

## Fish and Wildlife Habitat

The habitat resources for fish and wildlife across the North Slope planning area have unique regional and temporal concentrations. The planning area includes terrestrial, freshwater, estuarine, and marine habitats. Arctic landscapes are currently undergoing dramatic changes due to a warming climate. These shifts in habitats are expected to continue to affect fish and wildlife populations and distributions over the course of the 20-year life of this plan making it important to evaluate how activities will affect species in the context of on-going climate change. Climate change is accelerated at northern latitudes and scientific evidence indicates threats for multiple Arctic species that breed in summer, and carry-over threats for those that rely on Arctic habitats to fatten up prior to extended migrations. Therefore, adjudicators should consult with the appropriate state or federal agency to determine the most current information on fish and wildlife resources within the planning area.

Terrestrial mammals inhabiting the area include caribou, brown bears, moose, muskoxen, Dall sheep and a variety of furbearers. Caribou dominate the biological landscape with seasonal use occurring from four different herds, the Central Arctic Herd (CAH), the Porcupine Caribou Herd (PCH), the Teshekpuk Caribou Herd (TCH), and the Western Arctic Herd (WAH). Brown bear concentrations extend from the coast south throughout the planning area. Muskox and moose are concentrated along riverine corridors with muskox to the north along the coast and moose to the south through the planning area. Dall sheep inhabit the higher terrain sweeping along the southern portion of the planning area through the Brooks Range. Furbearers and other small mammals such as arctic fox, red fox, beaver, muskrat, lynx, American mink, American marten, Alaska marmot, wolverine, wolf, snowshoe hare, arctic ground squirrel, lemmings and voles occupy available habitats across the planning area. Marine mammals inhabiting the area include polar bears, multiple seal species (bearded, ringed, and spotted), walrus, and multiple whale species (harbor porpoise, beluga, bowhead, humpback, killer, minke and gray whales), all of which are found seasonally throughout the Arctic Coast Region of the planning area. Polar bears, considered marine mammals and managed by the USFWS, occupy both marine and terrestrial habitats with concentrations occurring near the coast.

The planning area seasonally provides important breeding habitat to millions of birds, including waterfowl, shorebirds, waterbirds, seabirds, songbirds and raptors, that migrate to the Arctic every spring and summer to breed, nest, raise young and acquire energy stores prior to southward migration in the fall. Productivity of the landscape acts as a nursery for numerous bird species that migrate elsewhere and consequently impact populations globally. Suitable habitat, which varies by species, is widely dispersed and includes freshwater, marine, tundra, shrubland and riparian habitat. The highest concentrations of migratory birds in the planning area are associated with the abundant wetlands, river deltas and nearshore marine habitats of the arctic coast and coastal plain, of which waterfowl and shorebirds are the most numerous. Landbird species, however, including raptors, songbirds and willow

ptarmigan are seasonally concentrated along river corridors. Throughout the rest of the planning area, concentrations occur along river corridors and deltas, coastal plain wetlands and barrier islands.

A number of marine, freshwater, and anadromous fish species are found in the waters of the planning area, including chum and pink salmon, Dolly Varden, whitefish, Arctic and least cisco, Arctic grayling, ninespine stickleback and slimy sculpin. Due to the lack of liquid water in winter, fishes that overwinter in freshwaters have strict requirements for flow, oxygen, etc., for survival. Often these areas are small, particularly in rivers and streams, with large concentrations of fishes overwintering together in a small area. Similarly, each species has a requirement for suitable spawning areas (proper substrate size, water temperature, proximity to a spring for a consistent annual flow) and feeding areas (suitable primary and secondary production, water clarity, shelter from predators). Subsistence use of many of these fish and wildlife resources occurs throughout the planning area. See the Subsistence and Harvest section in Chapter 2 for more detail.

Within the planning area, nearly all lands and waters contribute to wildlife habitat resources, and the most important areas are identified through this plan and supported through the following goals. These goals, objectives, and guidelines lay the foundation for maintaining the integrity of these habitat areas, and guide use and development interests. This section will consider the habitat and needs of fish and wildlife species within the planning area.

