



*A Special Report by the
Alaska State Office,
National Audubon Society on
Migratory Birds and Oil Development
in the Coastal Plain of the
Arctic National Wildlife Refuge*



BIRDS & OIL DEVELOPMENT
— IN THE —
ARCTIC REFUGE

Forty years ago, President Dwight D. Eisenhower wisely set aside much of the area now in north-east Alaska's Arctic National Wildlife Refuge, including its coastal plain, to protect wildlife, wilderness and recreational values. In 1980, Congress enlarged the refuge and clearly identified the conservation of "fish and wildlife populations and habitats in their natural diversity, including...snow geese, peregrine falcons and other migratory birds..." as one of its major purposes.

Birds are often hailed as symbols of freedom and the amazing migrations of the millions of birds that visit the Arctic Refuge excite the imagination and tangibly link this irreplaceable refuge with people across the entire nation and indeed the world. One hundred eighty species of birds have been recorded in the refuge. Their migrations take them to each of the 50 states, and they cross great oceans and follow distant coastlines to reach the lands and waters of six continents.

About 70 species of birds nest on the narrow Arctic Refuge coastal plain, between the rugged Brooks Range and the ice-bound Beaufort Sea. Most of this same coastal plain—the biological heart of what is now an intact, wild Arctic ecosystem—is contained within the 1.5-million-acre "1002 Area," where only Congress can decide to change the law and allow oil drilling or establish a fully protected wilderness area.



How would birds be affected if oil development is allowed in the Arctic Refuge?

In 1991, the members of the American Ornithologists' Union, the most prestigious professional organization for ornithologists in North America, addressed this question and raised concerns about the effects of oil development on birds and their habitats. The full text of their resolution appears on p. 7 of this brochure.

More than a decade later, ornithologists in the National Audubon Society's Alaska State Office and Science Division have taken a fresh look at North Slope oil development and birds. Based on consultations with scientific experts and a review of technical reports and articles, here are their major concerns and conclusions:

- The Arctic Refuge, including its coastal plain, has extraordinary value as an intact ecosystem, with all its native birdlife. The millions of birds that nest, migrate through, or spend the winter in the refuge are conspicuous and fundamental parts of the refuge ecosystem;
- The construction and operation of a sprawling industrial oilfield would reduce bird populations through the inevitable loss, degradation and fragmentation of habitat in the narrow coastal plain;
- Disturbance associated with routine human activities, including helicopter traffic, is stressful and would harm birds, especially those nesting near oilfields or gathering in large numbers during molt or migration;
- Oilfields attract predators (e.g., foxes and ravens) that prey on birds, and increased predation on nesting waterfowl is a significant impact of oil development at Prudhoe Bay and other central Arctic oilfields;
- If an oil spill were to reach coastal lagoons and wetlands, harm to loons, waterfowl and shorebirds could be especially serious and long-lasting;
- Birds with small, declining or vulnerable populations are most at risk from oil development in the refuge. See the Audubon Alaska WatchList on p. 6 for examples; and
- If the refuge is left whole and free of the influence of oil development, its birdlife can serve as sentinels, helping scientists evaluate the effects of environmental change on Arctic ecosystems.

In sum, the combination of habitat loss—plus human disturbance, increased predation and other indirect effects of oil development—would reduce the value of the Arctic Refuge coastal plain for migratory birds. Over time, fewer birds would nest or stop in the refuge, and species with small, declining or vulnerable populations would be most at risk. In the event that an oil spill were to reach coastal lagoons, the threat to bird populations would increase dramatically. The loss of birdlife that would follow oil development in the Arctic Refuge would diminish its value to everyone, including subsistence and sport hunters, backyard bird-watchers, scientists, and outdoor enthusiasts around the world.



American Golden-Plover
Photo by Oscar Johnson

Industrial Oilfields Fragment and Degrade Habitat

Within the Arctic Refuge, the coastal plain is very narrow—as few as 15 miles wide—and contains avian habitats found nowhere else in the refuge. Its lowland tundra, freshwater wetlands, coastal marshes, and barrier islands and lagoons are key parts of the larger Arctic ecosystem that makes the Arctic Refuge unique as a protected area in the United States.

