3 | Alaska Overview

Denali Highway pika survey. A. Underwood, ADF&G.

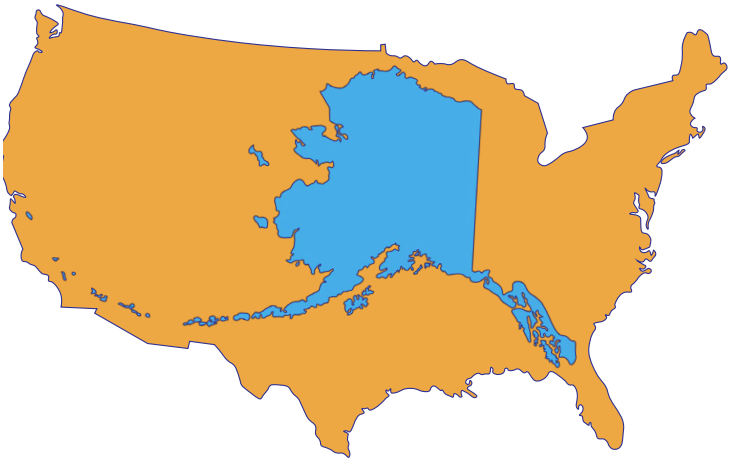
People

Alaska is the largest, most northerly, and most sparsely populated state in the nation (1.3 people per square mile). About 40% of Alaska's 733,391 residents live in a single city (Anchorage) and most development is centered in a narrow north-south "Railbelt" that parallels the Alaska Railroad route between the Kenai Peninsula, Anchorage, Matanuska-Susitna Valley, and Fairbanks. The state's capital, Juneau, is in Southeast Alaska. It is the state's third largest city, with about 32,000 residents, and is not connected directly to the road or rail system, except by marine ferry. Alaska's population increased by 3% between 2000 and 2020, with growth concentrated in the Southcentral region of the state, but has decreased in recent years.

In addition to urban centers, Alaska has a network of road-accessible rural communities and more than 200 small communities that are not connected to the road system. Most communities that are not connected to the road system are populated predominately by Alaska Natives living on ancestral lands used by their tribes. There are 229 federally recognized Alaska Native Tribes (40% of the total tribes in the United States). In 2023, Alaska Natives comprised nearly 16% of the state's total population (USCB 2024).

Landscapes

At 665,384 square miles, Alaska is one-fifth the size of the contiguous United States, hereafter the "Lower 48." (Figure 3.1).



Left: Figure 3.1. A map depicting the Lower 48 states overlayed with the State of Alaska.

Because of its remote northern location, Alaska has seen relatively little of the urbanization and land conversion (e.g., for farming, housing, flood control) common elsewhere in the United States. Approximately 60% of land in Alaska is owned and managed by the federal government, and 24.5% is managed by the State of Alaska. A relatively high percentage of the state has been managed under public ownership as state and federal parks, preserves, refuges, and national forests. These acres are largely under a conservation status that prohibits most development (e.g., National Park Service lands) and managed to conserve fish and wildlife populations in natural settings. Twelve regional Native corporations and dozens of local Native corporations own 10% of land in Alaska; less than 1% of the land is privately owned (State of Alaska 2023).

One-third of the state lies above the Arctic Circle, and Alaska is the only state with pack ice and a coastline on the Arctic Ocean. The large geographic and latitudinal extent of the state encompasses a wide range of climates, such as polar deserts in the north with cold temperatures, short summers, and low precipitation, continental climates in the interior with very cold winters and short but warm summers, and maritime climates along the southern coast with cool year-round temperatures and high precipitation. The vegetation is similarly varied. Alaska contains extensive Arctic tundra in the north, boreal forest in the interior, maritime tundra in the western deltas and islands, and temperate rainforest in the coastal regions of southcentral and southeast Alaska.

