GYRFALCON SURVEY:

RICHARDSON MOUNTAINS, NWT

FIELD REPORT 1987

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INTRODUCTION

There is little information available on the status of Gyrfalcons (Falco rusticolus) in the Richardson Mountains, N.W.T.. The Yukon Department of Renewable Resources has done annual surveys since 1974 for Gyrfalcons on about 18,000 km^2 of the Yukon North Slope (Mossop et al. 1986). On the NWT side of the border, no systematic surveys have been undertaken since those conducted by the Canadian Wildlife Service in the mid-1970's.

The Richardson Mountains fall within the land claims settlement of the Inuvialuit. Gyrfalcons are valuable as important biological indicators of ecosystem health and as contributors to the renewable resource based economy through tourism and potential sale of live birds. Both maintenance of productive ecosystems and development of economic opportunities from renewable resources are expressed in the "Inuvialuit Renewable Resource Conservation and Management Plan". The GNWT Department of Renewable Resources (DRR) strongly supports both of these goals.

As part of an effort to obtain more detailed information concerning the status of wildlife on Inuvialuit lands, the Department of Renewable Resources, Wildlife Management Division undertook its first systematic survey for Gyrfalcons in the Richardson Mountains on behalf of the Inuvialuit. This report describes the methods and results of that survey.

METHODS

From 15-17 June, 1987, the northeastern Richardson Mountains were surveyed for occupied Gyrfalcon nests. A skid-mounted Bell 206-B helicopter leased from the Polar Continental Shelf Project was used for the survey. The pilot, Marc Hutcheson, has had extensive experience flying raptor surveys. On June 15 and 16, the observers were Chris Shank, Randal Glaholt, and Jill Pangman, all from the DRR. On June 17, the observers were Shank and Glaholt. Weather was good to excellent throughout the survey period. The area was unknown to the pilot and observers and, consequently, search image and navigational facility grew better as the survey progressed. For an initial survey, coverage was considered to be excellent.

The area surveyed was bordered on the west by the Yukon border, on the east by the Mackenzie River, and extended from the Rat River in the south to the junction of the Fish and Mackenzie Rivers in the north (Fig. 1). A total of 12.3 hr were flown in which 675 km were surveyed. From other study areas, we know that each linear km flown translates into about 5 km^2 surveyed. Therefore, approximately 3400 km^2 of the 4800 km^2 block were covered. It is almost certain that we did not locate all of the nests in the area surveyed.

A standard helicopter survey technique (Fuller and Mosher 1981) was employed which consisted of flying through likely looking terrain, usually river valleys, and closely inspecting all possible nesting cliffs. When a nest was located, the helicopter