Oil development in the Arctic Refuge would require an extensive complex of drilling pads, roads, pipelines, impoundments, processing plants, dormitories, gravel mines, solid waste disposal sites, airports, and the like. In fact, the producing fields around Prudhoe Bay and Kuparuk sprawl over more than 1,000 square miles. Even with improved technologies, the industrial complex needed to produce and transport oil would mean the unavoidable loss of significant nesting, brood-rearing and feeding habitats for birds. In addition, indirect effects, such as altered water drainage, water depletion in lakes and rivers, dust deposition and habitat fragmentation, would extend far beyond the immediate "footprint" of an oilfield.

Direct losses of habitat at Prudhoe Bay and other North Slope oil fields have reduced habitat for nesting birds and altered their distributions. For example, nesting shorebirds (e.g., Dunlins), are less numerous near roads than away from roads, and one study estimated reductions of 5-18% in numbers of shorebirds nesting within the



Photo by J.P. Myers/VIREO

The Buff-breasted Sandpiper has a tiny world population—only about 15,000 birds. This species nests on drier terrain, where oil facilities are often located in order to avoid wetlands, and may be at risk from oil development across Arctic Alaska.

perimeter of the Prudhoe Bay oilfield. Nests of Tundra Swans are located farther from oilfield infrastructure than the nests of other waterfowl.

Within the Arctic Refuge—unlike the area around Prudhoe Bay—there is limited coastal habitat into which birds can be displaced. Any losses of habitat for species with small or declining populations could be harmful at the population level.

Industrial Complex Would Compromise Arctic Science

Birds can be sensitive indicators of environmental change. One of the weaknesses of research on the impacts of oil development at Prudhoe Bay and in associated fields in the central Arctic is that much of this work was designed to ask site-specific questions about the impacts of particular developments at a local scale. Most oil-field research was not designed to address questions at population scales and there is a lack of control sites free of oil-field influences. Within the Arctic Refuge, there is the chance to preserve for science an intact ecosystem—including the birdlife of the coastal plain—as a benchmark to help scientists detect and interpret the cumulative effects of oil and gas development on the North Slope.

Photo by Joel Bennett



The industrial "footprint" of even the newest oil fields like Alpine is substantial, and the effects on birds extend far beyond the immediate habitat covered by gravel.

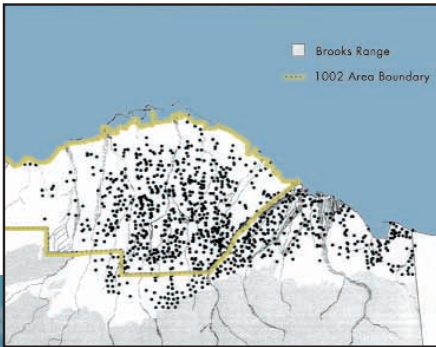
In addition, the effects of global climate change will be most readily apparent in Arctic regions. It is essential that there be areas with minimal confounding influences in which the effects of climate change on Arctic flora and fauna can be assessed. The birdlife of the coastal plain within the Arctic refuge can serve as sentinels of climate change, but only if they are free of the pervasive influence of oil and gas development.

Human Activity Disturbs Birds

Industrial oilfields are bustling with activity by people, trucks, airplanes, helicopters, barges and boats. Various species of birds react differently to disturbance, depending on the nature of the disturbance, the specific setting and the season.

Of paramount concern are Snow Geese. Up to 325,000 Snow Geese from the western Arctic Canada nesting population gather on the Arctic Refuge coastal plain in August and September to graze on cotton-grass and build fat reserves for their fall migration to wintering grounds in the southern United States and Mexico. They are highly sensitive to disturbance, especially by aircraft, and birds

Locations of Snow Goose flocks observed during surveys with the greatest number of geese, 1982-1993, on the coastal plain of the Arctic National Wildlife Refuge, Alaska. Reprinted from Robertson et al. (1997) by permission of the editor (see full reference on p. 8).