## Goals

**Minimize Habitat Loss.** When resource development projects occur, avoid or minimize reduction in the quality and quantity of fish and wildlife habitat, particularly on anadromous waterbodies.

**Manage Lands to Maintain the Natural Environment.** Maintain the natural environment in areas known to be important as habitat for fish and wildlife.

**Maintain and Protect Publicly Owned Habitat Base.** Maintain in public ownership and protect habitat for fish and wildlife resources sufficient to conserve a diversity of species to support commercial, recreational, or traditional uses on a sustained yield basis; or protect a unique or rare assemblage of a single or multiple species of regional, state, or national significance.

**Contribute to Economic Diversity.** Protect fish and wildlife resources which contribute directly or indirectly to local, regional, and state economies through commercial, subsistence, personal use, sport and non-consumptive uses.

**Manage for Sustained Yield.** ADNR management of state land and resources is to be consistent with the requirements of sustained yield, as expressed in the State Constitution under Article VIII (Natural Resources).

**Ensure Access to Public Lands and Waters.** Ensure access to state lands and waters and promote or enhance the responsible public use and enjoyment of fish and wildlife resources.

**Avoid the Introduction of and Reduce the Spread of Invasive Plants, Exotic Animals and Diseases.** State lands are to be managed to avoid the introduction, and reduce the spread, of non-native invasive animals and plants as well as exotic diseases that can be detrimental to wildlife populations. This management shall be consistent with the applicable requirements of 11 AAC 34.

## Objectives and Management Guidelines

**Objective A.** Minimize impacts to fish and wildlife habitat areas, whether or not it is classified as Wildlife Habitat Land, to maintain fish and wildlife populations, production, and related public uses.

- **Guideline A-1.** Anadromous waterbodies shall be designated as Habitat (Ha). See the Anadromous Waterbodies section of Chapter 3.
- **Guideline A-2.** Impacts to fish and wildlife habitat areas should be minimized when authorizing development and infrastructure projects.

**Objective B.** Protection of fish and wildlife habitat and riverine areas, particularly the areas described in guideline B-3, shall be considered in all authorizations by the Department.

- **Guideline B-1. *Habitat Manipulation: General Requirements.***
  1. Fish and wildlife restoration, enhancement or manipulation activities on state lands, whether by ADF&G or other parties, may be used to improve habitat for certain fish and wildlife species where ADF&G determines that it is beneficial to the species or habitat and ADNR determines that it is compatible with the management intent for those lands. Habitat manipulation through controlled burning, water control, dredging practices, removal of pollution and pollution sources, or other measures may be allowed with the intent to enhance or restore wildlife.
  2. Enhancement activities likely to attract significant public use, will be designed and located to minimize the impact of additional public use on the existing recreation resources, moorage, campsites, and other resource values.
  3. The state shall manage its lands and waters to avoid the introduction, and reduce the spread, of invasive non-native plants and animals, consistent with the requirements of 11 AAC 34. Although the *Strategic Plan for Noxious and Invasive Plants Management in Alaska* recognizes this as a statewide issue, in most instances this problem is best handled at the local level. On the North Slope, the quality control and assurance of imported materials in erosion control is a particularly effective means to meet this Objective.

