<i>Bonasa umbellus</i>
Spruce Grouse	<i>Falcipennis canadensis</i>
Willow Ptarmigan	<i>Lagopus lagopus</i>
Rock Ptarmigan	<i>Lagopus muta</i>
Red-throated Loon	<i>Gavia stellata</i>
Pacific Loon	<i>Gavia pacifica</i>
Common Loon	<i>Gavia immer</i>
Yellow-billed Loon	<i>Gavia adamsii</i>
Horned Grebe	<i>Podiceps auritus</i>
Red-necked Grebe	<i>Podiceps grisegena</i>
Osprey	<i>Pandion haliaetus</i>

Bald Eagle	<i>Haliaeetus leucocephalus</i>
Northern Harrier	<i>Circus cyaneus</i>
Sharp-shinned Hawk	<i>Accipiter striatus</i>
Northern Goshawk	<i>Accipiter gentilis</i>
Red-tailed Hawk	<i>Buteo jamaicensis</i>
Rough-legged Hawk	<i>Buteo lagopus</i>
Golden Eagle	<i>Aquila chrysaetos</i>
American Kestrel	<i>Falco sparverius</i>
Merlin	<i>Falco columbarius</i>
Gyr Falcon	<i>Falco rusticolus</i>
Peregrine Falcon	<i>Falco peregrinus</i>
Sandhill Crane	<i>Grus canadensis</i>
Black-bellied Plover	<i>Pluvialis squatarola</i>
American Golden-Plover	<i>Pluvialis dominica</i>
Pacific Golden-Plover	<i>Pluvialis fulva</i>
Semipalmated Plover	<i>Charadrius semipalmatus</i>
Spotted Sandpiper	<i>Actitis macularia</i>
Solitary Sandpiper	<i>Tringa solitaria</i>
Wandering Tattler	<i>Tringa incana</i>
Greater Yellowlegs	<i>Tringa melanoleuca</i>
Lesser Yellowlegs	<i>Tringa flavipes</i>
Upland Sandpiper	<i>Bartramia longicauda</i>
Whimbrel	<i>Numenius phaeopus</i>
Bristle-thighed Curlew	<i>Numenius tahitiensis</i>
Hudsonian Godwit	<i>Limosa haemastica</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 canuts</i>
Sanderling	<i>Calidris alba</i>
Semipalmated Sandpiper	<i>Calidris pusilla</i>
Western Sandpiper	<i>Calidris mauri</i>
Red-necked Stint	<i>Calidris ruficollis</i>
Least Sandpiper	<i>Calidris minutilla</i>
White-rumped Sandpiper	<i>Calidris fuscicollis</i>
Baird's Sandpiper	<i>Calidris bairdii</i>
Pectoral Sandpiper	<i>Calidris melanotos</i>
Rock Sandpiper	<i>Calidris ptilocnemis</i>
Dunlin	<i>Calidris alpina</i>
Stilt Sandpiper	<i>Calidris himantopus</i>
Buff-breasted Sandpiper	<i>Tryngites subruficollis</i>
Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>

Wilson's Snipe	<i>Gallinago delicata</i>
Red-necked Phalarope	<i>Phalaropus lobatus</i>
Red Phalarope	<i>Phalaropus fulicarius</i>
Sabine's Gull	<i>Xema sabini</i>
Bonaparte's Gull	<i>Chroicocephalus philadelphia</i>
Mew Gull	<i>Larus canus</i>
Glaucous-winged Gull	<i>Larus glaucescens</i>
Glaucous Gull	<i>Larus hyperboreus</i>
Aleutian Tern	<i>Onychoprion aleuticus</i>
Arctic Tern	<i>Sterna paradisaea</i>
Pomarine Jaeger	<i>Stercoraria pomarinus</i>
Parasitic Jaeger	<i>Stercoraria parasiticus</i>
Long-tailed Jaeger	<i>Stercoraria longicaudus</i>
Black Guillemot	<i>Cephus grylle</i>
Kittlitz's Murrelet	<i>Brachyramphus brevirostris</i>
Great Horned Owl	<i>Bubo virginianus</i>
Snowy Owl	<i>Bubo scandiacus</i>
Northern Hawk Owl	<i>Surnia ulula</i>
Great Gray Owl	<i>Strix nebulosa</i>
Short-eared Owl	<i>Asio flammeus</i>
Boreal Owl	<i>Aegolius funereus</i>
Belted Kingfisher	<i>Megaceryle alcyon</i>
Downy Woodpecker	<i>Picoides pubescens</i>
Hairy Woodpecker	<i>Picoides villosus</i>
American Three-toed Woodpecker	<i>Picoides dorsalis</i>
Northern Flicker	<i>Colaptes auratus</i>
Olive-sided Flycatcher	<i>Contopus cooperi</i>
Alder Flycatcher	<i>Empidonax alnorum</i>
Hammond's Flycatcher	<i>Empidonax hammondii</i>
Say's Phoebe	<i>Sayornis saya</i>
Northern Shrike	<i>Lanius excubitor</i>
Gray Jay	<i>Perisoreus canadensis</i>
Common Raven	<i>Corvus corax</i>
Horned Lark	<i>Eremophila alpestris</i>
Tree Swallow	<i>Tachycineta bicolor</i>
Violet-green Swallow	<i>Tachycineta thalassina</i>
Bank Swallow	<i>Riparia riparia</i>
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>
Black-capped Chickadee	<i>Poecile atricapillus</i>
Boreal Chickadee	<i>Poecile hudsonicus</i>
Gray-headed Chickadee	<i>Poecile cinctus</i>
Red-breasted Nuthatch	<i>Sitta canadensis</i>
American Dipper	<i>Cinclus mexicanus</i>

Ruby-crowned Kinglet	<i>Regulus calendula</i>
Arctic Warbler	<i>Phylloscopus borealis</i>
Bluethroat	<i>Luscinia svecica</i>
Northern Wheatear	<i>Oenanthe oenanthe</i>
Townsend's Solitaire	<i>Myadestes townsendi</i>
Gray-cheeked Thrush	<i>Catharus minimus</i>
Swainson's Thrush	<i>Catharus ustulatus</i>
Hermit Thrush	<i>Catharus guttatus</i>
American Robin	<i>Turdus migratorius</i>
Varied Thrush	<i>Ixoreus naevius</i>
Eastern Yellow Wagtail	<i>Motacilla tschutschensis</i>
White Wagtail	<i>Motacilla alba</i>
Red-throated Pipit	<i>Anthus cervinus</i>
American Pipit	<i>Anthus rubescens</i>
Bohemian Waxwing	<i>Bombycilla garrulus</i>
Lapland Longspur	<i>Calcarius lapponicus</i>
Smith's Longspur	<i>Calcarius pictus</i>
Snow Bunting	<i>Plectrophenax nivalis</i>
Northern Waterthrush	<i>Parkesia noveboracensis</i>
Orange-crowned Warbler	<i>Oreothlypis celata</i>
Yellow Warbler	<i>Setophaga petechia</i>
Blackpoll Warbler	<i>Setophaga striata</i>
Yellow-rumped Warbler	<i>Setophaga coronata</i>
Wilson's Warbler	<i>Cardellina pusilla</i>
American Tree Sparrow	<i>Spizella arborea</i>
Savannah Sparrow	<i>Passerculus sandwichensis</i>
Fox Sparrow	<i>Passerella iliaca</i>
Lincoln's Sparrow	<i>Melospiza lincolnii</i>
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>
Golden-crowned Sparrow	<i>Zonotrichia atricapilla</i>
Dark-eyed Junco	<i>Junco hyemalis</i>
Rusty Blackbird	<i>Euphagus carolinus</i>
Gray-crowned Rosy-Finch	<i>Leucosticte tephrocotis</i>
Pine Grosbeak	<i>Pinicola enucleator</i>
White-winged Crossbill	<i>Loxia leucoptera</i>
Common Redpoll	<i>Acanthis flammea</i>
Hoary Redpoll	<i>Acanthis hornemanni</i>
Pine Siskin	<i>Spinus pinus</i>

Mammals of the study area

* = major subsistence (regularly harvested) species

Common Name	Scientific Name
Alaska marmot	<i>Marmota broweri</i>
Alaska hare	<i>Lepus othus</i>
American Marten*	<i>Martes americana</i>
Arctic Fox*	<i>Vulpes lagopus</i>
Arctic ground squirrel	<i>Urocitellus parryii</i> ¹
Barren-ground shrew	<i>Sorex ugyunak</i>
Beaver*	<i>Castor canadensis</i>
Black bear*	<i>Ursus americanus</i>
Brown bear*	<i>Ursus arctos</i>
Brown lemming	<i>Lemmus trimucronatus</i>
Canada lynx*	<i>Lynx canadensis</i>
Caribou*	<i>Rangifer tarandus</i>
Collared lemming	<i>Dicrostonyx groenlandicus</i>
Dall's sheep*	<i>Ovis dalli</i>
Ermine	<i>Mustela erminea</i>
Gray wolf*	<i>Canis lupus</i>
Least weasel	<i>Mustela nivalis</i>
Mink*	<i>Neovison vison</i>
Moose*	<i>Alces alces</i>
Muskox*	<i>Ovibos moschatus</i>
Muskrat*	<i>Ondatra zibethicus</i>
Northern red-backed vole	<i>Myodes rutilus</i>
Northern river otter*	<i>Lontra canadensis</i>
Porcupine	<i>Erethizon dorsatum</i>
Red fox*	<i>Vulpes vulpes</i>
Singing vole	<i>Microtus miurus</i>
Snowshoe hare*	<i>Lepus americanus</i>
Tundra Shrew	<i>Sorex tundrensis</i>
Tundra vole	<i>Microtus oeconomus</i>
Wolverine*	<i>Gulo gulo</i>
Meadow Vole	<i>Microtus pennsylvanicus</i>
Northern bog lemming	<i>Synaptomys borealis</i>
Yellow-cheeked vole	<i>Microtus xanthrognatus</i>
Red Squirrel	<i>Tamiasciurus hudsonicus</i>

Northern Flying squirrel
Coyote

Glaucomys sabrinus
Canis latrans

¹Previously, *Spermophilus parryii* (MacDonald and Cook 2009).