Thousands of Snow Geese gather on the Arctic Refuge coastal plain each fall to eat cotton-grass and build fat reserves for long flights to southern wintering grounds. The birds spend up to 16 hours a day feeding, and human activity can easily disrupt them during this critical time.

that are displaced from prime feeding habitat or are frequently disturbed may be less fit for migration and experience reduced winter survival. More than 80% of the feeding habitat preferred by Snow Geese within the Arctic Refuge is located inside the 1002 Area. Indeed, the U.S. Department of the Interior estimates that oil development could displace Snow Geese from as much as 45% of their preferred feeding habitat within the 1002 Area.

Oilfields Attract Predators that Prey on Birds

Human food wastes and structures attract predators to oilfields and enhance their populations through increased survival and reproductive rates. Numbers of Glaucous Gulls, Common Ravens, Grizzly Bears and Arctic Foxes have increased in central Arctic oilfields, and these predators, in turn, prey on nesting birds.



Photo by Daniel D. Roby

Audubon Christmas Bird Counts document a dramatic increase in numbers of Common Ravens spending the winter at Prudhoe Bay. This is bad news for nesting songbirds, shorebirds and waterfowl, whose eggs and young are easy prey for ravens.

For example, at Howe Island, near the Endicott Causeway, high predation by foxes and bears appears to be responsible for low nest success or even complete failures in a colony of Snow Geese during the 11 years from 1991

through 2001. A report by BP Exploration (Alaska) Inc. cites increased predation as a significant impact of oilfield development on Pacific Loons, Brant, Common Eiders and Snow Geese.

Spilled Oil Kills Birds

Every year several hundred spills of oil and other toxic substances occur in North Slope oil fields. Most spills are small, but some are very large. For example, an April 2001 spill released more than 92,000 gallons of crude oil and salt water onto the tundra in the Kuparuk oilfield. Spilled oil harms bird habitats. In addition, because oil is toxic and destroys the insulating capacity of feathers, birds or embryos (in eggs) that come into contact with oil usually die.

With respect to oil spills, the greatest risk to birds in the Arctic Refuge is a spill reaching coastal lagoons or nearshore waters. This might happen from an accident with a supply barge or the rupture of a pipeline crossing one of the rivers emptying into the Beaufort Sea. In 1979, in fact, the Trans-Alaska Pipeline ruptured and spilled 63,000 gallons of crude oil into the Atigun River. If crude oil reaches marine lagoons on the Beaufort Sea coast, it could jeopardize tens of thousands of molting Long-tailed Ducks (formerly Oldsquaw) and other waterbirds, such

as King Eiders, loons and phalaropes. Thousands of shorebirds gathering in river deltas and coastal meadows and marshes also would be highly vulnerable.



Photo by John S. Lough

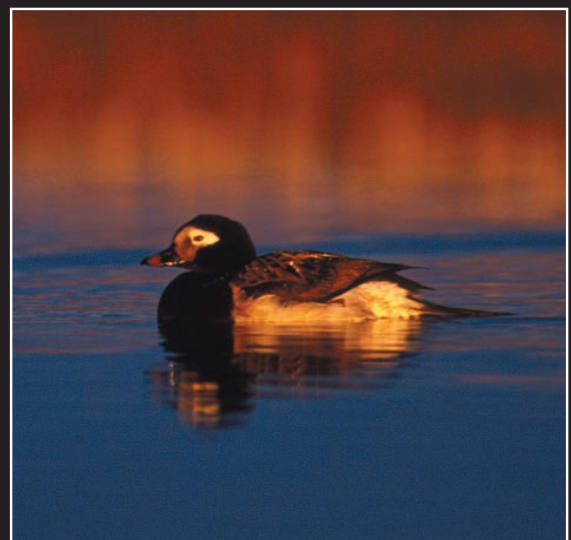
The Exxon Valdez oil spill killed more than 250,000 marine birds, like this white-winged scoter. The effects still linger 12 years after the spill. Crude oil reaching the marine lagoons on the edge of the Arctic Refuge coastal plain could have even more devastating consequences, especially given the industry's inability to clean up oil in broken ice.

Audubon Alaska WatchList

The WatchList identifies species of birds with declining or vulnerable populations. It serves as an early warning, alerting landowners, industry, resource managers and the public to take steps to prevent populations from becoming threatened or endangered with extinction. WatchList species regularly recorded on the coastal plain and adjacent coast of the Arctic Refuge include:

Red-throated Loon*	Yellow-billed Loon
Common Eider*	King Eider*
Long-tailed Duck*	Black Scoter
Golden Eagle	Peregrine Falcon
Wandering Tattler	Whimbrel
Bar-tailed Godwit	Buff-breasted Sandpiper*

The species with * are probably at greatest risk if there is oil development on the Arctic Refuge coastal plain.