- **Guideline B-2.** *Alteration of the Riverine Hydrological System.* To the extent feasible, channelization, diversion, or damming that will alter the natural hydrological conditions and have a significant adverse impact on important riverine habitat will be avoided. If projects like this are proposed they will require a review and permit from the ADF&G Habitat Section and other agencies.
- **Guideline B-3.** *Protection of Riverine Areas.* Riverine areas perform a variety of important functions related to recreation, habitat protection, and water quality/quantity maintenance, and the protection of these areas is important to DMLW. Authorizations are to ensure the natural conditions of these areas are protected by avoiding, minimizing, or mitigating the impacts in any authorization that may be issued.
- **Guideline B-4.** *Allowing Uses in Fish and Wildlife Habitats (Ha).* These habitats are defined as areas that serve as concentrated use areas for a single or multiple fish and wildlife species during a sensitive life history stage where alteration of the habitat and/or human disturbance could result in permanent loss of a population or sustained yield of the species, or these habitats are highly important to the maintenance or management of a single or multiple fish and wildlife species.
  1. In the granting of authorizations within areas classified Wildlife Habitat Land, ADNR adjudicators shall acquire more detailed recent information pertaining to habitat resources and values if there is some question as to the appropriateness of the use that is under consideration for authorization.
  2. There is a distinct seasonality associated with the critical life periods of certain species; seasonality, and any associated off-season carry-over effects, shall be taken into consideration during project review and approval. Seasonality and critical life cycle stages are identified by various agency sources. Thus, it may be possible, through consultation with ADF&G and other agencies, that uses and facilities may be found appropriate within areas classified Wildlife Habitat Land if the seasonality criteria are satisfied by including mitigating measures in project design.
  3. Uses that are likely to produce levels of acoustical or visual disturbance sufficient to disturb sensitive life stages may be authorized with spatial or temporal restrictions that eliminate or minimize the disturbance during the sensitive life stage period.
  4. Uses not consistent with a plan designation and classification, or not authorized in a management intent statement, and that, if permitted, would result in the degradation of the resource(s) within areas designated “Ha”, are to be considered incompatible and are not to be authorized unless determined to be necessary and in the best interest of the state. Degradation of the resource might result from actions involving one or more of the following factors: dredging, filling, significant compaction of vegetation and sediment, alteration of flow patterns, discharge of toxic substances, or disturbance during sensitive periods.

5. If there is a question as to whether a use would be appropriate or whether it would degrade a listed resource, ADNR shall consult with ADF&G in making the determination of initial incompatibility.
  6. Non-designated uses that cause significant adverse impacts to the resources identified within a given “Ha” parcel may be allowed if:
    - a) ADNR, in consultation with ADF&G, determines that the management unit in question does not possess those attributes characteristic of a Habitat designation as defined in the plan; or
    - b) If ADNR, in consultation with ADF&G, determines that the non-designated use can be made compatible and significant adverse impacts to the “Ha” area avoided with appropriate design, siting, and operating stipulations; or
    - c) If after consideration of the above statements, the project is then found to be in the best interest of the state under AS 38.05.035(e) or similar Department authorizations, and significant adverse impacts are mitigated under Management Guideline C-4.
  7. For more information about the fish and wildlife categories used to identify Habitat (Ha) classifications and species-specific guidelines for allowing uses in Fish and Wildlife Habitats, see the *Explanation of Habitat Classifications* discussion at the end of this resource section.
- **Guideline B-5.** *Allowing Uses Outside of Fish and Wildlife Habitat Areas.* Important fish and wildlife habitat or harvest areas may exist within other classifications than “Ha.” In the granting of authorizations, ADNR adjudicators shall consult with ADF&G and the appropriate federal management agency to acquire more detailed and recent information pertaining to fish and wildlife habitat and harvest values. See *Subsistence and Harvest* resource section for more detail.
  - **Guideline B-6.** *Threatened and Endangered Species.*
    1. All land use activities will be conducted consistent with state and federal Endangered Species Acts to avoid jeopardizing the continued existence of threatened or endangered species of animals or plants, to provide for their continued use of an area, and to avoid modification or destruction of their habitat.
    2. Specific mitigation recommendations should be identified through consultation with ADF&G’s statewide Threatened, Endangered, and Diversity Program for any land use activity that potentially affects threatened and endangered species.
    3. The U.S. Fish and Wildlife Service (USFWS), Division of Ecological Services, and the National Marine Fisheries Service (NMFS) should be consulted on questions that involve endangered or threatened species of federal interest and the ADF&G Threatened, Endangered, and Diversity Program for those listed by the state.

**Objective C.** When resource development projects occur, adequate measures shall be taken in order to avoid or minimize impacts that may result in changes in the quality and quantity of fish and wildlife habitat.