Reference

MacDonald, S. O., and J. A. Cook. 2009. Recent mammals of Alaska. University of Alaska Press, Fairbanks, Alaska. 300 pp.

Species-Ecotype Relationships

Use Levels:

3 = high use

2 = medium use

1 = low use

0 = not used

Ecotype																											
	Whimbrel	Bristle-thighed Curlew	Hudsonian Godwit	Bar-tailed Godwit	Ruddy Turnstone	Black Turnstone	Surfbird	Red Knot	Sanderling	Semipalmated Sandpiper	Western Sandpiper	Red-necked Stint	Least Sandpiper	White-rumped Sandpiper	Baird's Sandpiper	Pectoral Sandpiper	Rock Sandpiper	Dunlin	Stilt Sandpiper	Buff-breasted Sandpiper	Long-billed Dowitcher	Wilson's Snipe	Red-necked Phalarope	Red Phalarope	Sabine's Gull	Bonaparte's Gull	
Alpine Acidic Barrens	0	0	0	0	0	0	3	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	
Alpine Acidic Dryas Dwarf Shrub	0	0	0	1	2	0	3	3	0	0	1	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	
Alpine Alkaline Barrens	0	0	0	0	0	0	3	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	
Alpine Alkaline Dryas Dwarf Shrub	0	0	0	1	2	0	3	3	0	0	1	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	
Alpine Ericaceous Dwarf Shrub	0	0	0	1	2	0	3	3	0	0	1	0	0	0	3	0	3	0	0	0	0	0	1	0	0	0	
Alpine Lake	0	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	
Alpine Mafic Barrens	0	0	0	0	0	0	3	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	
Alpine Snowfields and Glaciers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Alpine Wet Sedge Meadow	0	1	0	1	2	0	0	2	0	1	1	0	0	3	2	1	1	0	0	1	0	1	1	0	0	0	
Coastal Barrens	1	0	1	1	2	3	0	1	3	2	2	3	1	1	1	1	1	3	3	1	2	0	1	0	3	0	
Coastal Brackish Sedge-Grass Meadow	1	1	1	1	1	3	0	0	0	3	1	1	1	2	1	2	0	2	1	1	2	2	2	3	3	0	
Coastal Crowberry Dwarf Shrub	1	1	0	1	1	1	0	0	0	3	3	1	0	0	1	1	0	1	0	1	0	0	0	0	1	0	
Coastal Dunegrass Meadow	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1	1	0	1	0	0	0	0	0	0	1	0	
Coastal Water	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	2	0	
Human Modified Barrens	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
Lacustrine Barrens	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
Lacustrine Bluejoint Meadow	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	1	0	0	0	0	0	0	1	0	0	1	0
Lacustrine Wet Sedge Meadow	1	0	0	1	2	0	0	2	0	2	2	0	2	3	1	3	0	3	0	1	3	3	3	2	3	0	
Lacustrine Willow Shrub	1	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	
Lowland Alder Tall Shrub	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Lowland Barrens-Burned	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Lowland Birch Forest	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Lowland Birch-Ericaceous-Willow Low Shrub	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	
Lowland Black Spruce Forest	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
Lowland Ericaceous Shrub Bog	2	0	2	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	3	0	0	0	3	
Lowland Lake	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	3	3	3	0	
Lowland Sedge Fen	1	0	0	1	1	0	0	0	0	2	2	0	2	3	1	3	0	3	0	1	3	2	3	2	3	0	
Lowland Sedge-Dryas Meadow	3	1	0	3	0	0	0	0	0	3	3	0	1	3	2	2	0	1	0	1	0	2	0	0	1	0	
Lowland Spruce-Birch Forest	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Lowland Willow Low Shrub	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	
Riverine Alder-Willow Tall Shrub	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Riverine Barrens	0	0	0	0	3	2	0	0	0	1	1	0	0	0	1	1	0	0	0	1	1	0	1	0	1	0	
Riverine Birch-Willow Low Shrub	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	
Riverine Dryas Dwarf Shrub	3	1	0	3	1	0	0	0	0	2	3	0	2	0	3	2	0	1	0	1	0	1	0	0	0	0	
Riverine Poplar Forest	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Riverine Water	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	
Riverine Wet Sedge Meadow	1	0	0	1	1	0	0	0	0	2	2	0	2	1	0	3	0	3	0	0	3	2	2	2	3	0	
Riverine White Spruce-Poplar Forest	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Riverine White Spruce-Willow Forest	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Riverine Willow Low Shrub	1	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	
Shadow/Indeterminate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Upland Alder-Willow Tall Shrub	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Upland Aspen Forest	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Upland Barrens-Burned	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Upland Barrens-Landslides	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Upland Barrens-Thermokarst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Upland Birch Forest	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Upland Birch-Ericaceous-Willow Low Shrub	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Upland Bluejoint-Herb Meadow	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	
Upland Dwarf Birch-Tussock Shrub	3	3	1	3	0	0	0	2	0	2	3	0	3	0	0	3	1	0	0	1	0	2	0	0	0	0	
Upland Mafic Barrens	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
Upland Sagebrush Shrub	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Upland Sandy Barrens	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Upland Sedge-Dryas Meadow	3	3	1	3	0	0	0	2	0	2	3	0	2	0	2	2	1	0	0	1	0	1	0	0	0	0	
Upland Spruce-Birch Forest	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Upland Spruce-Birch-Herb Forest	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Upland White Spruce Forest	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Upland White Spruce-Herb Forest	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Upland White Spruce-Lichen Forest	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Upland Willow Low Shrub	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	

No. ecotypes used (use ranks 3,2):

5 2 1 4 7 3 6 10 1 10 9 1 10 5 11 8 3 5 1 0 5 13 6 5 8 2

Ecotype	Mew Gull	Glaucous-winged Gull	Glaucous Gull	Aleutian Tern	Arctic Tern	Pomarine Jaeger	Parasitic Jaeger	Long-tailed Jaeger	Black Guillemot	Kittlitz's Murrelet	Great Horned Owl	Snowy Owl	Northern Hawk Owl	Great Gray Owl	Short-eared Owl	Boreal Owl	Belted Kingfisher	Downy Woodpecker	Hairy Woodpecker	American Three-toed Woodpecker	Northern Flicker	Olive-sided Flycatcher	Alder Flycatcher
Alpine Acidic Barrens	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Alpine Acidic Dryas Dwarf Shrub	0	0	0	0	0	0	1	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Alpine Alkaline Barrens	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Alpine Alkaline Dryas Dwarf Shrub	0	0	0	0	0	0	1	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Alpine Ericaceous Dwarf Shrub	0	0	0	0	0	0	1	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Alpine Lake	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alpine Mafic Barrens	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Alpine Snowfields and Glaciers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alpine Wet Sedge Meadow	0	0	1	0	0	0	2	2	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0
Coastal Barrens	3	3	3	3	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Coastal Brackish Sedge-Grass Meadow	3	3	3	1	3	2	2	1	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0
Coastal Crowberry Dwarf Shrub	0	0	1	1	0	1	2	0	0	0	0	2	0	0	3	0	0	0	0	0	0	0	0
Coastal Dunegrass Meadow	2	0	2	3	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0
Coastal Water	3	3	3	3	3	3	1	1	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Human Modified Barrens	1	0	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lacustrine Barrens	2	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lacustrine Bluejoint Meadow	2	0	2	0	2	0	1	1	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0
Lacustrine Wet Sedge Meadow	3	0	3	0	3	2	3	3	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0
Lacustrine Willow Shrub	2	0	2	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
Lowland Alder Tall Shrub	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Lowland Barrens-Burned	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
Lowland Birch Forest	0	0	0	0	0	0	0	0	0	0	2	0	1	2	0	2	1	2	2	0	1	0	1
Lowland Birch-Ericaceous-Willow Low Shrub	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
Lowland Black Spruce Forest	0	0	0	0	0	0	0	0	0	0	1	0	3	3	0	1	1	0	0	2	0	3	1
Lowland Ericaceous Shrub Bog	3	0	1	0	1	0	0	2	0	0	0	0	3	3	1	0	0	0	0	0	0	3	1
Lowland Lake	3	1	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lowland Sedge Fen	3	0	3	0	2	2	2	2	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0
Lowland Sedge-Dryas Meadow	0	0	1	0	0	1	2	2	0	0	0	2	0	0	3	0	0	0	0	0	0	0	0
Lowland Spruce-Birch Forest	0	0	0	0	0	0	0	0	0	0	3	0	1	2	0	3	1	2	2	3	1	1	1
Lowland Willow Low Shrub	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
Riverine Alder-Willow Tall Shrub	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	3
Riverine Barrens	2	1	2	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Riverine Birch-Willow Low Shrub	2	0	2	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	1
Riverine Dryas Dwarf Shrub	0	0	1	0	0	0	2	2	0	0	0	2	0	0	3	0	0	0	0	0	0	0	0
Riverine Poplar Forest	0	0	0	0	0	0	0	0	0	0	2	0	1	2	0	2	3	3	3	0	3	0	2
Riverine Water	2	1	2	0	2	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
Riverine Wet Sedge Meadow	3	0	3	0	3	2	2	2	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0
Riverine White Spruce-Poplar Forest	0	0	0	0	0	0	0	0	0	0	3	0	1	2	0	3	3	3	3	3	3	1	2
Riverine White Spruce-Willow Forest	0	0	0	0	0	0	0	0	0	0	3	0	1	2	0	1	3	1	1	3	0	1	2
Riverine Willow Low Shrub	2	0	2	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
Shadow/Indeterminate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Upland Alder-Willow Tall Shrub	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Upland Aspen Forest	0	0	0	0	0	0	0	0	0	0	2	0	1	1	0	2	1	3	3	0	1	0	0
Upland Barrens-Burned	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
Upland Barrens-Landslides	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Upland Barrens-Thermokarst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Upland Birch Forest	0	0	0	0	0	0	0	0	0	0	2	0	1	1	0	2	1	2	2	0	1	0	0
Upland Birch-Ericaceous-Willow Low Shrub	0	0	0	0	0	0	0	2	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
Upland Bluejoint-Herb Meadow	0	0	0	0	0	0	1	1	0	0	0	3	0	0	2	0	0	0	0	0	0	0	0
Upland Dwarf Birch-Tussock Shrub	0	0	1	0	0	0	2	2	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0
Upland Mafic Barrens	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Upland Sagebrush Shrub	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
Upland Sandy Barrens	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Upland Sedge-Dryas Meadow	0	0	1	0	0	0	2	2	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0
Upland Spruce-Birch Forest	0	0	0	0	0	0	0	0	0	0	3	0	1	1	0	3	1	2	2	3	1	1	1
Upland Spruce-Birch-Herb Forest	0	0	0	0	0	0	0	0	0	0	3	0	0	1	0	3	1	2	2	3	1	1	1
Upland White Spruce Forest	0	0	0	0	0	0	0	0	0	0	3	0	1	1	0	1	1	0	0	3	0	1	0
Upland White Spruce-Herb Forest	0	0	0	0	0	0	0	0	0	0	3	0	1	1	0	1	1	0	0	3	0	1	0
Upland White Spruce-Lichen Forest	0	0	0	0	0	0	0	0	0	0	3	0	1	1	0	1	1	0	0	3	0	1	0
Upland Willow Low Shrub	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
<i>No. ecotypes used (use ranks 3,2):</i>	16	3	15	3	12	5	10	13	2	3	12	12	2	7	13	8	6	8	8	9	2	2	6

