Fish and Wildlife of Alaska's North Slope

GEESE

Four different species of geese (snow, white-fronted, brant, and Canadian) nest on the Arctic Coastal Plain of Alaska and are among the more common nesting birds in the oilfields. Industry scientists and consultants have annually studied these birds since the early 1970s to monitor their population status and to measure their responses to oilfield activities. Many of these studies have been conducted in cooperation with the state, federal, and North Slope Borough resource agencies. Over the years the results from these various studies have been used to modify the design and operational procedures of new oilfield developments operated by ConocoPhillips.

Brant and Snow Geese

Brant (*Branta nigricans* or *niblinbaq*) and snow geese (*Chen hyperborea* or *qavuq*) are colonial nesters that return each year to the same nesting area. Individual ConocoPhillips studies have located and mapped many colonies of brant and one colony of snow geese in the oilfields. Brant nesting colonies in the oilfields occur in large lake complexes. To avoid terrestrial predators, they most often select those lakes that contain many individual islands. During one six-year study using colored leg bands, ConocoPhillips scientists documented that individual brant annually returned to the same lake, and at times the same island, to nest. This study also examined brant fidelity to brood-rearing areas.

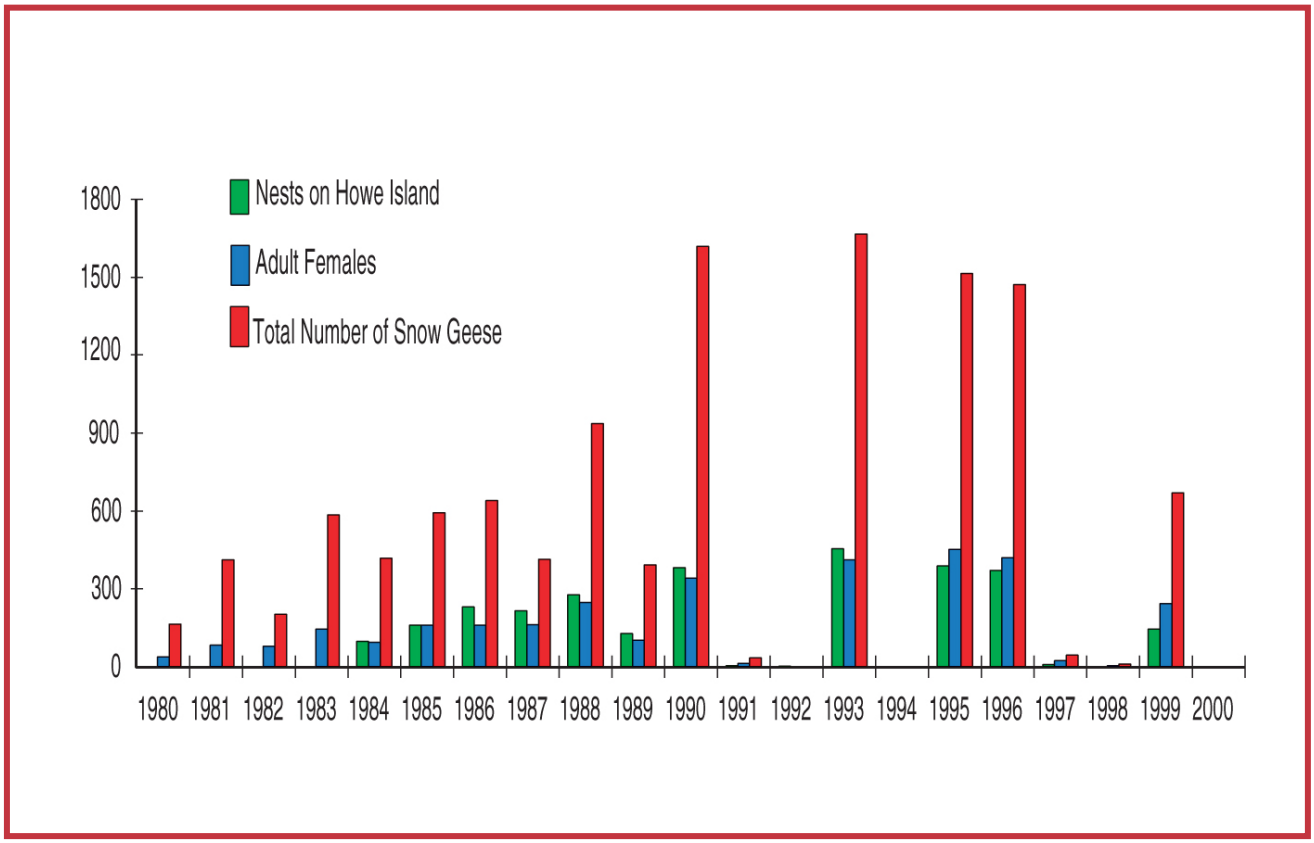
Banded brant (Branta nigricans *or* niblinbaq).

