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Birds Associated with the Atigun River
Crude Oil Spill (TAPS)

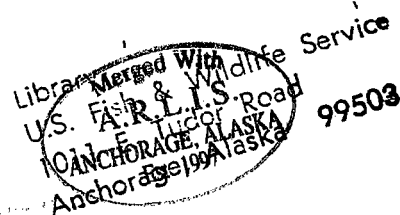
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INTRODUCTION

This report summarizes observations of birds and bird habitats in relation to the Atigun River crude oil spill (TAPS, 10 June 1979). All observations were made during 26-28 June. The purpose of this report is to list the presence of bird species in the immediate area of the spill, record bird species associated with several habitat types that were contaminated to varying degrees, and document direct impacts of oil on birds.

PROCEDURES

Pamplin et al. (1979) selected 12 reaches of river representative of different channel and habitat types along the most heavily contaminated area between Atigun Pass and Atigun Canyon. Six of these segments (1, 5, 6, 8, 11, 12) were examined in detail on foot. A bird species list was compiled, individual sightings were recorded by spill section, activity and habitat type, and notes were made on breeding status, feeding sites, and the presence of oil on birds and nests. The data that follow were gathered opportunistically and do not represent a systematic or quantitative survey. Heavy helicopter traffic of clean up crews probably displaced waterfowl and raptors from the upper valley during the period of observation.

RESULTS

During two and one-half days of observation 23 bird species were seen, of which six exhibited direct or behavioral evidence of breeding (Table 1). Sage (1974) reported a total of 72 species, including 35 that nested and another 13 suspected breeding species.

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Table 1. Bird species associated with the Atigun River crude oil spill, their breeding status and habitats used in or adjacent to the floodplain.

Species	Breeding Status	Number of Observations	Spill Section	Habitats
Green-winged teal (<i>Anas carolinensis</i>)	- ^a	27	1, 11	meander, adjacent pond
Oldsquaw (<i>Clangula hyemalis</i>)	- ^a	3	11	meander, adjacent pond
Rough-legged hawk (<i>Buteo lagopus</i>)	-	2	-	upland tundra
Golden eagle (<i>Aquila chrysaetos</i>)	- ^a	1	11	floodplain, upland tundra
Semipalmated plover (<i>Charadrius semipalmatus</i>)	nests (5)	11	1, 6, 8, 11	gravel/sand side channels
American golden plover (<i>Pluvialis dominica</i>)	- ^a	2	11, 12	cutbanks, upland tundra
Wandering tattler (<i>Heterosceelus incanum</i>)	-	3	1, 5	gravel/sand side channel, pond
Baird's sandpiper (<i>Calidris bairdii</i>)	- ^a	5	1, 8	gravel/sand side channel, pond
Least sandpiper (<i>Calidris minutilla</i>)	- ^a	1	1	gravel/sand side channel
Northern phalarope (<i>Lobipes lobatus</i>)	nest, ^a	3	8, 11	side channel, pond
Long-tailed jaeger (<i>Stercorarius longicaudus</i>)	- ^a	3	5, 11, 12	floodplain, upland tundra
Glaucous gull (<i>Larus hyperboreus</i>)	-	4	8, 11	main channel, floodplain
Mew gull (<i>Larus canus</i>)	- ^a	8	1, 8, 11	main channel, floodplain
Arctic tern (<i>Sterna paradisaea</i>)	-	2	11	main channel, floodplain
Short-eared owl (<i>Asio flammeus</i>)	-	1	-	upland tundra
Common raven (<i>Corvus corax</i>)	- ^a	2	8	upland tundra, floodplain
American robin (<i>Turdus migratorius</i>)	- ^a	2	1, 8	riparian willow
Yellow wagtail (<i>Motacilla flava</i>)	nest behavior	2	1	riparian willow
Water pipit (<i>Anthus spinoletta</i>)	- ^a	1	1	riparian willow
Gray-crowned rosy finch (<i>Leucosticte tephrocotis</i>)	-	5	1	grassy bar, upland tundra
Redpoll (<i>Carduelis</i> spp.)	fledglings, ^a	abundant	all	riparian willow
White-crowned sparrow (<i>Zonotrichia leucophrys</i>)	nest behavior, ^a	abundant	all	riparian willow
Lapland longspur (<i>Calcarius lapponicus</i>)	nest behavior, ^a	abundant	all	riparian willow, upland tundra

^a breeding records or breeding behavior recorded by Sage (1974).

The following discussion summarizes the observations of habitat use by birds in the immediate vicinity of the oiled Atigun River, especially in the six segments selected for study (Table 1). Pichon et al. (this report) describe the vegetation in these various habitat types.

Waterfowl - Green-winged teal and oldsquaws were seen feeding and resting on the meandered main channel in Section 11 and on ponds adjacent to the floodplain. One oldsquaw hen may have been nesting near the borrow pit at P/L MP 147.5.