Ecotype																							
	Hammond's Flycatcher	Say's Phoebe	Northern Shrike	Gray Jay	Common Raven	Horned Lark	Tree Swallow	Violet-green Swallow	Bank Swallow	Cliff Swallow	Black-capped Chickadee	Boreal Chickadee	Gray-headed Chickadee	Red-breasted Nuthatch	American Dipper	Ruby-crowned Kinglet	Arctic Warbler	Bluethroat	Northern Wheatear	Townsend's Solitaire	Gray-cheeked Thrush	Swainson's Thrush	Hermit Thrush
Alpine Acidic Barrens	0	3	0	0	3	3	0	3	0	0	0	0	0	0	0	0	0	0	2	3	0	0	0
Alpine Acidic Dryas Dwarf Shrub	0	1	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0
Alpine Alkaline Barrens	0	3	0	0	3	3	0	3	0	0	0	0	0	0	0	0	0	0	2	3	0	0	0
Alpine Alkaline Dryas Dwarf Shrub	0	1	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0
Alpine Ericaceous Dwarf Shrub	0	1	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0
Alpine Lake	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alpine Mafic Barrens	0	3	0	0	3	3	0	3	0	0	0	0	0	0	0	0	0	0	2	3	0	0	0
Alpine Snowfields and Glaciers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alpine Wet Sedge Meadow	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0
Coastal Barrens	0	1	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Coastal Brackish Sedge-Grass Meadow	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Coastal Crowberry Dwarf Shrub	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Coastal Dune-grass Meadow	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Coastal Water	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Human Modified Barrens	0	1	0	0	2	0	1	1	2	2	0	0	0	0	1	0	0	0	0	0	0	0	0
Lacustrine Barrens	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lacustrine Bluejoint Meadow	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lacustrine Wet Sedge Meadow	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lacustrine Willow Shrub	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	1	0	0
Lowland Alder Tall Shrub	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	3	2	0	0	3	0	1
Lowland Barrens-Burned	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0
Lowland Birch Forest	2	0	1	2	1	0	3	1	0	0	3	0	0	0	0	0	0	0	0	0	1	2	3
Lowland Birch-Ericaceous-Willow Low Shrub	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	1	0	0
Lowland Black Spruce Forest	0	0	1	3	1	0	1	1	0	0	1	2	1	1	0	3	0	0	0	0	2	1	1
Lowland Ericaceous Shrub Bog	0	0	2	3	0	0	1	1	0	0	1	2	0	0	1	0	0	0	0	0	0	0	0
Lowland Lake	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lowland Sedge Fen	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lowland Sedge-Dryas Meadow	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lowland Spruce-Birch Forest	2	0	0	3	1	0	3	1	0	0	3	2	1	3	0	3	0	0	0	0	1	3	2
Lowland Willow Low Shrub	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	1	0	0	0
Riverine Alder-Willow Tall Shrub	0	0	3	2	1	0	0	0	0	0	1	1	1	0	0	0	3	2	0	0	3	0	1
Riverine Barrens	0	2	0	0	1	0	0	2	3	3	0	0	0	0	1	0	0	0	0	0	0	0	0
Riverine Birch-Willow Low Shrub	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	2	3	0	0	2	0	0
Riverine Dryas Dwarf Shrub	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0
Riverine Poplar Forest	1	0	1	2	3	0	3	2	0	0	2	0	1	0	1	0	0	0	0	0	2	2	3
Riverine Water	0	0	0	0	0	0	1	1	3	3	0	0	0	0	3	0	0	0	0	0	0	0	0
Riverine Wet Sedge Meadow	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Riverine White Spruce-Poplar Forest	2	0	0	3	3	0	3	2	0	0	2	2	1	3	0	3	0	0	0	0	1	3	2
Riverine White Spruce-Willow Forest	1	0	1	3	1	0	2	1	0	0	1	3	1	2	1	3	0	0	0	0	1	2	1
Riverine Willow Low Shrub	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3	0	0	1	0	0
Shadow/Indeterminate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Upland Alder-Willow Tall Shrub	0	0	3	1	0	0	0	0	0	0	1	1	1	0	0	0	3	2	0	2	3	0	1
Upland Aspen Forest	3	0	3	1	1	0	3	2	0	0	2	0	0	0	0	0	0	0	0	0	1	1	3
Upland Barrens-Burned	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
Upland Barrens-Landslides	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1
Upland Barrens-Thermokarst	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1
Upland Birch Forest	3	0	1	1	1	0	3	2	0	0	3	0	0	0	0	0	0	0	0	0	1	1	3
Upland Birch-Ericaceous-Willow Low Shrub	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	1	0	0
Upland Bluejoint-Herb Meadow	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Upland Dwarf Birch-Tussock Shrub	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	0	0	0
Upland Mafic Barrens	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
Upland Sagebrush Shrub	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Upland Sandy Barrens	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Upland Sedge-Dryas Meadow	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Upland Spruce-Birch Forest	3	0	0	3	1	0	2	2	0	0	3	1	0	3	0	3	0	0	0	0	1	3	2
Upland Spruce-Birch-Herb Forest	3	0	0	3	1	0	2	2	0	0	3	1	0	3	0	3	0	0	0	0	1	3	2
Upland White Spruce Forest	0	0	1	3	1	0	1	1	0	0	1	3	0	2	0	3	0	0	0	0	2	1	1
Upland White Spruce-Herb Forest	0	0	1	3	1	0	1	1	0	0	1	3	0	2	0	3	0	0	0	0	2	1	1
Upland White Spruce-Lichen Forest	0	0	1	3	1	0	1	1	0	0	1	3	0	2	0	3	0	0	0	0	1	1	1
Upland Willow Low Shrub	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	2	1	0	0
<i>No. ecotypes used (use ranks 3,2):</i>	7	4	8	14	6	6	9	10	3	3	8	8	0	8	1	9	4	11	7	8	10	7	8