Snow geese (Chen hyperborea *or* qavuq) *in pen during survey.*

Most active brant colonies in the oilfields support ten or fewer nests, but one or two colonies may have exceed several hundred nests. More than a thousand black brant annually nest in the North Slope oilfields region. Numbers of brant nests throughout the oilfields have been stable since surveys in the 1970s.

Snow geese nest in several areas in the oilfield region, with the primary nesting colony located on Howe Island near the mouth of the Sagavanirktok River. This site, where as many as 455 nests have been seen, has been monitored for almost three decades, beginning when it was first discovered and reported by ConocoPhillips scientists. About 10 to 20 snow goose nests typically occur in the rest of the oilfields.

Both brant and snow geese arrive in the oilfields and typically begin nesting in early June. After eggs hatch, adults move with the chicks to nearby tidal flats and salt marshes for brood-rearing. Broods in the oilfield region spend much of the time feeding on salt marsh sedges. Studies supported by ConocoPhillips have found that food



Population of the Sagavanirktok River delta snow goose population, 1980-2000.

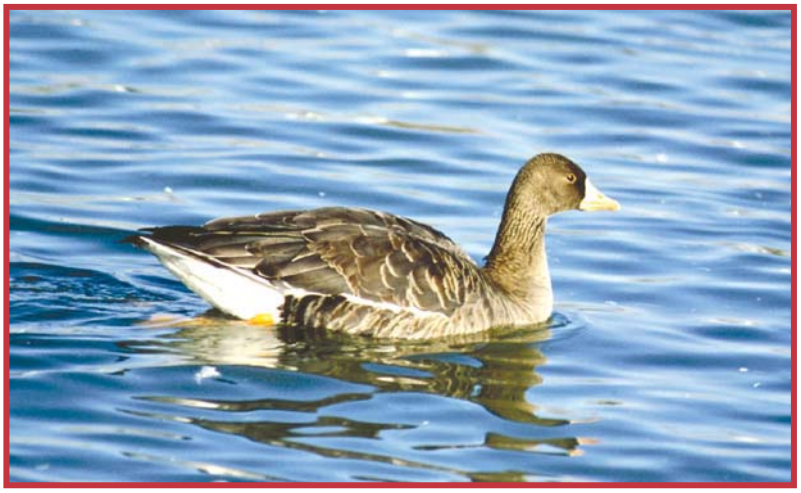
sources for goslings in the Kuparuk area are plentiful, and goslings here have demonstrated greater growth rates than goslings in other areas. Fall migration begins in mid to late August and continues into September.

ConocoPhillips has conducted many studies on potential impacts to these geese since the early development of the Prudhoe Bay and Kuparuk oilfields. Specific evaluations studied impacts from facility noise, habitat loss, aircraft noise, and drilling activity. Studies also focused on evaluating and documenting seasonal habitat preferences for each species and for different events, such as nesting and brood-rearing. Many of these studies were conducted as a stipulation to a specific development permit, and hence were conducted with cooperation from state and federal resource biologists. The results from each study were used to further mitigate any potential impacts to these nesting birds at new developments.

In general none of these collected data show that oilfield development has eliminated or reduced any important brant or snow goose nesting or brood-rearing habitats. Studies have found no evidence of effects from oilfield activities on distribution of brant and snow geese nesting on Howe Island near the Endicott Causeway, nor on brood-rearing birds near the large salt marsh at the Kuparuk oilfield dock at Oliktok Point. Density and abundance surveys have shown that populations appear stable since the 1970s.