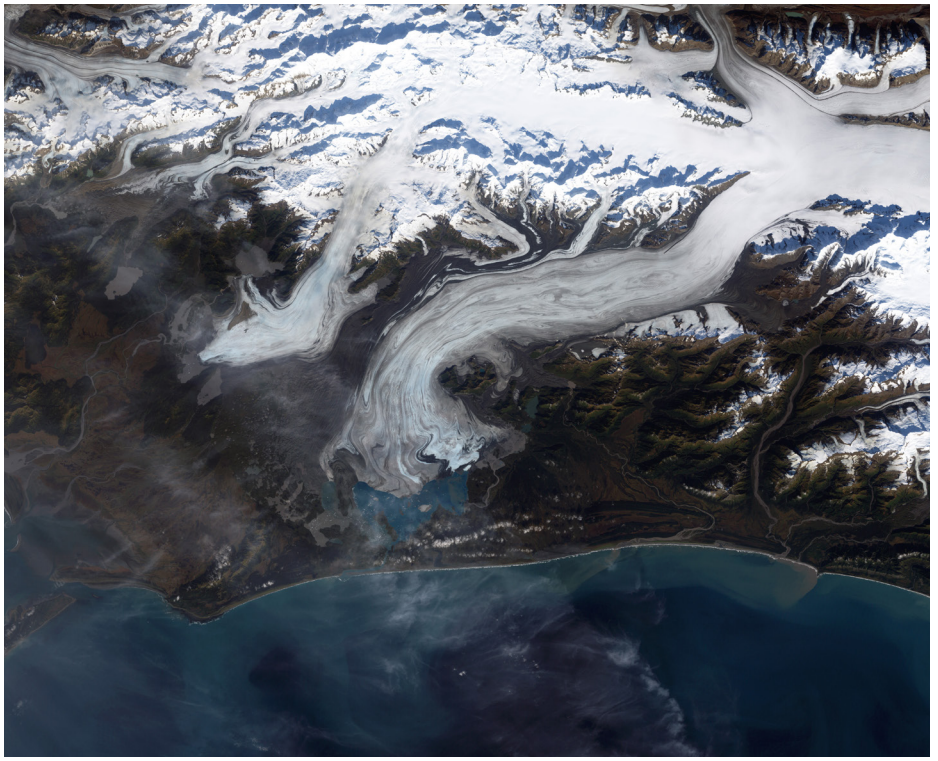
Alaska is one of the most geologically active regions in North America. Much of the state is marked by tectonic uplift and great vertical relief because it is situated where the northeast end of the Pacific Plate collides directly with the North American Plate. The megathrust boundary between the plates results in both the 2,500-mile-long Aleutian Trench and the arc of active volcanoes that parallel the trench. Along the trench, the rate of plate convergence is about a tenth of an inch per year. Convergence results in uplift and mountain building along Alaska's coasts. The St. Elias Mountains, along the Gulf of Alaska coast, rise from sea level to over 18,000 feet in just six miles, making it the steepest mountain belt in the world. Alaska boasts 39 mountain ranges, 17 of the 20 highest mountains in the United States, and the tallest mountain in North America (20,310 feet).

Mount Veniaminof is an active stratovolcano in the Aleutian Range. ADF&G.

Where tall mountains occur along the coast, orographic lifting of moisture-laden maritime air results in high snowfall, which develops into persistent ice and snow fields. The massive weight of accumulated snow and ice at high elevations creates immense "rivers" of ice that slowly flow seaward as glaciers. Not surprisingly, Alaska has more glaciers (664 named) and more glacial ice (33,000 square miles) than any other state. In fact, all the glaciers in the Lower 48 combined would be smaller than Alaska's Bering Glacier, North America's largest at 1,900 square miles.

North America's highest peak at 20,310 feet above sea level is located in the Alaska Range. ADF&G.

Currently, 25% of global ice loss from glaciers occurs in Alaska (Hugonnet et al. 2021). Most glaciers in Alaska are undergoing a rapid loss of mass due primarily to warming climatic conditions. Glacial runoff currently accounts for half the total freshwater input into the Gulf of Alaska, adding enough water to increase the global sea level by 0.006 inches per year (Berthier et al. 2010). Glacial melt plays an important and generally positive role in the dynamics and high productivity of nearshore systems (Timm 2020), such as adding habitat for Pacific salmon (Pitman et al. 2021). However, diminishment of glacial ice can have adverse impacts on several of Alaska's wildlife species, including the harbor seal, which pups and rests on ice floes calved from glaciers, and the Kittlitz's Murrelet, which nests on barren, newly exposed terrain near glaciers and feeds near tidewater glaciers.