Ecotype																							
	American Robin	Varied Thrush	Eastern Yellow Wagtail	White Wagtail	Red-throated Pipit	American Pipit	Bohemian Waxwing	Lapland Longspur	Smith's Longspur	Snow Bunting	Northern Waterthrush	Orange-crowned Warbler	Yellow Warbler	Blackpoll Warbler	Yellow-rumped Warbler	Wilson's Warbler	American Tree Sparrow	Savannah Sparrow	Fox Sparrow	Lincoln's Sparrow	White-crowned Sparrow	Golden-crowned Sparrow	Dark-eyed Junco
Alpine Acidic Barrens	1	0	0	0	3	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
Alpine Acidic Dryas Dwarf Shrub	0	0	0	0	3	3	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Alpine Alkaline Barrens	1	0	0	0	3	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
Alpine Alkaline Dryas Dwarf Shrub	0	0	0	0	3	3	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Alpine Ericaceous Dwarf Shrub	0	0	0	0	3	3	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Alpine Lake	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alpine Mafic Barrens	1	0	0	0	3	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
Alpine Snowfields and Glaciers	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Alpine Wet Sedge Meadow	0	0	0	0	0	3	0	2	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Coastal Barrens	0	0	0	3	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Coastal Brackish Sedge-Grass Meadow	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Coastal Crowberry Dwarf Shrub	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Coastal Dunegrass Meadow	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0	0	0	0
Coastal Water	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Human Modified Barrens	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Lacustrine Barrens	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lacustrine Bluejoint Meadow	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	3	0	1	0	0	0
Lacustrine Wet Sedge Meadow	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0
Lacustrine Willow Shrub	1	0	3	0	0	0	0	1	0	0	0	0	0	0	0	1	3	3	1	1	3	3	0
Lowland Alder Tall Shrub	3	0	0	0	0	0	0	0	0	0	0	3	3	2	0	3	2	0	3	0	3	1	0
Lowland Barrens-Burned	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	0	1	0	0
Lowland Birch Forest	2	3	0	0	0	0	1	0	0	0	0	2	0	2	3	1	0	0	1	0	0	0	1
Lowland Birch-Ericaceous-Willow Low Shrub	1	0	2	0	0	0	0	1	0	0	0	0	1	0	0	1	3	3	1	0	3	1	0
Lowland Black Spruce Forest	1	1	0	0	0	0	3	0	0	0	1	0	0	1	1	1	0	0	1	1	1	0	2
Lowland Ericaceous Shrub Bog	1	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	1	1	1	3	1	0	0
Lowland Lake	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lowland Sedge Fen	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
Lowland Sedge-Dryas Meadow	0	0	1	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0
Lowland Spruce-Birch Forest	2	3	0	0	0	0	1	0	0	0	0	1	0	1	3	1	0	0	1	0	0	0	3
Lowland Willow Low Shrub	1	0	2	0	0	0	0	1	0	0	0	0	1	0	0	1	3	3	1	0	3	1	0
Riverine Alder-Willow Tall Shrub	3	2	0	0	0	0	0	0	0	0	3	3	3	3	0	3	2	0	3	0	2	1	0
Riverine Barrens	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Riverine Birch-Willow Low Shrub	2	0	2	0	0	0	0	0	1	0	2	0	2	0	0	3	3	3	3	0	3	2	0
Riverine Dryas Dwarf Shrub	1	0	1	0	0	2	0	3	2	0	0	0	1	0	0	0	0	3	0	0	0	0	0
Riverine Poplar Forest	2	3	0	0	0	0	2	0	0	0	2	2	0	3	3	1	0	0	1	0	1	0	1
Riverine Water	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Riverine Wet Sedge Meadow	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0
Riverine White Spruce-Poplar Forest	2	3	0	0	0	0	1	0	0	0	2	2	0	1	3	1	0	0	1	0	0	0	3
Riverine White Spruce-Willow Forest	2	3	0	0	0	0	2	0	0	0	2	1	0	1	2	1	0	0	1	0	1	0	2
Riverine Willow Low Shrub	1	0	3	0	0	0	0	1	1	0	0	0	2	0	0	1	3	3	1	1	3	2	0
Shadow/Indeterminate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Upland Alder-Willow Tall Shrub	3	2	0	0	0	0	0	0	0	0	1	3	3	3	0	3	2	0	3	0	2	1	0
Upland Aspen Forest	3	3	0	0	0	0	1	0	0	0	0	3	0	2	3	1	0	0	1	0	0	0	1
Upland Barrens-Burned	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	0	1	2	0
Upland Barrens-Landslides	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	0	1	0	1	1	0
Upland Barrens-Thermokarst	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	0	1	0	1	1	0
Upland Birch Forest	2	3	0	0	0	0	1	0	0	0	0	2	0	2	3	1	0	0	1	0	0	0	1
Upland Birch-Ericaceous-Willow Low Shrub	1	0	2	0	0	0	0	1	1	0	0	0	1	0	0	1	3	3	1	0	3	3	0
Upland Bluejoint-Herb Meadow	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	3	0	0	0	0	0
Upland Dwarf Birch-Tussock Shrub	1	0	3	0	0	2	0	3	3	1	0	0	0	0	0	0	0	3	0	0	1	1	0
Upland Mafic Barrens	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Upland Sagebrush Shrub	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
Upland Sandy Barrens	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Upland Sedge-Dryas Meadow	0	0	1	0	0	3	0	3	2	1	0	0	0	0	0	0	0	3	0	0	0	0	0
Upland Spruce-Birch Forest	1	3	0	0	0	0	1	0	0	0	0	1	0	1	3	1	0	0	1	0	0	0	3
Upland Spruce-Birch-Herb Forest	1	3	0	0	0	0	1	0	0	0	0	1	0	1	3	1	0	0	1	0	0	0	3
Upland White Spruce Forest	1	2	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	1	0	1	0	2
Upland White Spruce-Herb Forest	1	2	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	1	0	1	0	2
Upland White Spruce-Lichen Forest	1	1	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2
Upland Willow Low Shrub	1	0	2	0	0	0	0	1	1	0	0	0	1	0	0	1	3	3	1	0	3	3	0
No. ecotypes used (use ranks 3,2):	13	13	8	1	6	10	4	10	6	8	5	8	5	7	9	4	10	17	6	1	10	6	9

Ecotype	Rusty Blackbird	Gray-crowned Rosy-Finch	Pine Grosbeak	White-winged Crossbill	Common Redpoll	Hoary Redpoll	Pine Siskin
Alpine Acidic Barrens	0	3	0	0	0	0	0
Alpine Acidic Dryas Dwarf Shrub	0	3	0	0	0	0	0
Alpine Alkaline Barrens	0	3	0	0	0	0	0
Alpine Alkaline Dryas Dwarf Shrub	0	3	0	0	0	0	0
Alpine Ericaceous Dwarf Shrub	0	3	0	0	0	0	0
Alpine Lake	0	0	0	0	0	0	0
Alpine Mafic Barrens	0	3	0	0	0	0	0
Alpine Snowfields and Glaciers	0	1	0	0	0	0	0
Alpine Wet Sedge Meadow	0	0	0	0	0	0	0
Coastal Barrens	0	0	0	0	0	0	0
Coastal Brackish Sedge-Grass Meadow	0	0	0	0	0	0	0
Coastal Crowberry Dwarf Shrub	0	0	0	0	0	0	0
Coastal Dunegrass Meadow	0	0	0	0	0	0	0
Coastal Water	0	0	0	0	0	0	0
Human Modified Barrens	0	0	0	0	0	0	0
Lacustrine Barrens	0	0	0	0	0	0	0
Lacustrine Bluejoint Meadow	0	0	0	0	0	0	0
Lacustrine Wet Sedge Meadow	0	0	0	0	0	0	0
Lacustrine Willow Shrub	0	0	0	0	3	3	0
Lowland Alder Tall Shrub	0	0	0	0	3	3	0
Lowland Barrens-Burned	0	0	0	0	3	3	0
Lowland Birch Forest	0	0	0	0	0	0	0
Lowland Birch-Ericaceous-Willow Low Shrub	0	0	0	0	3	3	0
Lowland Black Spruce Forest	1	0	0	3	1	1	1
Lowland Ericaceous Shrub Bog	3	0	0	0	2	2	0
Lowland Lake	0	0	0	0	0	0	0
Lowland Sedge Fen	0	0	0	0	0	0	0
Lowland Sedge-Dryas Meadow	0	0	0	0	0	0	0
Lowland Spruce-Birch Forest	0	0	3	3	1	1	1
Lowland Willow Low Shrub	0	0	0	0	3	3	0
Riverine Alder-Willow Tall Shrub	3	0	0	0	2	2	0
Riverine Barrens	0	0	0	0	0	0	0
Riverine Birch-Willow Low Shrub	0	0	0	0	3	3	0
Riverine Dryas Dwarf Shrub	0	0	0	0	0	0	0
Riverine Poplar Forest	0	0	0	0	0	0	0
Riverine Water	0	0	0	0	0	0	0
Riverine Wet Sedge Meadow	0	0	0	0	0	0	0
Riverine White Spruce-Poplar Forest	0	0	3	3	1	1	1
Riverine White Spruce-Willow Forest	0	0	3	3	1	1	1
Riverine Willow Low Shrub	0	0	0	0	3	3	0
Shadow/Indeterminate	0	0	0	0	0	0	0
Upland Alder-Willow Tall Shrub	0	0	0	0	2	2	0
Upland Aspen Forest	0	0	0	0	0	0	0
Upland Barrens-Burned	0	0	0	0	3	3	0
Upland Barrens-Landslides	0	0	0	0	1	1	0
Upland Barrens-Thermokarst	0	0	0	0	1	1	0
Upland Birch Forest	0	0	0	0	0	0	0
Upland Birch-Ericaceous-Willow Low Shrub	0	0	0	0	3	3	0
Upland Bluejoint-Herb Meadow	0	0	0	0	0	0	0
Upland Dwarf Birch-Tussock Shrub	0	0	0	0	1	1	0
Upland Mafic Barrens	0	1	0	0	0	0	0
Upland Sagebrush Shrub	0	0	0	0	3	3	0
Upland Sandy Barrens	0	0	0	0	0	0	0
Upland Sedge-Dryas Meadow	0	0	0	0	0	0	0
Upland Spruce-Birch Forest	0	0	3	1	1	1	1
Upland Spruce-Birch-Herb Forest	0	0	3	1	1	1	1
Upland White Spruce Forest	0	0	3	1	1	1	1
Upland White Spruce-Herb Forest	0	0	3	1	1	1	1
Upland White Spruce-Lichen Forest	0	0	3	1	1	1	1
Upland Willow Low Shrub	0	0	0	0	3	3	0
No. ecotypes used (use ranks 3,2):	2	6	8	4	14	14	0