White-Fronted and Canada Geese

White-fronted geese (*Anser albifrons* or *niblivik*) are likely the most common goose species in the oilfield region. Although field-wide population surveys have not been conducted, some estimates based on late summer counts indicate there may be up to 6,000 to 8,000 white-fronts in the general vicinity of the Arctic Coastal Plain oilfields. They are widely distributed across the region, although they are more common in the western portion. Canada geese (*Branta canadensis* or *iqsrabutilik*) are also common and although also seen across the oilfield region, they are more common in the eastern portion. The slightly different distribution patterns for these two geese have been known since early surveys were initiated in the 1970s. These patterns basically remain unchanged from that time.



White-fronted goose (Anser albifrons *or* niblivik).

These geese are not colonial nesters, although Canada geese can nest in high densities in a relatively small area of ideal nesting habitat. White-fronts nest in a variety of habitats ranging from open tundra away from lakes to wetter meadow habitat. Canada geese often nest along lake shorelines and on islands in lakes.

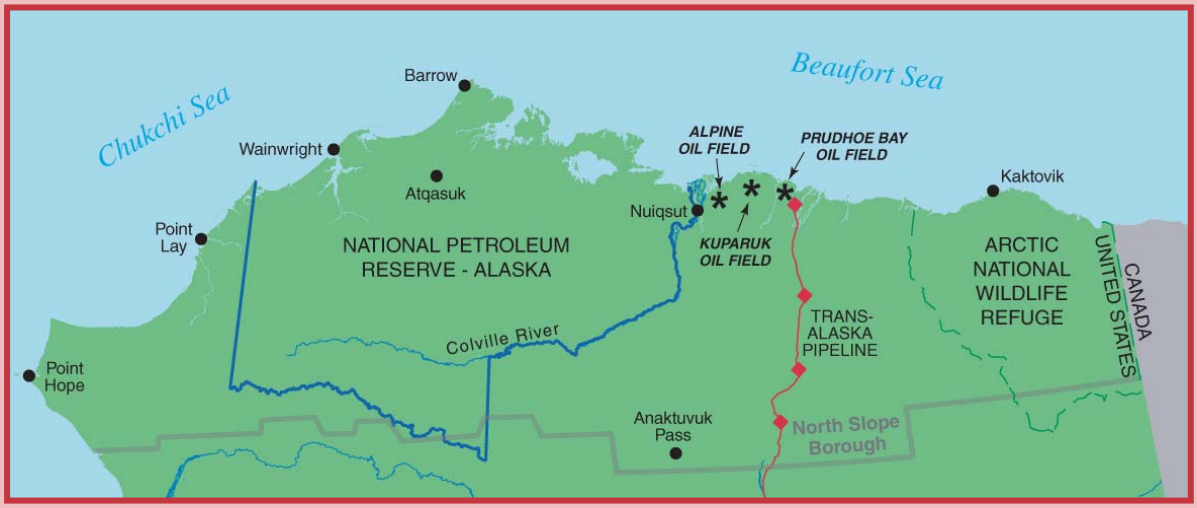
Disturbance studies have also been conducted to monitor response by these two geese species to many types of oilfield activity. In general, this research has shown these birds to be highly adaptable to routine oilfield activity. Successful nests for both species have occurred within about 30 feet of active roads and drill sites, and studies of

disturbance from facility noise have shown that general patterns of distribution and abundance remain unchanged, for the most part, near airstrips and camp facilities.

Future Developments

As new developments are designed, ConocoPhillips is using the collective knowledge and understanding of these studies of goose behavior and response to oilfield activities. By knowing goose habitat preferences for different seasons and for each species, and then mapping these habitats in baseline studies, development planners can minimize potential impacts when selecting locations for new facilities.

With this information, ConocoPhillips can continue to ensure that oilfield operations do not cause any alterations to local goose populations. In addition, by understanding the timing of seasonal movements from nesting to brood-rearing habitats, ConocoPhillips can also adjust the timing of its operations to further mitigate any impacts to these birds.



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