- **Guideline C-1. *Balancing Impacts with Potential Development.***
  1. To the extent practicable, linear infrastructure shall be co-located to reduce the surface area of impacted lands except in situations where separation distances are required to reduce adverse impacts to wildlife movements.
  2. ADNR, in its consideration of resources and in the management of state land, shall consider the immediate and long-term impacts of such use upon fish and wildlife populations and human uses of those populations, habitat and soil degradation, and upon other forms of use that may occupy the area that is under consideration in an authorization. Uses that are not compatible with these uses and resources are to be made compatible through the use of stipulations when possible.
  3. It is recognized that the use and development of resources will create some level and area of impact. Nonetheless, the state may determine through its authorization processes that the development of specific surface or subsurface resources is appropriate, even with some level of impact, and may approve such developments, with appropriate stipulations. It is also recognized that the development of specific subsurface resources may take precedence over surface uses.
- **Guideline C-2. *Water Intake Structures.***
  1. When issuing water rights for waters providing fish habitat, ADNR will require that practical water intake structures be installed that do not result in entrainment, entrapment, or impingement of fish and will maintain instream flows needed to sustain existing fish populations. The simplest and most cost-effective technology may be used to implement this guideline when consistent with all applicable permits.
  2. Water intake structures should be screened, and intake velocities shall be limited to prevent entrapment, entrainment, or injury to fish. The structures supporting intakes should be designed to prevent fish from being led into the intake. Other effective techniques may also be used to achieve the intent of this guideline.
  3. The DMLW (Water Section) and ADF&G Habitat Section should be consulted to determine screen size, water velocity, and intake design if the intake structure is in fish-bearing waters. ADF&G will continue to determine and permit the appropriate intake structures for specific locations and projects.
- **Guideline C-3. *Transportation Routes and Facilities.*** Location of routes and timing of construction should be determined in consultation with ADF&G. Transportation corridors that intersect or cross fish or wildlife movement areas shall be equipped with appropriate crossing devices or structures to allow the free and efficient bidirectional passage of species using the corridor.

- **Guideline C-4. Mitigation.**
  1. When issuing permits and leases or otherwise authorizing the use or development of state lands, ADNR will recognize the requirements of the activity or development and the effects to habitat when determining stipulations or measures needed to protect fish, wildlife, or their habitats. The costs of mitigation relative to the benefits to be gained will be considered in the implementation of the authorization.
  2. ADNR will consult with appropriate federal agencies to develop future North Slope mitigation measures to avoid and minimize impacts to resources within the plan boundary.
  3. All land use activities will be conducted in accordance with requirements from ADNR and other pertinent agencies to avoid or minimize adverse effects on fish, wildlife, or their habitats, and on public access to those resources.
  4. ADNR, ADEC, and ADF&G may require the mitigation of any significant damage to fish, wildlife, or their habitats that may occur as a result of a project or proposal. ADNR, ADEC, and ADF&G will enforce permit stipulations and measures consistent with their authorities and enforcement capabilities.
  5. Mitigation will be required for any significant damage to fish, wildlife, or their habitats that may occur as a direct result of the party's failure to comply with applicable law, regulations, or the conditions of the permit or lease.
  6. When determining appropriate stipulations and measures, the Department will apply, in order of priority, the following steps. Mitigation requirements listed in other guidelines in this plan will also follow these steps:
    - a) Avoid anticipated, significant adverse effects on fish, wildlife, or their habitats through siting, timing, or other management options.
    - b) When significant adverse effects cannot be avoided by design, siting, timing, or other management options, the magnitude of the adverse effect(s) of the use or development will be minimized.
    - c) If significant loss of fish or wildlife habitat occurs, the loss will be rectified by repairing, rehabilitating, or restoring the affected area to a useful state once the authorized use ceases and the Department has determined the appropriate DR&R and potential site remediation action (if any) needed for the degraded lands or waters.
    - d) ADNR shall consider replacement or enhancement of fish and wildlife habitat when steps 1 through 3 cannot avoid substantial and irreversible loss of habitat. The ADF&G will identify the species affected, the need for replacement or enhancement, and the suggested method for addressing the impact. In those instances when replacement or enhancement is not feasible, ADNR will consider the provision of substitute resources or environments. ADNR will consider only those replacement and enhancement techniques that are either scientifically supported or are likely to be effective and that will

result in a benefit to the species impacted by the development. Replacement or enhancement will be required by ADNR if it is determined to be in the best interest of the state either through the AS 38.05.035(e) or other authorization process.