Ecotype	MER - Mammal-Ecotype Relationships																										
	Alaska marmot	Alaskan hare	American Marten*	Arctic Fox*	Arctic ground squirrel	Barren-ground shrew	Beaver*	Black bear*	Brown bear*	Brown lemming	Canada lynx*	Caribou*	Collared lemming	Dall sheep*	Ermine	Gray wolf*	Least weasel	Mink*	Moose*	Muskoxen*	Muskrat*	Northern red-backed vole	Northern river otter*	Porcupine*	Red fox*	Singing vole	Snowshoe hare*
Alpine Acidic Barrens	2	0	0	0	1	0	0	0	3	1	0	1	1	3	1	1	1	0	0	2	0	1	0	0	1	1	0
Alpine Acidic Dryas Dwarf Shrub	3	0	0	0	2	0	0	1	3	1	0	3	2	2	2	3	1	0	0	3	0	1	0	0	2	1	0
Alpine Alkaline Barrens	2	0	0	0	0	0	0	0	3	0	0	1	1	3	1	1	0	0	0	2	0	0	0	0	1	1	0
Alpine Alkaline Dryas Dwarf Shrub	3	0	0	0	2	0	0	1	1	1	0	3	0	0	1	3	1	0	0	0	0	1	0	0	2	2	0
Alpine Ericaceous Dwarf Shrub	3	0	0	0	1	0	0	1	1	0	0	3	1	1	1	3	1	0	0	2	0	1	0	0	2	1	0
Alpine Lake	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alpine Mafic Barrens	2	0	0	0	0	0	0	0	1	0	0	0	1	2	0	1	0	0	0	0	0	0	0	0	1	0	0
Alpine Snowfields and Glaciers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Alpine Wet Sedge Meadow	0	0	0	0	0	0	0	0	2	1	0	2	1	1	1	2	1	0	0	1	0	0	0	0	2	1	0
Coastal Barrens	0	1	0	1	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	1	0	0
Coastal Brackish Sedge-Grass Meadow	0	0	0	2	0	0	0	0	3	2	0	0	0	0	1	0	1	0	0	3	1	0	0	0	2	0	0
Coastal Crowberry Dwarf Shrub	0	1	0	1	0	1	0	0	3	0	0	0	0	0	1	0	0	0	0	3	0	1	0	0	2	0	0
Coastal Dunegrass Meadow	0	1	0	2	0	0	0	0	2	1	0	0	1	0	0	0	0	0	0	2	0	1	0	0	2	0	0
Coastal Water	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Human Modified Barrens	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Lacustrine Barrens	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lacustrine Bluejoint Meadow	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lacustrine Wet Sedge Meadow	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Lacustrine Willow Shrub	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0	1
Lowland Alder Tall Shrub	0	1	0	0	2	3	1	2	1	2	1	1	2	0	2	1	0	0	1	2	0	2	0	1	1	2	1
Lowland Barrens-Burned	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lowland Birch Forest	0	0	1	0	0	0	0	3	0	1	3	0	0	0	2	1	0	0	1	0	0	1	0	2	1	0	3
Lowland Birch-Ericaceous-Willow Low Shrub	0	1	0	0	2	3	0	1	2	2	2	2	1	0	1	2	1	0	1	2	0	2	0	1	2	2	2
Lowland Black Spruce Forest	0	0	3	0	0	1	0	3	1	2	3	0	0	0	1	3	1	0	3	0	0	1	0	3	3	0	3
Lowland Ericaceous Shrub Bog	0	0	0	0	0	1	0	1	1	1	1	0	1	0	1	1	0	0	1	1	0	0	0	0	1	1	1
Lowland Lake	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3	1	0	3	0	3	0	0	0	0
Lowland Sedge Fen	0	1	0	0	2	2	0	0	1	3	0	0	1	0	2	1	1	0	1	1	1	2	0	0	1	1	0
Lowland Sedge-Dryas Meadow	0	3	0	0	1	2	0	1	2	1	0	0	1	0	1	2	1	0	2	3	0	1	0	0	2	2	0
Lowland Spruce-Birch Forest	0	0	3	0	0	0	0	3	2	0	3	0	0	0	1	1	1	0	0	0	0	0	0	3	2	0	3
Lowland Willow Low Shrub	0	2	0	0	2	1	1	1	3	2	2	0	2	0	1	1	1	0	1	3	0	1	0	1	2	1	2
Riverine Alder-Willow Tall Shrub	0	0	0	0	1	1	3	3	3	1	2	1	0	0	1	1	1	0	1	2	0	1	0	1	1	1	2
Riverine Barrens	0	1	0	0	2	1	0	1	3	0	1	1	0	0	1	1	1	0	1	3	0	1	0	0	1	1	1
Riverine Birch-Willow Low Shrub	0	2	0	0	1	1	0	3	3	1	2	1	1	0	1	2	1	0	2	1	1	1	0	1	2	1	2
Riverine Dryas Dwarf Shrub	0	1	0	0	1	1	0	1	1	0	0	1	2	0	1	1	1	0	0	0	0	1	0	1	1	0	0
Riverine Poplar Forest	0	0	2	0	0	0	0	2	0	0	2	0	0	0	1	1	0	0	1	0	0	0	0	2	1	0	1
Riverine Water	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	3	0	0	0	0
Riverine Wet Sedge Meadow	0	0	0	0	1	1	0	1	2	2	0	1	0	0	1	1	1	0	1	0	1	1	0	0	1	0	0
Riverine White Spruce-Poplar Forest	0	0	2	0	0	0	0	3	3	1	3	0	0	0	1	1	1	0	1	0	0	1	0	3	1	0	3
Riverine White Spruce-Willow Forest	0	0	2	0	0	0	0	3	3	1	3	0	0	0	1	2	0	0	2	0	0	1	0	3	2	0	3
Riverine Willow Low Shrub	0	3	0	0	1	1	3	2	3	1	1	1	0	0	1	1	1	0	1	0	0	1	0	1	1	1	1
Shadow/Indeterminate	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Upland Alder-Willow Tall Shrub	0	1	0	0	2	3	0	2	3	2	2	1	1	0	3	3	1	0	3	2	0	3	0	1	3	3	2
Upland Aspen Forest	0	0	1	0	0	0	0	1	1	0	2	0	0	0	1	1	1	0	0	0	0	1	0	2	1	0	2
Upland Barrens-Burned	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Upland Barrens-Landslides	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Upland Barrens-Thermokarst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Upland Birch Forest	0	0	2	0	0	2	0	2	1	2	1	0	0	0	1	2	1	0	2	0	0	1	0	2	2	0	1
Upland Birch-Ericaceous-Willow Low Shrub	0	1	0	0	3	3	0	3	1	3	2	0	3	0	3	1	1	0	1	1	0	3	0	1	1	3	2
Upland Bluejoint-Herb Meadow	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0
Upland Dwarf Birch-Tussock Shrub	0	2	0	0	3	3	0	0	3	3	0	3	3	0	3	3	1	0	1	1	0	3	0	1	3	3	0
Upland Mafic Barrens	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Upland Sagebrush Shrub	0	0	0	0	2	0	0	0	2	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0
Upland Sandy Barrens	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Upland Sedge-Dryas Meadow	1	2	0	0	3	2	0	1	2	3	0	2	3	0	3	2	1	0	0	1	0	3	0	0	2	3	0
Upland Spruce-Birch Forest	0	0	3	0	0	1	0	3	2	2	1	0	0	0	1	2	1	0	2	0	0	1	0	3	2	1	1
Upland Spruce-Birch-Herb Forest	0	0	3	0	0	0	0	3	2	0	1	0	0	0	1	1	0	0	0	0	0	0	0	3	1	0	1
Upland White Spruce Forest	0	0	3	0	0	0	0	2	2	2	1	0	1	0	2	3	1	0	3	0	0	2	0	3	3	1	1
Upland White Spruce-Herb Forest	0	0	2	0	0	1	0	2	2	0	1	0	0	0	1	1	0	0	0	0	0	0	0	3	1	0	1
Upland White Spruce-Lichen Forest	0	0	2	0	0	0	0	1	2	0	1	0	0	0	1	1	0	0	0	0	0	1	0	2	1	0	1
Upland Willow Low Shrub	0	3	0	0	3	2	0	1	3	2	1	2	3	1	2	2	1	0	2	1	0	2	0	1	2	2	1
<i>No. ecotypes used (use ranks 3,2):</i>	6	7	11	2	13	11	4	17	29	15	13	8	8	4	10	16	0	2	9	15	2	9	2	13	21	9	12