Shorebirds - Most shorebird observations were on sandy gravel secondary channels, sandy shores (Sections 11 and 12) and adjacent ponds. Observations of semipalmated plovers were made at all sites except Section 12. Five nests were found, all at or near the high water line on sandy gravel bars of the side channels (Sections 6 and 8) or outwash fans of tributaries (Sections 1 and 11). Two nests had traces of oil deposits and two others may have been exposed at high water during the spill.

Baird's sandpipers (5 observations) and wandering tattlers (3 observations) fed on sandy gravel bars and adjacent ponds in Sections 1, 5, 6 and 8, as did one least sandpiper in Section 1. American golden plovers were seen on cutbanks and adjacent upland tundra. Northern phalaropes fed on a side channel (Section 8) and an adjacent pond (Section 11) near a nest.

Gulls and Terns - Glaucous and mew gulls foraged on the main river channel, side channels, oxbow ponds in Section 11, and were seen frequently in the entire valley. Arctic terns preferred deep ponds and meandered river channels. Long-tailed jaegers hunted adjacent tundra and riparian willow thickets where rodent runs were evident.

Raptors and Raven - Rough-legged hawks, short-eared owls and common ravens were seen near the floodplain and upland tundra. One golden eagle hunted in riparian willows in Section 11. These species all travel widely and probably prey on voles and lemmings of the riparian willow community. Helicopter disturbance and poor weather yielded too few sightings for determining habitat use near the river.

Passerines - Redpolls, white-crowned sparrows and Lapland longspurs were abundant at all sites with riparian willow thickets, where they foraged and nested. All species probably had hatched young but only redpoll and longspur fledglings were seen. Yellow wagtails (Section 1) exhibited brooding behavior and, with a water pipit, foraged in willows and on vegetated tundra river bars. American robins were seen in Sections 1 and 8 on riparian willows and adjacent tundra. During a snow shower on 27 June, gray-crowned rosy finches were seen on grassy areas and tundra river bars in Section 1, but they may have been displaced from adjacent alpine zones by the weather.

Ptarmigan - Although ptarmigan were not seen, Sage (1974) listed both rock (Lagopus mutus) and willow ptarmigan (L. lagopus) as breeders. Fecal droppings were numerous in willow thickets.

DISCUSSION

The species diversity of breeding birds in the Atigun valley could not be thoroughly documented from this short reconnaissance effort, but further observations will increase the data base. Breeding evidence was scarce because this field effort was made toward the end of nesting when most passerines had hatched, and insufficient time was devoted to the arduous task of nest searching. Sage (1974) can be used as a general

source of background material, but also includes the birds of the Sagavanirktok River which may or may not breed near the Atigun.

Regardless of the documentation of avifauna, there are major deposits of crude oil in the river and on vegetation (see Pichon et al, and others this report) that present two immediate hazards to birds. Coating of plumage by crude oil causes stress and often death from hypothermia. This hazard is especially widespread in riparian willow (Salix alaxensis) and vegetated tundra river bars on side channels where crude oil was heavily deposited on the lower parts of shrubs and stranded in vegetation because of receding water levels during the spill. Nesting passerines and especially their fledgling young have been exposed to oil while foraging, and forthcoming shorebird broods will be equally threatened. Raptors, gulls and the common ravens would also be exposed to oil while hunting rodents in these habitats. If the oil deposits persist, ptarmigan could be oiled in late fall and winter when they move into the floodplain.

The second hazard to birds is ingestion of toxic petroleum elements, either during feeding or from cleaning oil off their plumage. All groups of birds, insectivores, granivores and predators could ingest oil while foraging or from contaminated foods, but aquatic species of shorebirds, gulls and waterfowl are probably more susceptible. Shorebirds feed along strand lines where oil deposits are heavy, and by probing in sand and silt where oil is widely distributed on the surface and tied up in several new strata of depositional sands. Semipalmated plovers seem closely tied to the sandy gravel bars of the most active channels, where two nests and one incubating bird were seen moderately oiled.

The area between Atigun Pass and Atigun Canyon has significant oil deposits in gravel and sand substrates, and extensive reaches with heavily oiled vegetation in riparian bird habitats. Although few oiled birds were observed, the extent and thickness of oil deposits make this a serious imminent hazard to birds. Intensive studies would be required to document the overall effects of oil toxicity.

There appears to be no practical method for clean up of oil in vegetation without additional major damage to plant communities. Therefore, residual oil will probably persist for a long time. This underscores the need to prevent oil from spreading into riparian vegetation during future spills of this type. Prompt containment in the main scoured channels would reduce contamination of valuable vegetated habitats and may facilitate more thorough clean up. Oil will be released and slowly removed from the fluvial substrates and should be monitored, especially during and after flood conditions next spring.

LITERATURE CITED

Sage, B.L. 1974. Ecological distribution of birds in the Atigun and Sagavanirktok river valleys, arctic Alaska. Canadian Field-Naturalist 88:281-291.