The Bering Glacier terminates in Vitus Lake south of Alaska's Wrangell-St. Elias National Park. Combined with the Bagley Icefield, it is the largest glacier in North America. NASA, used with permission.

Ice in Endicott Arm. A. Carroll, ADF&G.

Arctic sea ice is a regular and important feature of the marine environment in both the Arctic Ocean and the Bering Sea. Alaska is the only state with permanent pack ice habitat. As the climate warms, however, the ice pack in the Arctic is diminishing. As of September 2023, Arctic sea ice extent (1.6 million square miles) was about 10% lower than the previous two years and overall the sixth lowest in the 45-year-long satellite record. All 17 of the lowest minimum sea ice extents have occurred in the 17 years since 2007. This translates to a 12.2% shrinkage of sea ice per decade since 1979 (Thoman et al. 2023). Since 2000, warmer summers have contributed to ice melt, so less multiyear ice (greater than four years) persists, resulting in younger, thinner ice than recorded in the 1980s and 1990s (Meier et al. 2022).

Fish and Wildlife

Alaska harbors populations of many northern species that occur in no other state, including beluga whales, ice seals, polar bears, muskoxen, Alaska blackfish, Kittlitz's Murrelets, Pribilof Rock Sandpipers, and McKay's Buntings, to name just a few.

Pack ice provides an important habitat for many marine mammals, including ice seals, polar bears, and Pacific walrus. As the pack ice grows during winter and shrinks during summer, the ice edge moves over hundreds of miles of shallow continental shelf. For walruses, which rest on the ice edge and dive to the seafloor to feed on benthic invertebrates, changes in the location of the pack ice edge continually carry them to new feeding areas. A problem arises if the ice edge retreats so far during summer that it occurs in deep, nonshelf waters. When walruses can no longer reach the bottom to feed, their only option is to leave the ice pack and swim to land. There, they face decreased access to food and increased risk of mortality from stampedes caused by disturbances from airplanes, people, or bears.

Walruses resting on an ice floe in the Chukchi Sea (USFWS permit #MA039386-2). J. Crawford, ADF&G.

One of Alaska's exceptional contributions to the world's avifauna is its seabirds. Alaska's coastal and offshore waters provide habitat for upwards of 100 million seabirds of more than 90 species (ASC 2024). Fifty of those species are nonbreeding residents, visitors, or species that only use marine habitats seasonally. Additionally, another 30 species, totaling 40

to 60 million individuals, breed in Alaska and spend most of their lives in U.S. territorial waters (Hatch and Piatt 1995). Alaska hosts over 95% of the breeding seabirds in the continental United States, with eight species nesting exclusively in Alaska and nowhere else in North America (Hatch and Piatt 1995), including the Red-faced Cormorant, Red-legged Kittiwake, and Whiskered Auklet. The Arctic Tern, which nests in Alaska, is considered the world's longest-distance migrant, traveling as much as 44,000 miles round-trip annually between the Arctic and the Antarctic (Hatch et al. 2020).

Red-legged Kittiwake. ADF&G.

Arctic Tern. A. Bankert, ABR, used with permission.

The global significance of Alaska's seabirds can be measured by the large number of globally important bird areas (IBAs; discrete areas with greater than 1% of the world's population) in the state. Based on breeding colony counts, biologists have identified 61 Alaska IBAs with globally significant populations of 22 species and 30 million birds (Smith et al. 2014). These areas, representing just 15% of all mapped breeding colonies in Alaska, contain 89% of its colonial nesting seabirds. Important areas for seabirds extend well beyond their nesting colony sites. They must also find their food (forage fish and krill) in highly ephemeral patches at sea. Biologists have identified 64 pelagic (open ocean) IBAs that provide habitat for 45 species and over 23 million seabirds (Smith et al. 2014). Although only 6% of the total water area is covered by IBAs, they contain about 38% of all pelagic seabirds in Alaska waters.