- **Guideline C-5. *Avoidance of Conflicts with Traditional Uses of Fish and Game.*** Surface activities authorized under permit or lease that have the potential to impact local harvest activities, are to avoid significant conflicts with local subsistence harvests and other traditional uses of fish and wildlife resources. The impact of surface activities upon local harvest is to be evaluated in ADNR authorizations. These evaluations are to determine the degree of impact and, where significant impact is likely to occur, either deny the activity or impose seasonal/temporal restrictions. Prior to issuing an authorization that may have a significant effect upon habitat or local harvests, ADNR is to consult with ADF&G, the borough, and local communities to ascertain their interests and concerns. See *Subsistence and Harvest* section for more information.

**Objective D. *Other Guidelines affecting Fish and Wildlife Habitat.*** Nearly all of the resource guidelines found within Chapter 2 either directly or indirectly affect fish and wildlife habitat in the planning area. The most commonly affected resource sections include Public Access, Transportation and Infrastructure, Water Resources, Subsistence and Harvest, Subsurface Resources, and Recreation and Tourism; however other resources addressed in this chapter's sections should also be considered.

## Species Specific Management Guidelines

**Caribou.** The Central Arctic Herd (CAH), the Teshekpuk Caribou Herd (TCH), and the Western Arctic Caribou Herd (WAH) are present within the planning area; however, other caribou herds are occasionally present in the planning area including the Porcupine Caribou Herd (PCH). The CAH occupies the central region of the North Slope. The female caribou of the CAH calve across a broad swath of the Arctic coastal plain from the Canning River drainage of the Arctic Refuge west to the Colville River. Most calves are born in areas on either side of the Prudhoe Bay oil complex. The TCH primarily occupies lands outside of the planning area, west of the Colville River, with calving concentrated in the area surrounding Teshekpuk Lake between May and late-June. The area north of Teshekpuk Lake is commonly used by the TCH for insect relief and grazing. The TCH often migrates through and periodically overwinters in the planning area. The WAH occupies the central and southwestern region of the North Slope with their range primarily existing within the Brooks Foothills region and a small area within the southern portion of the Dalton corridor region. Cows migrate to their calving grounds in the Utukok Hills between late-May and mid-June. During late-July and early-August, after calving, cow and calf groups, as well as bulls migrate east toward Anaktuvuk Pass to avoid insect harassment.

The most significant habitats include calving grounds, summer range for insect relief areas, migratory corridors and winter range. Where these areas exist, they are identified within



specific management units in the Resource Allocation Tables (RAT) of Chapter 3. The RAT and the applicable goals, objectives, and guidelines found in this Chapter are to be consulted to determine the full management intent as well as the particular temporal sensitivity of herds within each unit. If it is likely that a caribou concentration exists within the area affected by a potential project, adjudicators shall consult with ADF&G and may contact USFWS to identify important areas in addition to those identified in the management units in the Plan and to determine appropriate mitigation or avoidance measures. Other management requirements pertain to the 'Subsurface Resources' component of Chapter 2 and should be consulted prior to authorizing locatable, leasing, or licensing activities.

**Moose.** Moose are present throughout the planning area, with various habitats being important for calving, rutting and/or overwintering. In particular, willow stands associated with river valleys and riparian areas are important winter concentration habitat. Calving typically occurs from May through June, while rutting occurs late September to October. ADNR authorizations shall include seasonal restrictions on activities that would produce significant acoustical or visual disturbance during wintering, calving (including post-calving), or rutting periods.

Moose calving and rutting areas may change over time. Adjudicators shall consult with ADF&G and may contact USFWS to identify important areas in addition to those identified in the management units in the Plan and to determine appropriate mitigation or avoidance measures.

**Dall Sheep.** Dall sheep are present throughout the mountainous terrain and open alpine ridges within the Brooks Foothills and Dalton Corridor regions. Within these areas, sheep are widely distributed and there are numerous areas that are important for lambing, rutting, and winter habitats. Lambing typically occurs in May and June. Ewes and lambs are especially vulnerable and sensitive to disturbances (e.g., low elevation air traffic) and other environmental factors at this time. Adjudicators shall consult ADF&G and may contact USFWS to identify important areas in addition to those identified in the management units in the Plan and to determine appropriate mitigation or avoidance measures.