Ecotype												
	Tundra Shrew	Cinerus Shrew	Dusky Shrew	Pygmy Shrew	Tundra vole	Wolverine*	Meadow Vole	Northern bog lemming	Yellow-cheeked vole	Red Squirrel	Northern Flying squirrel	Coyote
Alpine Acidic Barrens	0	0	1	0	1	3	0	0	0	0	0	1
Alpine Acidic Dryas Dwarf Shrub	0	1	2	0	2	3	0	0	0	0	0	3
Alpine Alkaline Barrens	0	0	0	0	0	3	0	0	0	0	0	1
Alpine Alkaline Dryas Dwarf Shrub	0	1	2	0	0	3	0	0	0	0	0	3
Alpine Ericaceous Dwarf Shrub	0	0	1	0	0	3	0	0	0	0	0	3
Alpine Lake	0	0	0	0	0	0	0	0	0	0	0	0
Alpine Mafic Barrens	0	0	0	0	0	1	0	0	0	0	0	1
Alpine Snowfields and Glaciers	0	0	0	0	0	1	0	0	0	0	0	0
Alpine Wet Sedge Meadow	0	0	1	0	1	3	2	0	0	0	0	2
Coastal Barrens	0	0	0	0	0	0	0	0	0	0	0	0
Coastal Brackish Sedge-Grass Meadow	0	0	0	0	0	0	0	0	0	0	0	0
Coastal Crowberry Dwarf Shrub	1	1	0	0	1	0	0	0	0	0	0	0
Coastal Dunegrass Meadow	0	0	0	0	0	0	0	0	0	0	0	0
Coastal Water	0	0	0	0	0	0	0	0	0	0	0	0
Human Modified Barrens	0	0	0	0	0	0	0	0	0	0	0	0
Lacustrine Barrens	0	0	0	0	0	0	0	0	0	0	0	0
Lacustrine Bluejoint Meadow	0	0	0	0	0	0	3	2	0	0	0	0
Lacustrine Wet Sedge Meadow	0	0	0	0	0	0	3	2	0	0	0	0
Lacustrine Willow Shrub	0	1	1	0	0	1	2	3	0	0	0	1
Lowland Alder Tall Shrub	3	2	2	3	2	2	2	1	0	0	0	1
Lowland Barrens-Burned	0	0	0	0	0	0	0	0	0	0	0	0
Lowland Birch Forest	0	0	0	2	1	1	1	0	1	0	0	1
Lowland Birch-Ericaceous-Willow Low Shrub	2	2	2	2	2	2	1	3	0	0	0	2
Lowland Black Spruce Forest	1	1	1	3	1	3	0	0	1	3	2	3
Lowland Ericaceous Shrub Bog	1	1	1	0	0	1	1	3	0	0	0	1
Lowland Lake	0	0	0	0	0	0	0	0	0	0	0	0
Lowland Sedge Fen	2	2	1	2	2	1	1	3	0	0	0	1
Lowland Sedge-Dryas Meadow	2	1	1	0	1	1	3	3	0	0	0	2
Lowland Spruce-Birch Forest	0	1	2	3	1	1	0	0	3	2	3	2
Lowland Willow Low Shrub	1	1	1	2	1	1	1	2	1	0	0	2
Riverine Alder-Willow Tall Shrub	2	2	1	0	1	2	1	0	1	0	0	2
Riverine Barrens	1	0	0	0	1	2	0	0	0	0	0	1
Riverine Birch-Willow Low Shrub	1	3	2	2	1	2	1	2	0	0	0	3
Riverine Dryas Dwarf Shrub	2	0	0	1	0	1	1	0	0	0	0	1
Riverine Poplar Forest	1	1	1	2	0	1	0	0	1	1	1	1
Riverine Water	0	0	0	0	0	0	0	0	0	0	0	0
Riverine Wet Sedge Meadow	0	1	0	2	1	1	3	3	0	0	0	2
Riverine White Spruce-Poplar Forest	1	3	2	2	1	1	0	0	3	2	3	3
Riverine White Spruce-Willow Forest	1	3	2	2	1	2	0	0	3	2	3	2
Riverine Willow Low Shrub	1	2	2	2	1	1	1	3	0	0	0	2
Shadow/Indeterminate	0	0	0	0	0	0	0	0	0	0	0	0
Upland Alder-Willow Tall Shrub	3	3	3	3	2	3	1	0	1	0	0	3
Upland Aspen Forest	0	1	0	0	0	1	1	0	1	0	0	1
Upland Barrens-Burned	0	0	0	0	0	0	0	0	0	0	0	0
Upland Barrens-Landslides	0	0	0	0	0	0	0	0	0	0	0	0
Upland Barrens-Thermokarst	0	0	0	0	0	0	0	0	0	0	0	0
Upland Birch Forest	1	1	1	2	1	1	1	0	1	0	0	2
Upland Birch-Ericaceous-Willow Low Shrub	3	3	3	3	3	1	2	0	2	0	0	2
Upland Bluejoint-Herb Meadow	0	0	0	0	0	1	3	1	0	0	0	1
Upland Dwarf Birch-Tussock Shrub	3	3	3	3	3	3	2	0	0	0	0	3
Upland Mafic Barrens	0	0	0	0	0	0	0	0	0	0	0	0
Upland Sagebrush Shrub	0	0	0	0	0	1	1	0	0	0	0	1
Upland Sandy Barrens	0	0	0	0	0	0	0	0	0	0	0	0
Upland Sedge-Dryas Meadow	3	3	3	2	3	2	3	0	0	0	0	2
Upland Spruce-Birch Forest	1	1	1	2	1	2	1	0	3	2	3	2
Upland Spruce-Birch-Herb Forest	0	1	1	1	0	1	2	0	3	2	3	2
Upland White Spruce Forest	2	2	2	3	2	3	1	0	3	3	2	3
Upland White Spruce-Herb Forest	0	1	1	1	0	1	2	0	3	3	3	1
Upland White Spruce-Lichen Forest	0	0	0	0	0	1	1	0	3	3	3	1
Upland Willow Low Shrub	2	3	3	2	2	2	3	0	0	0	0	2
No. ecotypes used (use ranks 3,2):	12	14	15	21	10	19	14	11	9	9	9	24

BIRDS

Comparison of 3 ecotype projection models

Species use levels 3, 2 (high, moderate) ONLY

Species	Habitat (ha)				Change in habitat (ha), 2100-2010		
	2010 (a)	Temperature-dependent model, 2100 (b)	Time-dependent model, 2100 (c)	Rate-adj model, 2100 (d)	Temperature-dependent model (b-a)	Time-dependent model (c-a)	Rate-adjusted model (d-a)
Alder Flycatcher	12088.26	14762.72	13033.53	12665.42	2674.46	945.2662	577.1537
Aleutian Tern	12079.48	12311.37	12144.43	12332.49	231.8888	64.95346	253.0171
American Dipper	841.5365	1370.195	707.9117	1403.351	528.6582	-133.625	561.8145
American Golden-Plover	68061.07	60337.55	65872.9	62267.4	-7723.53	-2188.17	-5793.67
American Kestrel	4330.972	9297.365	6447.333	7519.933	4966.393	2116.361	3188.96
American Pipit	77092.63	67006.86	74465.14	68201.46	-10085.8	-2627.49	-8891.16
American Robin	14755.58	19724.46	15739.16	16776.66	4968.883	983.5798	2021.082
American Three-toed Woodpecker	17156.65	29935.76	22134.35	23325.37	12779.11	4977.705	6168.724
American Tree Sparrow	41075.2	35424.8	39231.53	38710.47	-5650.4	-1843.67	-2364.73
American Wigeon *	9886.476	11078.91	9847.547	12993.99	1192.438	-38.9289	3107.511
Arctic Tern	19872.22	20253.1	19777.09	22463.17	380.8787	-95.1252	2590.949
Arctic Warbler	12092.57	15247.71	13181.4	13370.8	3155.136	1088.834	1278.226
Baird's Sandpiper	48291.25	42943.19	46882.57	44028.4	-5348.06	-1408.68	-4262.85
Bald Eagle	0	0	0	0	0	0	0
Bank Swallow	1747.927	1848.171	1741.888	2031.693	100.2439	-6.03953	283.7655
Bar-tailed Godwit	42335.71	34116.98	40211.27	34364.4	-8218.73	-2124.44	-7971.31
Belted Kingfisher	4487.945	4045.455	4284.649	3889.333	-442.491	-203.297	-598.612
Black Guillemot	12060.48	12280.4	12123.21	12306.86	219.9163	62.72891	246.3844
Black Scoter *	2938.579	4316.907	3336.04	5088.836	1378.328	397.4611	2150.257
Black Turnstone	1302.077	861.0244	1418.018	1030.086	-441.052	115.9413	-271.991
Black-bellied Plover	6039.555	7308.819	6364.571	8895.473	1269.264	325.0163	2855.918
Black-capped Chickadee	2316.553	4310.386	3309.641	3415.711	1993.833	993.0883	1099.158
Blackpoll Warbler	11727.64	15542.2	12712.3	13195.75	3814.564	984.6677	1468.114
Bluethroat	71787.16	61490.07	68780.75	64904.83	-10297.1	-3006.41	-6882.33
Bohemian Waxwing	5609.381	10438.17	7704.654	8415.664	4828.79	2095.273	2806.283
Bonaparte's Gull	4330.972	9297.365	6447.333	7519.933	4966.393	2116.361	3188.96
Boreal Chickadee	17467.13	29873.45	21597.93	23386.97	12406.32	4130.798	5919.84
Boreal Owl	2316.553	4310.386	3309.641	3415.711	1993.833	993.0883	1099.158
Brant *	14531.35	13428.9	14146.03	13906.19	-1102.45	-385.32	-625.164
Bristle-thighed Curlew	40256.93	32111.72	38130.88	32320.21	-8145.21	-2126.05	-7936.72
Buff-breasted Sandpiper	0	0	0	0	0	0	0
Bufflehead *	230.0678	720.8303	402.1203	464.2546	490.7625	172.0524	234.1868
Cackling Goose *	7904.553	8015.831	7834.874	10015.62	111.2787	-69.6782	2111.069
Canvasback *	4232.53	4258.415	4105.405	4935.066	25.88466	-127.125	702.5359
Cliff Swallow	1747.927	1848.171	1741.888	2031.693	100.2439	-6.03953	283.7655