One of the most impressive IBAs is centered in Unimak Pass, in the Aleutian Islands. Upwards of 7 million seabirds use these waters, including globally significant populations of Short-tailed Shearwaters (3.4 million) and Sooty Shearwaters (1.1 million). These birds are drawn here by the upwelling waters and abundant food resources. Unimak Pass also lies along the great circle route between North America and Asia that is traveled by 3,000 tankers and cargo ships each year (8 to 9 per day). These ships, with a median bulk fuel load of 1.6 million gallons, pose a potential threat to these birds should an accident or grounding occur here (Transportation Research Board 2009).

Alaska has 33,904 miles of marine shoreline, which is 38% of the shoreline in the entire United States. This extensive shoreline, combined with its northern location and abundant breeding habitat, makes Alaska a particularly important place for shorebirds. Alaska annually hosts 7 to 12 million shorebirds, representing up to 50% of all the shorebirds in North America. Seventy-seven species of shorebird have been recorded in Alaska, representing fully one-third of the world's shorebird

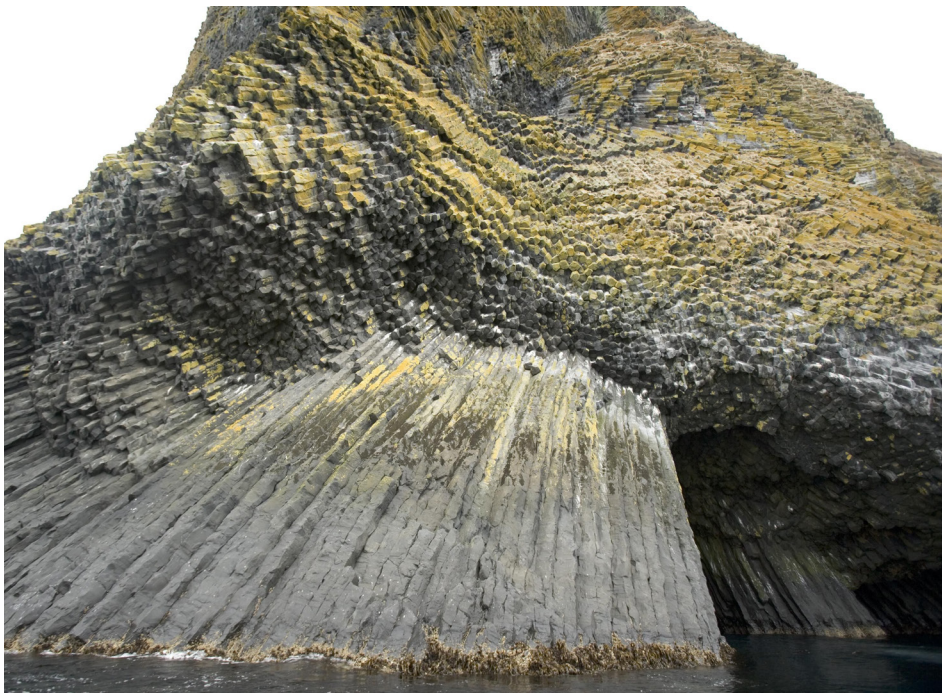
Black-bellied Plover. A. Bankert, ABR, used with permission.

Western Sandpiper. A. Bankert, ABR, used with permission.

Black Turnstone. T. Bowman, USFWS, used with permission.

species (ASG 2019). Alaska contains most of the world's breeding population of three shorebird species (Bristle-thighed Curlew, Western Sandpiper, and Black Turnstone) and the entire global population of numerous species and subspecies, including Rock Sandpiper (*ptilocnemis* and *couesi*), Dunlin (*pacifica* and *arcticola*), Bar-tailed Godwit (*baueri*), Marbled Godwit (*beringiae*), and Black-bellied Plover. Regarding important habitat, Alaska has more than 50 shorebird migration staging or stopover sites that qualify as Western Hemisphere Shorebird Reserve Network sites (USFWS 2024a). At ten of these sites, concentrations exceed 1 million birds, with sites like the Copper River Delta hosting between 5 and 8 million shorebirds each spring.