**Musk ox.** Musk ox are present in the Arctic National Wildlife Refuge, Cape Thompson, and the eastern portion of the North Slope near the Kavik River. The highest concentration of musk oxen occurs along the Sagavanirktok, Kuparuk and Colville Rivers; with the highest concentration near the Arctic coast south and east of Deadhorse and northwest of Prudhoe Bay in the area of Beechey Point. During the winter, ideal habitat is limited to areas of shallow or patchy snow where the species can forage for dried grasses, sedges, willows, and other vegetation. Preferred summer habitat includes streams and vegetated valleys with a variety of plants and vegetation. Mating typically occurs between August and October and calves are born in the spring between April and June. For nearly two decades, musk ox mortality has been increasing across the North Slope due to changes in predation, starvation, and habitat loss. Adjudicators shall consult ADF&G and may contact USFWS to identify important areas in addition to those identified in the management units in the Plan and to determine appropriate mitigation or avoidance measures.

**Grizzly and Polar Bear Denning Sites.** Some maternal denning sites have a recorded use dating back decades. Exploration and production activities in tundra habitat shall not be conducted within one-half mile of known occupied grizzly bear dens, unless alternative mitigation measures are approved by ADF&G. Operations must avoid known polar bear dens by one mile. If a polar bear should den within an existing area of development, off-site activities shall be restricted to minimize disturbance. Known den sites for grizzly bears can be obtained from the ADF&G Division of Wildlife Conservation and known den sites for polar bears are obtained from the USFWS. Adjudicators shall consult ADF&G and USFWS to identify important areas in addition to those identified in the management units in the Plan and to determine appropriate mitigation or avoidance measures. All permanent and long-term seasonal facilities shall prepare a bear interaction plan to reduce conflicts with polar and brown bears.

**Marine Mammal Haulouts.** Walrus and seal subsistence haulouts shall not be physically altered. Structures or activities that would preclude or significantly interfere with the continued use of these areas shall not be authorized and should be situated at least one-half mile from haulouts. Uses with high levels of acoustical or visual disturbance shall not be allowed within one-half mile of walrus haulouts from May 1 through December 1; and one-half mile of seal haulouts from May 1 through October 15. Consult the 'Resources & Uses' section of the Arctic Tidelands Region in the Resource Allocation Tables to determine subsistence harvest locations. Adjudicators shall consult ADF&G and may contact USFWS and NMFS to identify important areas in addition to those identified in the management units in the Plan and to determine appropriate mitigation or avoidance measures.

**Migratory Birds.** The planning area contains a variety of habitats that are integral to the breeding, molting, nesting and foraging to numerous migratory bird species. Alaska and the Arctic Coastal Plain, in particular, serve as the northerly geographic endpoint of every major avian migratory flyway in North America and host major shorebird migrations from the Asian and Australasian flyways as well. The Alaska Wildlife Action Plan has identified 56 migratory bird Species of Greatest Conservation Concern as occurring within the planning area (ADF&G State Wildlife Action Plan 2015). For many species, the planning area includes core breeding and staging areas important to population maintenance. Migratory birds are protected under the Migratory Bird Treaty Act (MBTA), and the Bald and Golden Eagle Protection Act (Eagle Act). Current recommendations are that disturbance of nesting habitat should be avoided for tundra, shrub and marsh habitat between June 1 to July 31, seabird colonies between May 20 to September 15 and raptor and raven cliff nesting sites between April 15 to August 15. Adjudicators shall consult ADF&G and may contact USFWS to identify important areas in addition to those identified in the management units in the Plan and to determine appropriate mitigation or avoidance measures.

Abundant field data reveal concurrent climate-related stressors that result in both breeding and in carry-over effects for Arctic migratory species. Given the list below, it is imperative to account for both the current context of climate change, as well as any additional habitat disturbance, which can result in cumulative impacts.