Species	Habitat (ha)				Change in habitat (ha), 2100-2010		
	2010 (a)	Temperature- dependent model, 2100 (b)	Time-dependent model, 2100 (c)	Rate-adj model, 2100 (d)	Temperature- dependent model (b-a)	Time-dependent model (c-a)	Rate-adjusted model (d-a)
Common Eider *	12319.71	12414.53	12343.81	12435.51	94.81878	24.1067	115.8029
Common Goldeneye *	213.781	537.4718	327.0045	342.3979	323.6908	113.2236	128.6169
Common Loon *	3577.618	4534.271	3445.12	4995.871	956.6523	-132.498	1418.252
Common Merganser	213.781	537.4718	327.0045	342.3979	323.6908	113.2236	128.6169
Common Raven	15299.55	15109.02	15276.27	15505.02	-190.529	-23.2783	205.4758
Common Redpoll	42794.96	37730.52	40701.02	41089.91	-5064.44	-2093.94	-1705.05
Dark-eyed Junco	17156.65	29935.76	22134.35	23325.37	12779.11	4977.705	6168.724
Downy Woodpecker	2316.553	4310.386	3309.641	3415.711	1993.833	993.0883	1099.158
Dunlin	3924.938	4285.848	4021.871	5680.377	360.9103	96.93236	1755.439
Eastern Yellow Wagtail	61094.21	48069.38	57124.71	53237.7	-13024.8	-3969.5	-7856.51
Emperor Goose *	19440.59	18146.53	19023.09	20200.64	-1294.07	-417.502	760.0485
Fox Sparrow	12418.31	16192.9	13323.39	14227.99	3774.593	905.0842	1809.683
Glaucous Gull *	21744.26	24081.84	22435.5	26548.98	2337.578	691.2412	4804.722
Glaucous-winged Gull *	12300.71	12383.56	12322.59	12409.88	82.84632	21.88216	109.1701
Golden Eagle	81111.99	65161.51	77037.68	69544.55	-15950.5	-4074.31	-11567.4
Golden-crowned Sparrow	22240.75	18085.39	21316.88	22179.79	-4155.36	-923.87	-60.9559
Gray Jay	21928.49	33675.07	26743.31	27516.26	11746.58	4814.822	5587.769
Gray-cheeked Thrush	27194.28	42264.11	31978.4	34484.22	15069.84	4784.119	7289.948
Gray-crowned Rosy-Finch	35655.36	33902.5	35214.21	34869.39	-1752.86	-441.152	-785.966
Gray-headed Chickadee	0	0	0	0	0	0	0
Great Gray Owl	5889.15	11807.21	8576.792	9449.813	5918.059	2687.642	3560.664
Great Horned Owl	15254.38	24119.39	18070.68	18855.65	8865.011	2816.304	3601.279
Greater Scaup *	6014.6	6022.892	5886.624	8008.321	8.292309	-127.975	1993.721
Greater White-fronted Goose *	16329.63	9323.798	13005.34	12849.83	-7005.83	-3324.29	-3479.79
Greater Yellowlegs	1394.022	1359.484	1327.396	1521.602	-34.5374	-66.6258	127.5805
Green-winged Teal *	10126.71	11182.07	10046.93	13097	1055.368	-79.7757	2970.297
Gyrfalcon	20205.84	13542.08	18546.21	17439.73	-6663.76	-1659.63	-2766.11
Hairy Woodpecker	2316.553	4310.386	3309.641	3415.711	1993.833	993.0883	1099.158
Hammond's Flycatcher	2142.4	3812.542	3022.265	3112.941	1670.142	879.8647	970.5409
Harlequin Duck *	2758.539	4129.024	2960.485	4094.996	1370.485	201.9456	1336.457
Hermit Thrush	2316.553	4310.386	3309.641	3415.711	1993.833	993.0883	1099.158
Hoary Redpoll	42794.96	37730.52	40701.02	41089.91	-5064.44	-2093.94	-1705.05
Horned Grebe	488.6069	1131.989	672.6866	950.9357	643.3825	184.0797	462.3288
Horned Lark	35655.36	33902.5	35214.21	34869.39	-1752.86	-441.152	-785.966
Hudsonian Godwit	1394.022	1359.484	1327.396	1521.602	-34.5374	-66.6258	127.5805
King Eider	11902.67	11985.35	11923.44	11993.22	82.68671	20.77436	90.55775
Kittlitz's Murrelet	15006.14	14394.79	14853.61	15084.79	-611.348	-152.525	78.65336
Lapland Longspur	47155.17	39142.55	45081.11	40762.74	-8012.62	-2074.07	-6392.43
Least Sandpiper	47257.72	41230.88	45892.77	43253.87	-6026.83	-1364.95	-4003.85

Species	Habitat (ha)				Change in habitat (ha), 2100-2010		
	2010 (a)	Temperature-dependent model, 2100 (b)	Time-dependent model, 2100 (c)	Rate-adj model, 2100 (d)	Temperature-dependent model (b-a)	Time-dependent model (c-a)	Rate-adjusted model (d-a)
Lesser Scaup *	5774.369	5919.732	5687.241	7905.305	145.3623	-87.1284	2130.935
Lesser Yellowlegs	35042.93	35362.63	35996.56	33714.3	319.6986	953.6217	-1328.64
Lincoln's Sparrow	1394.022	1359.484	1327.396	1521.602	-34.5374	-66.6258	127.5805
Long-billed Dowitcher	3924.938	4285.848	4021.871	5680.377	360.9103	96.93236	1755.439
Long-tailed Duck *	21799.71	22624.42	21651.09	24689.18	824.7113	-148.622	2889.466
Long-tailed Jaeger	84898.05	68371.36	80310.86	73810.66	-16526.7	-4587.18	-11087.4
Mallard *	8486.862	9251.896	8322.181	11290.33	765.0345	-164.681	2803.465
Merlin	57359.64	56835.04	58314.64	53551.47	-524.606	955.0017	-3808.17
Mew Gull	23138.28	25441.32	23762.9	28070.59	2303.041	624.6154	4932.303
Northern Flicker	291.0527	699.0741	407.548	405.3209	408.0214	116.4953	114.2682
Northern Goshawk	17330.8	30433.6	22421.73	23628.14	13102.8	5090.929	6297.341
Northern Harrier	51474.07	41989.44	47651.75	43185.74	-9484.64	-3822.33	-8288.33
Northern Hawk Owl	4330.972	9297.365	6447.333	7519.933	4966.393	2116.361	3188.96
Northern Pintail *	8884.906	9650.1	8721.333	11706.98	765.1941	-163.573	2822.077
Northern Shoveler *	8486.862	9251.896	8322.181	11290.33	765.0345	-164.681	2803.465
Northern Shrike	13828.62	17735.74	14725.9	15871.45	3907.128	897.2872	2042.833
Northern Waterthrush	4141.99	4039.457	4083.237	3576.213	-102.533	-58.7536	-565.777
Northern Wheatear	36627.87	34851.84	36180.89	35818.73	-1776.03	-446.975	-809.136
Olive-sided Flycatcher	4330.972	9297.365	6447.333	7519.933	4966.393	2116.361	3188.96
Orange-crowned Warbler	11844.54	15743.43	12832.47	13298.3	3898.894	987.9395	1453.765
Osprey	1395.308	1342.036	1377.492	998.2821	-53.2724	-17.8159	-397.026
Pacific Golden-Plover	46218.49	39210.92	44376.72	40984.31	-7007.58	-1841.77	-5234.18
Pacific Loon *	6856.136	7393.087	6594.536	9411.672	536.9505	-261.6	2555.536
Parasitic Jaeger	47155.17	39142.55	45081.11	40762.74	-8012.62	-2074.07	-6392.43
Pectoral Sandpiper	46102.84	38107.79	44033.38	39731.14	-7995.05	-2069.46	-6371.7
Peregrine Falcon	42335.71	34118.03	40211.39	34365.05	-8217.69	-2124.33	-7970.66
Pine Grosbeak	14219.7	21997.88	17014.41	17327.04	7778.181	2794.719	3107.345
Pine Siskin	0	0	0	0	0	0	0
Pomarine Jaeger	15669.79	15976.16	15745.54	17359.96	306.3674	75.75216	1690.17
Red Knot	77373.4	68095.55	74984.46	69089.88	-9277.85	-2388.95	-8283.52
Red Phalarope	5978.768	5005.182	5624.32	6837.413	-973.587	-354.448	858.6449
Red-breasted Merganser	4833.836	5525.449	4613.933	6235.401	691.6128	-219.903	1401.565
Red-breasted Nuthatch	14219.7	21997.88	17014.41	17327.04	7778.181	2794.719	3107.345
Red-necked Grebe	2700.251	2146.366	2474.904	2421.612	-553.885	-225.347	-278.638
Red-necked Phalarope	17881.43	16990.53	17547.76	18830.64	-890.9	-333.674	949.2027
Red-necked Stint	157.8137	295.0433	199.7682	313.6403	137.2296	41.95455	155.8266
Red-tailed Hawk	17156.65	29935.76	22134.35	23325.37	12779.11	4977.705	6168.724
Red-throated Loon *	18758.8	19378.44	18517.98	21404.9	619.6372	-240.826	2646.093
Red-throated Pipit	35655.36	33902.5	35214.21	34869.39	-1752.86	-441.152	-785.966