Alaska has over 40% of the nation's surface water resources, including more than 12,000 rivers, 3 million lakes greater than five acres, and numerous creeks and ponds. Alaska has 174 million acres of wetlands, 63% of the nation's total. Most of these habitats are intact and free from development or water management. As a result, it is a prolific producer of waterfowl and other waterbirds as well as robust fisheries. For example, freshwaters of the Bristol Bay watershed support approximately half of the global abun-dance of wild sockeye salmon and is the location of the world's largest sockeye salmon fishery. Alaska is the breeding ground for approximately 20% of all waterfowl in the United States, including more than 60% of the world's population of Pacific Black



This sea cave is part of a columnar basalt formation. Some sea caves are used by nesting seabirds. S. Hillebrand, USFWS, used with permission.

Brant and 90% of the world's population of Emperor Geese (USFWS 2024b). Alaska supports 100% of the United States breeding populations of Greater White-fronted Geese, Cackling Geese, Dusky Canada Geese, Pacific Black Brant, Long-tailed Duck, Spectacled Eider, King Eider, Steller's Eider, Common Eider, Black Scoter, White-winged Scoter, and Surf Scoter.

Avian species dependent on terrestrial habitats (landbirds) constitute the largest and most ecologically diverse component of Alaska's avifauna (Handel et al. 2021). Notable groups include grouse and ptarmigan, raptors, woodpeckers, and passerines. Most landbird species are migratory, and four major global migration flyways merge in Alaska. Birds travel to breed in Alaska from all over the world, and reproductive success in Alaska affects populations in both North and South America. Alaska's largest area of landbird habitat is interior boreal forest, which comprises the westernmost portion of the Northern Forest Avifaunal Biome. Collectively with Canada, this biome is considered a "veritable Neotropical migrant factory" for species such as thrushes, warblers, and flycatchers (Rich et al. 2004). Alaska also supports 100% of the United States' breeding populations of Gyrfalcon, Rough-legged Hawk, and Snowy Owl, as well as large proportions of other raptor taxa.

Alaska's unique geography, climate, and intact ecosystems support 116 species of mammals (MacDonald and Cook 2009). Alaska's vast wilderness provides a home for many of North America's large mammals, including iconic species like the brown bear, wolf, lynx, caribou, and moose. The state's successful effort to introduce the American bison to Interior Alaska has provided hunting and viewing opportunities for Alaskans. Additionally, the state is in the process of reintroducing the wood bison, a species that

Pacific Black Brant near the Colville River delta, northern Alaska. R. Askren, USGS, used with permission.

Harlequin Ducks use clear, fast-flowing rivers and streams for breeding. ABR, used with permission.

Willow Ptarmigan in summer plumage on the Arctic tundra. D. Hejna, ABR, used with permission.

Northern collared lemming. ADF&G.

was previously extirpated from the state. Two wild herds have been established as of 2025, one near the Innoko River in Southwest Alaska and one at the Minto Flats State Game Refuge in the Interior. While large mammal species are not the primary focus of this plan, they are very important for ecological, cultural, recreational, and economic reasons, and research and conservation of harvested species is supported by license sales as well as federal Pittman-Robertson funds.

Alaska also hosts a high diversity of small mammals, which play important roles in the state's ecosystems as herbivores, carnivores, prey, seed dispersers, and nutrient cyclers (Droghini et al. 2022). For example, flying squirrels (see Northern Flying Squirrel vignette) and some voles are key dispersers of fungal spores associated with roots of seedling trees, leading to successful regeneration and mature trees that are more resilient to environmental change (Paragi et al. 2020). Alaska's unique geography and glacial history have produced a large number of endemic small mammal species, such as the Pribilof Island shrew and the Alaska hare (Cook et al. 2001).