Some scientifically documented examples of existing climate-related stressors for birds:

1. Ecological models suggest suitable breeding conditions and habitat will decrease with time for many species.
2. Many low-lying areas are changing and drying, reducing habitat suitability.
3. River deltas are modifying sediment deposition, due to rising sea levels, more severe storms and glacial runoff, causing deltas to change and invertebrate food supplies to change, which are critical to fattening of migratory birds.
4. Shrubs and predators are expanding, making habitats less suitable and potentially more dangerous.
5. Early emergence of invertebrates creates a phenological mismatch that can reduce survival.
6. Greater variability of seasonal weather and dates of snowmelt can dramatically reduce breeding success.

**Waterfowl and other waterbirds.** The abundant wetlands, ponds and other aquatic habitats within the Arctic Coast Region provide important breeding concentrations for numerous waterbird species, including king eiders, spectacled eiders, black brant, snow geese, greater white fronted geese, tundra swans, pacific loons, red-throated loons and yellow-billed loons. The species diversity and abundance of the general area is underscored by a site not far from State land (Teshekpuk Lake Special Area), which is recognized as the most important place in the Circumpolar Arctic for breeding aquatic birds, including shorebirds. Spectacled eiders are currently Threatened under the Endangered Species Act (ESA), and yellow-billed loons are a former Candidate species. Nesting activity and habitats of both species have been documented since 1993, especially in the vicinity of oil leases, including the Colville River Delta. The Colville River, Fish Creek, Sagavanirktok River, Kuparuk River, Ikpikpuk, Chipp, and Canning River deltas provide important breeding and staging habitats. Lagoons and nearshore marine waters of the Arctic Coast Region provide important foraging habitat. Barrier islands within the Arctic Tidelands Region contain concentrations of breeding common eiders. Adjudicators shall consult ADF&G and may contact USFWS to identify important areas in addition to those identified in the management units in the Plan and to determine appropriate mitigation or avoidance measures.

**Shorebirds.** The planning area contains several areas important to dozens of shorebird species during breeding and post-breeding staging with at least 17 priority shorebird species (Alaska Shorebird Group, 2019). In important waterfowl and waterbird habitat, activities requiring a lease, permit, or development plan, and producing habitat disturbance or high levels of acoustical or visual disturbance from sources such as boat traffic, vegetation clearing, construction, blasting, dredging, and seismic operations, should be avoided during sensitive periods such as nesting, staging, or brood-rearing periods. Adjudicators shall consult ADF&G and may contact USFWS to identify important areas in addition to those identified in the management units in the Plan and to determine appropriate mitigation or avoidance measures.

**Seabird Colonies and Rookeries.** Seabird colonies and rookeries shall not be physically altered. Structures or activities that would preclude or significantly interfere with the continued use of these areas should not be authorized and should be situated at least one-half mile distant from seabird colonies and rookeries. Uses with high levels of acoustical or visual disturbance should not be allowed within one mile of seabird colonies from April 15 through August 31. Consult the ‘Resources & Uses’ section of the Arctic Tidelands Region Resource Allocation Tables to determine seabird colonies and rookeries likely to be present within areas of an identified tideland unit. Adjudicators shall consult ADF&G and may contact USFWS to identify important areas in addition to those identified in the management units in the Plan and to determine appropriate mitigation or avoidance measures.

**Landbirds.** Landbirds include songbirds, upland gamebirds and raptors. Although landbirds occur at relatively lower densities than waterbirds, the planning area supports a significant portion of the continental populations of several species. The Alaska Landbird Plan 2020 highlights multiple species, including the snowy owl which was recently placed on IUCN (2017) Red List of Threatened Species, and the olive-sided flycatcher which has declined both continentally and within Alaska. Other songbirds of conservation concern include gray-headed chickadees, Smith’s and Lapland longspurs and northern wheatears. Songbird breed within a variety of habitats, including coastal and alpine tundra and riparian areas. Gray-headed chickadees are one of the highest priority species for ADF&G, as they are extremely limited to discrete, unique patches of poplar grove habitats, primarily within the Central Slope and Brooks Foothills Regions. Willow ptarmigan, an important species for harvest, use various portions of the planning area throughout the year where they concentrate in willow stands within river valleys.