Species	Habitat (ha)				Change in habitat (ha), 2100-2010		
	2010 (a)	Temperature- dependent model, 2100 (b)	Time-dependent model, 2100 (c)	Rate-adj model, 2100 (d)	Temperature- dependent model (b-a)	Time-dependent model (c-a)	Rate-adjusted model (d-a)
Rock Ptarmigan *	99114.11	82721.71	94080.15	88536.53	-16392.4	-5033.96	-10577.6
Rock Sandpiper	20649.22	19507.71	20360.59	19784.6	-1141.51	-288.626	-864.619
Rough-legged Hawk	81111.99	65161.51	77037.68	69544.55	-15950.5	-4074.31	-11567.4
Ruby-crowned Kinglet	17156.65	29935.76	22134.35	23325.37	12779.11	4977.705	6168.724
Ruddy Turnstone	23172.18	22346.91	23218.6	22611.95	-825.278	46.4181	-560.237
Ruffed Grouse *	12148.98	16107.41	14196.79	13857	3958.426	2047.808	1708.02
Rusty Blackbird	2741.09	2229.887	2507.774	2395.873	-511.202	-233.315	-345.217
Sabine's Gull	18880.78	18655.77	18455.44	20547.63	-225.012	-425.344	1666.844
Sanderling	157.8137	295.0433	199.7682	313.6403	137.2296	41.95455	155.8266
Sandhill Crane *	7115.356	8355.519	7373.86	10082.68	1240.163	258.5039	2967.329
Savannah Sparrow	76462.55	61444.11	71784.36	68217.33	-15018.4	-4678.19	-8245.22
Say's Phoebe	15910.17	14857.61	15872.48	15698.22	-1052.56	-37.6919	-211.95
Semipalmated Plover	1096.778	858.8446	1253.006	1047.555	-237.934	156.2275	-49.2231
Semipalmated Sandpiper	46340.48	38488.25	44314.19	40127.04	-7852.23	-2026.29	-6213.43
Sharp-shinned Hawk	17156.65	29935.76	22134.35	23325.37	12779.11	4977.705	6168.724
Short-eared Owl	47372.87	40577.92	45455.99	42308.62	-6794.95	-1916.88	-5064.25
Smith's Longspur	43182.09	35227.52	41092.43	35522.54	-7954.57	-2089.66	-7659.56
Snow Bunting	36785.68	35146.89	36380.66	36132.37	-1638.8	-405.02	-653.309
Snow Goose *	12060.48	12280.4	12123.21	12306.86	219.9163	62.72891	246.3844
Snowy Owl *	47132.64	40474.76	45256.6	42205.61	-6657.88	-1876.03	-4927.03
Solitary Sandpiper	1394.022	1359.484	1327.396	1521.602	-34.5374	-66.6258	127.5805
Spectacled Eider	11902.67	11985.35	11923.44	11993.22	82.68671	20.77436	90.55775
Spotted Sandpiper	936.6064	548.6458	1038.128	719.0024	-387.961	101.5212	-217.604
Spruce Grouse *	17156.65	29935.76	22134.35	23325.37	12779.11	4977.705	6168.724
Steller's Eider	11902.67	11985.35	11923.44	11993.22	82.68671	20.77436	90.55775
Stilt Sandpiper	157.8137	295.0433	199.7682	313.6403	137.2296	41.95455	155.8266
Surf Scoter *	2938.579	4316.907	3336.04	5088.836	1378.328	397.4611	2150.257
Surfbird	35655.36	33902.5	35214.21	34869.39	-1752.86	-441.152	-785.966
Swainson's Thrush	2641.715	3931.632	3993.278	3389.884	1289.916	1351.563	748.1681
Townsend's Solitaire	47412.23	51034	49082.54	50289.16	3621.768	1670.303	2876.923
Tree Swallow	3420.808	4953.348	4279.585	4008.672	1532.539	858.7771	587.8635
Tundra Swan *	18366.38	13435.56	15301.54	17024.74	-4930.82	-3064.84	-1341.64
Upland Sandpiper	40419.8	32498.41	38222.23	32669.55	-7921.38	-2197.57	-7750.24
Varied Thrush	24003.46	35599.9	27852.09	28745.75	11596.44	3848.623	4742.289
Violet-green Swallow	18063.85	18000.19	18430.15	18182.33	-63.6656	366.2991	118.478
Wandering Tattler	21793.66	20099.65	21552.09	20566.12	-1694.01	-241.567	-1227.54
Western Sandpiper	46100.25	38385.09	44114.8	40024.03	-7715.16	-1985.44	-6076.22
Whimbrel	43729.74	35476.47	41538.67	35886	-8253.27	-2191.07	-7843.73
White Wagtail	157.8137	295.0433	199.7682	313.6403	137.2296	41.95455	155.8266

Species	Habitat (ha)				Change in habitat (ha), 2100-2010		
	2010 (a)	Temperature-dependent model, 2100 (b)	Time-dependent model, 2100 (c)	Rate-adj model, 2100 (d)	Temperature-dependent model (b-a)	Time-dependent model (c-a)	Rate-adjusted model (d-a)
White-crowned Sparrow	41075.2	35424.8	39231.53	38710.47	-5650.4	-1843.67	-2364.73
White-rumped Sandpiper	5354.373	5910.938	5547.005	7058.219	556.5647	192.6316	1703.846
White-winged Crossbill	4239.541	9347.93	6479.437	7018.385	5108.389	2239.897	2778.845
White-winged Scoter *	2449.972	3184.918	2663.353	4137.9	734.9455	213.3814	1687.928
Willow Ptarmigan *	79556.96	67126.9	76031.18	70145.49	-12430.1	-3525.79	-9411.47
Wilson's Snipe	52106.62	46831.45	50379.04	50180.71	-5275.18	-1727.58	-1925.91
Wilson's Warbler	12092.57	15247.71	13181.4	13370.8	3155.136	1088.834	1278.226
Yellow Warbler	12402.13	16136.23	13755.24	14296.26	3734.098	1353.114	1894.134
Yellow-billed Loon	3577.618	4534.271	3445.12	4995.871	956.6523	-132.498	1418.252
Yellow-rumped Warbler	3420.808	4953.348	4279.585	4008.672	1532.539	858.7771	587.8635

* = subsistence species

Species shown with zero (0) habitat are those that occur within the study area only with level 1 (marginal) habitat, not included here.

MAMMALS

Comparison of 3 ecotype projection models
 Species use levels 3, 2 (high, moderate) ONLY

Species	Habitat (ha)				Change in habitat (ha), 2100-2010		
	2010 (a)	Temperature- dependent model, 2100 (b)	Time-dependent model, 2100 (c)	Rate-adj model, 2100 (d)	Temperature- dependent model (b-a)	Time-dependent model (c-a)	Rate-adjusted model (d-a)
Alaska Marmot	35655.36	33902.5	35214.21	34869.39	-1752.86	-441.152	-785.966
Alaskan Hare	49241.69	45417.25	49125.4	45452.38	-3824.45	-116.292	-3789.31
American Marten*	18093.61	31271.96	22632.92	24125.07	13178.35	4539.314	6031.467
Arctic Fox*	259.2272	134.1296	220.6049	128.6457	-125.098	-38.6222	-130.582
Arctic Ground Squirrel	99086.73	82167.71	94308.48	87239.2	-16919	-4778.26	-11847.5
Barren-ground Shrew	81534.75	63989.39	75423.05	68837.55	-17545.4	-6111.71	-12697.2
Beaver*	4709.807	4143.495	4264.347	4673.766	-566.312	-445.46	-36.0415
Black bear*	46428.15	55029.78	50149.54	50063.54	8601.626	3721.383	3635.387
Brown Bear*	113817.4	113214	114500.7	109374.4	-603.439	683.239	-4443.06
Brown Lemming	97839.7	93351.92	97076.25	92316.29	-4487.78	-763.449	-5523.41
Canada Lynx*	39152.87	38653.69	39367.87	37981.1	-499.176	215.0038	-1171.76
Caribou*	73150.69	58556.78	68308.65	61075.39	-14593.9	-4842.05	-12075.3
Cinereus Shrew	94618.87	82867.98	90641.29	84214.39	-11750.9	-3977.58	-10404.5
Collared Lemming	80492.55	65331.42	76917.6	69719.55	-15161.1	-3574.96	-10773
Coyote	121893.7	118505.1	121660.7	115500.2	-3388.61	-233.054	-6393.57
Dall's Sheep*	31834.44	29983.37	31365.25	31088.05	-1851.08	-469.192	-746.392
Dusky Shrew	109858.8	97900.95	105933.7	98072.68	-11957.8	-3925.04	-11786.1
Ermine	100165.3	93631.21	99139.22	94116.65	-6534.12	-1026.11	-6048.68
Gray Wolf*	101544.4	102785.1	102278.6	97091.25	1240.71	734.2348	-4453.15
Least Weasel	0	0	0	0	0	0	0
Meadow Vole	67187.79	53792.26	63695.7	58823.4	-13395.5	-3492.1	-8364.39
Mink*	3053.18	2384.571	2510.129	2874.028	-668.609	-543.051	-179.153
Moose*	32579.86	49219.17	38693.88	41527.95	16639.31	6114.024	8948.093
Muskoxen*	55353.52	52271.79	54103.81	52584.89	-3081.73	-1249.7	-2768.62
Muskrat*	3053.18	2384.571	2510.129	2874.028	-668.609	-543.051	-179.153
Northern Bog Lemming	17004.11	16689.89	16168.84	19542.15	-314.222	-835.265	2538.04
Northern Flying Squirrel	17156.65	29935.76	22134.35	23325.37	12779.11	4977.705	6168.724
Northern Red-backed Vole	90341.47	78437.85	86271.59	80015.48	-11903.6	-4069.88	-10326
Northern River Otter*	3053.18	2384.571	2510.129	2874.028	-668.609	-543.051	-179.153
Porcupine	18191.33	32057.27	23190.62	24853.99	13865.94	4999.291	6662.658
Pygmy Shrew	100866.8	98474.14	101105.5	96772.28	-2392.68	238.7116	-4094.53
Red Fox*	103183.4	107207.7	105094.1	100636	4024.321	1910.695	-2547.38
Red Squirrel	17156.65	29935.76	22134.35	23325.37	12779.11	4977.705	6168.724
Singing Vole	80224.8	62675.58	74679.27	66520.99	-17549.2	-5545.52	-13703.8
Snowshoe Hare*	38978.72	38155.85	39080.5	37678.33	-822.866	101.7803	-1300.38

Species	Habitat (ha)				Change in habitat (ha), 2100-2010		
	2010 (a)	Temperature- dependent model, 2100 (b)	Time-dependent model, 2100 (c)	Rate-adj model, 2100 (d)	Temperature- dependent model (b-a)	Time-dependent model (c-a)	Rate-adjusted model (d-a)
Tundra Shrew	93767.33	81313.51	89532.37	82933.94	-12453.8	-4234.96	-10833.4
Tundra Vole	107169.8	94026.42	102783.2	96018.74	-13143.4	-4386.55	-11151
Wolverine*	116831.3	115010.7	117412.8	110958.6	-1820.62	581.4565	-5872.71
Yellow-cheeked Vole	30239.38	30548.07	30836.61	29254.04	308.688	597.228	-985.344

* = subsistence species

Species shown with zero (0) habitat are those that occur within the study area only with level 1 (marginal) habitat, not included here.