Much of the marine area covered in the State Wildlife Action Plan (SWAP) lies over relatively shallow continental shelf waters, especially in the Bering Sea, and is highly productive for fish. State territorial waters extend to three miles offshore, and waters between three and 200 miles offshore represent an exclusive economic zone under federal management authority. For marine species, this plan will cover many fish and wildlife species that use marine waters out to the 200-mile limit, with a particular emphasis on species known to be at risk and those of high economic, cultural, or ecological importance. Commercially important species of seafood from Alaska include salmon, crab, scallops, herring, lingcod, and rockfish. In Alaska, important forage fish species include capelin, eulachon, and sand lance. These fish species constitute critically important food for larger predatory fish, seabirds, and marine mammals. Some of these fish have over 20% fat content (Iverson et al. 2002), making them particularly valuable for birds and marine mammals. Forage fish species are not harvested commercially in Alaska, but species like eulachon are of significant cultural and subsistence importance. Information about population status, trends, and ecology of forage fishes in Alaska is limited, and more baseline information on these species is needed.

Arctic graying. ADF&G

The variation in climate, physiography, and vegetation across the state, combined with a complex glacial history, has resulted in a

diverse assemblage of freshwater fishes in the state (Oswood et al. 2000). Many freshwater fish are anadromous, migrating short or long distances between marine feeding areas and freshwater spawning grounds. Alaska is famous for producing large numbers of Pacific salmon, which migrate from freshwater rivers to the ocean, where they spend most of their lives. They eventually return, often in the millions, to their natal streams to spawn, bringing important marine-derived nutrients into aquatic and terrestrial systems and supporting healthy wildlife populations. Other freshwater fish species, such as Dolly Varden, rainbow trout, and grayling, are important components of riverine and lacustrine ecosystems and are sought after by anglers.

Grizzly bear. G. Smith, ADF&G.

Three beluga whales. K. Frost, ADF&G.

Economy

Due to healthy habitats and well-managed use, Alaska has abundant populations of fish and wildlife that draw residents and visitors alike to outdoor activities. In 2022, 2.7 million visitors traveled to Alaska and spent nearly $3.9 billion during the summer and winter months, with a total economic impact of $5.6 billion. The tourism industry alone supports 56,711 jobs in Alaska during the peak season, and one-tenth of Alaska's workforce is employed in tourism, underscoring its vital role in the state's job market (ATIA 2024, AKRDC 2024a).

Wildlife viewing is a steadily growing industry in the state, with moose, marine mammals, birds, and brown (grizzly) bears being the most popular animals (ECONorthwest 2014). In 2019, 55 businesses and 187 vessels involved in whale watching tours in Alaska's coastal waters supported 1,105 jobs and $37.3 million in labor income, with the total economic impact of whale watching in Alaska estimated at $103 million (NOAA 2020). Similarly, bear viewing, particularly in Southcentral Alaska, generates $34 million annually, supporting an estimated 680 jobs and contributing $10 million in direct wages (Young and Little 2019).

Alaska's exceptional bird habitats offer unparalleled viewing opportunities to observe rare and threatened species. Across the expansive Alaska landscape, 545 species of birds have been recorded (Gibson et al. 2025). In a single year (2016), nearly 300,000 birdwatchers visited Alaska, spent $378 million, supported 4,000 jobs, and contributed to rural and remote economic communities (Schwoerer and Dawson 2022).

Commercial fishing. D. Smith, ADF&G.

The unparalleled hunting and fishing opportunities in Alaska provide important subsistence, cultural, recreational, personal use, and economic benefits for Alaskans. Nearly half a million Alaskans and tourists enjoyed recreational fishing in Alaska, contributing approximately $815 million to the state economy in 2021 and supporting 6,100 jobs (ASA 2021). In contrast to wildlife viewing, fishing and hunting license, tag, and permit sales directly support the management of fish and wildlife populations within the state. Over the years 2022–2025, the sale of hunting licenses, big game tags, and permit sales (e.g., draw hunt applications) contributed $19 million per year to ADF&G (ADF&G 2025). The guided hunting industry alone, including direct spending and wages, generated $91.8 million in economic activity in 2019 (MG 2021). Resident hunters also contribute tremendously to the Alaska economy through their expenditures to go hunting, including travel and purchases of equipment that includes ATVs, aircraft, boats, and outdoor gear.