Long-tailed Duck Photo by Subhankar Banerjee

In August 1991, the members of the prestigious American Ornithologists' Union, the leading professional organization for avian scientists in the North America, adopted the following resolution:

Resolution 3:
**ON THE CONSEQUENCES OF OIL EXPLORATION
IN THE ARCTIC NATIONAL WILDLIFE REFUGE**

WHEREAS the coastal plain of the Arctic National Wildlife Refuge is representative of Arctic lowland tundra habitats for which the assemblage of birds is afforded protection in no other conservation area, and

WHEREAS the coastal plain provides fall staging areas for up to 300,000 Lesser Snow Geese (*Chen caerulescens caerulescens*) from nesting colonies in the western Canadian Arctic which are easily disturbed by aircraft activity at these staging areas, and

WHEREAS the coastal plain provides nesting habitat for the Spectacled Eider (*Somateria fischeri*), which is currently under review for listing as an endangered species, and

WHEREAS coastal lagoons provide valuable habitat for molting, staging, and feeding for hundreds of thousands of ducks, loons, phalaropes, and larids, and

WHEREAS Arctic salt march habitat is extremely limited in extent on the Beaufort sea coast and receives heavy use for brood rearing and staging for a variety of shorebirds and waterfowl species, and

WHEREAS riparian areas, including willow shrub communities, are relatively uncommon habitats that support high densities of breeding birds, including species with very limited North American distributions, such as the Yellow Wagtail (*Motacilla flava*) and Bluethroat (*Luscinia svecica*), and

WHEREAS the coastal plain provides resting habitat for an estimated 300 to 400 thousand shorebirds of at least 14 species, including the Buff-breasted Sandpiper (*Tryngites subruficollis*), a species of conservation concern, and

RECOGNIZING that the potential effects of oil exploration on the avifauna of the Arctic National Wildlife Refuge are currently unknown,

THEREFORE BE IT RESOLVED that the American Ornithologists' Union recommends that the United States Congress designate the Arctic National Wildlife Refuge as Wilderness Area.



Snowy Owls

SELECTED REFERENCES

- Day, R. H. 1998. Predator populations and predation intensity on tundra-nesting birds in relation to human development. Unpubl. report prepared for U.S. Fish and Wildlife Service, Fairbanks, AK, by ABR, Inc., Fairbanks, AK.
- Garner, G.W. and P.E. Reynolds (eds.). 1986. Final report, baseline study of the fish, wildlife, and their habitats. Arctic National Wildlife Refuge Coastal Plain Resource Assessment. Volume I:1-392. U.S. Fish and Wildlife Service, Anchorage, AK.
- Martin, P.D. 1983. Bird use of the Arctic tundra habitats at Canning River Delta, Alaska. Unpubl. M.S. thesis, University of Alaska, Fairbanks.
- Meehan, R.H. 1986. Impact of oilfield development on shorebirds, Prudhoe Bay, Alaska. Unpubl. Ph.D. thesis, University of Colorado, Boulder.
- Robertson, D.G., A.W. Brackney, M.A. Spindler, and J.W. Hupp. 1997. Distribution of autumn-staging Lesser Snow Geese on the northeast coastal plain of Alaska. *Journal of Field Ornithology* 68:124-134.
- Streever, B. and B. Wilson (eds.). 2001. Technical briefs: Alaska's North Slope oilfields. BP Exploration (Alaska), Inc., Anchorage, Alaska.
- Truett, J.C. and S.R. Johnson (eds.). 2000. The natural history of an Arctic oil field. Academic Press, San Diego, CA.

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It is never silent on the Arctic tundra during summer... the lilting song of the Lapland longspur, the peeping sandpipers, the jaeger's cry, the loon's mystical call, the grunting of thousands of caribou. The Arctic music is as constant as the 24-hour daylight.

Debbie Miller, *Midnight Wilderness*
Alaska Northwest Books (2000)

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