Golden eagles, federally protected under the Bald and Golden Eagle Protection Act, use habitats throughout the planning area and appear to be important for continental populations. The best-available tracking data, recently analyzed for this management document by the FWS Western Golden Eagle Team, demonstrates that non-breeding golden eagles from multiple states utilize areas north of the Brooks Range. Approximately half of 43 marked individuals were documented on state lands within the planning area, primarily within the Central Slope and Brooks Foothills regions. The additional federal protections under the Eagle Protection Act prohibit molesting, agitating, disturbing or taking these species, their parts, nests, or eggs without a federal permit. Disturbance includes decreasing productivity by substantially interfering with breeding, feeding, sheltering behavior, or causing nest abandonment in the current or subsequent year.

Alaska also supports 100% of the U.S. breeding population of gyrfalcon, rough-legged hawk, and snowy owl, as well as large proportions of other raptor subspecies. Given the endemic nature of breeding populations, recent declines and the importance of tundra as breeding habitat, these species are worthy of consideration. Common raptors within the planning area include peregrine falcons, gyrfalcons, rough-legged hawks, golden eagles and short-eared and snowy owls. Generally, raptor nesting sites are associated with bluffs and cliffs along riverine areas, particularly the Colville River Delta and lower Colville River area have some of the highest concentrations. Snowy owls nest on tundra habitat with several concentration

areas found throughout the Arctic Coast Region. Snowy owls are on the Yellow Watchlist for Partners in Flight, which means it is a species of conservation concern at a continental scale with a declining population. Short-eared owls are in steep decline with a loss of 65% of global population from 1970-2014. Both snowy and short-eared owls were regularly detected in USFWS aerial surveys of waterbirds on the Arctic Coastal Plain since 1986. These birds represent potential breeders, given survey timing. Adjudicators shall consult with ADF&G and may contact USFWS to identify important areas in addition to those identified in the management units in the Plan and to determine appropriate mitigation or avoidance measures.

### **Anadromous and High Value Fish Habitat**

Residents of the North Slope have a long history of harvesting fish for subsistence, primarily anadromous species (Dolly Varden, whitefishes *spp.*, and small amounts of Pacific salmon *spp.*), and resident species (Arctic grayling, burbot, northern pike, and lake trout). Small numbers of Arctic cod, saffron cod, and Arctic flounder are also taken but most of the total fish harvest is on species that spend at least part of their life cycle in freshwater. While subsistence harvest data is limited, research from the ADF&G, Division of Subsistence suggests that 250,000-300,000 lbs. of fish are harvested annually by the residents of Atkasuk, Utqiagvik, and Kaktovik. Research conducted by ADF&G, BLM, USFWS, UAF, North Slope Borough Wildlife Department, and NGOs has documented several aspects of the life history of fishes found on the North Slope including seasonal movements, spawning and overwintering areas, run timing, etc. for species in the Colville, Anaktuvuk, Canning, Ivishak and other river drainages. Adjudicators shall consult ADF&G and may contact USFWS to identify important areas in addition to those identified in the management units in the Plan and to determine appropriate mitigation or avoidance measures.

### **Threatened and Endangered Species**

All land use activities will be consistent with state and federal Endangered Species Acts to avoid jeopardizing the continued existence of threatened or endangered species or animals or plants, to provide for their continued use of an area, and to avoid modification or destruction of their habitat. Specific mitigation recommendations should be identified through interagency consultation for any land use activity that potentially affects threatened or endangered species. At the time of adoption, there are no Threatened or Endangered species recognized under AS 16.20.190 within the planning boundary. The U.S. Fish and Wildlife Service, Division of Ecological Services, or the National Marine Fisheries Service should be consulted for questions involving federally designated threatened or endangered species in the planning area. Federally designated Threatened (T) and Endangered (E) species are listed below.

Species	Status
polar bear ( <i>Ursa maritimus</i> )	T
spectacled eider ( <i>Somateria fischeri</i> )	T
Steller's eider ( <i>Polysticta stelleri</i> )	T
humpback whale ( <i>Megaptera novaeangliae</i> )	E
bowhead whale ( <i>Balaena mysticetus</i> )	E
ringed seal ( <i>Phoca hispida</i> )	T
bearded seal ( <i>Erignathus barbatus</i> )	T