Over the past decade, the utilization of natural resources, which are crucial to Alaska's economy, has increased by nearly 24%. Alaska's two largest natural resource sectors are oil and gas ($5.9 billion, 69,250 jobs; MRG 2023) and commercial fishing ($5.7 billion, 62,200 jobs; MRG 2024). Other industries are one-tenth the size or less and include mining ($1 billion, 11,400 jobs; AMA 2023) and farming (1,200 farms, $47.1 million; USDA 2022, UA 2022).

From 1959 to 2022, the State of Alaska collected nearly $274 billion in petroleum revenues, with 81% ($221 billion) in unrestricted funds available for use at the state's discretion. State government revenues from oil and gas have a broad impact across Alaska, funding programs like Medicaid, K-12 education, and various capital projects. In 2022, high oil prices led to an increase in petroleum revenues for the state, contributing 50% of all unrestricted state revenues (MRG 2023). In fact, Alaska's gross domestic product (GDP) reached its highest level in the past 20 years ($63.6 billion, USBEA 2023). However, North Slope oil and gas production in Alaska has declined steadily to less than 25% of its peak in 1988. The decline in production from existing fields is anticipated to continue over the next decade. Nevertheless, new projects currently under development or evaluation are expected to boost total North Slope production between 2023 and 2032 (MRG 2023). In addition, there are high expectations for increased production from the National Petroleum Reserve in Alaska (NPR-A) and offshore oil fields in the Arctic Ocean. Mining exploration and development in Alaska are also expected to increase over the next decade as the demand for critical minerals and precious metals increases.

Alaska accounts for 60% of the total commercial fishery harvest volume in the United States (MRG 2024), nearly four times more than the next largest seafood-producing state. From 2021 through 2022, the top three commercially harvested fish were salmon ($799 million ex-vessel value), pollock ($457 million), and crab ($233 million; MRG 2024). When all commercial fisheries were considered,

Alaska's seafood industry was worth $2 billion in 2022. Two-thirds of Alaska's seafood harvest is exported annually ($3.3 billion value annually), with Alaska's top exports being frozen sockeye salmon, pollock, surimi, and fillets (AKRDC 2024b).

Alaska's other significant sources of revenue come from investment earnings ($3.5 billion in fiscal year 2024 [FY24] and $3.7 billion in fiscal year 2025 [FY25] from the $77 billion in assets managed by the Alaska Permanent Fund), the federal government ($3 billion in FY24), and restricted nonpetroleum revenue ($831 million per year; ADR 2024).

Summary

Alaska is large, relatively pristine, and has intact fish and wildlife habitats with more conservation land than other states and territories. Its fish and wildlife populations are relatively abundant and healthy and do not face the same impacts from habitat loss and fragmentation as other states. Our challenges in this plan are to identify declining taxa that may be vulnerable to current and future threats and to identify what conservation and management actions Alaska can take to mitigate those threats and prevent the need for listings under the Endangered Species Act. While oil and gas, fishing, logging, and other economic activities can impact fish and wildlife and their habitats at local scales in Alaska, they are not the primary drivers of population loss for declining species in the state due to adequate existing regulations. For example, many migratory birds are threatened by activities outside of Alaska that affect populations that breed in the state. Once birds arrive on the breeding grounds, they encounter relatively pristine and intact habitat. However, monitoring at development sites is a potential tool to ensure that existing regulations continue to promote sustained yield of SGCN, especially as these species may face threats that are cumulative. Alaska has a wealth of fish and wildlife, including many species that exist nowhere else in the nation. The state recognizes its constitutional mandate to conserve and manage these resources for the public good according to the sustained yield principle and will use this plan to guide its efforts.

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