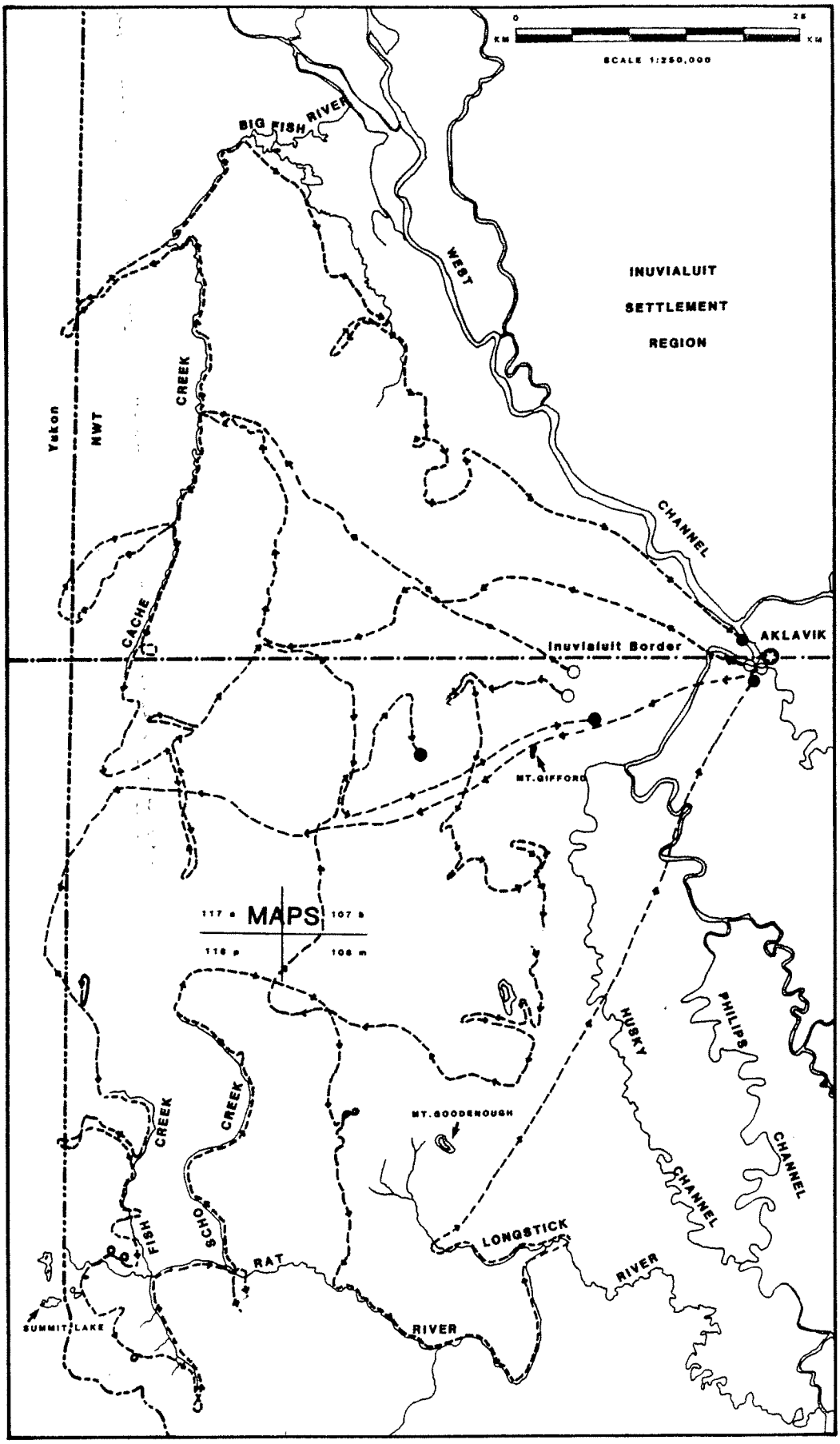

Figure 1. Map of the study area depicting the flight lines flown from 15-17 June, 1987.

landed and the nest was entered to photograph, measure, and place numbered leg-bands on the chicks. Photographs and body measurements allow accurate determination of age. If recovered, leg-bands tell much about the birds migration patterns and lifespan. Both previously known nest sites and new areas were checked.

RESULTS AND DISCUSSION

Gyrfalcon Status and Biology

A total of 9 Gyrfalcon nests were previously listed for the survey area in the NWT Wildlife Management Division's raptor database. Of these, 8 were checked and none were occupied. However, 7 new nests were located 4 of which are almost certainly alternative sites to previously recorded nests. Gyrfalcons commonly have more than one "alternative" nest per territory, only one of which will be used in any given year. Nests were considered as alternatives if they were within 10 km of each other and have never been seen to be occupied simultaneously. In addition, two Gyrfalcons were seen flying in areas in which no nests could be found.

Table 1 summarizes the nest occupancy data by National Topographic Service Map Sheet Number. The total number of nests now known from the surveyed area is 16 probably representing 12 territories. On the basis of 12 territories, the calculated territorial density is one pair per 283 km^2. The greatest density of territories occurs in Map Sheet 117A in the northwestern portion of the survey area and near the Yukon border. On the basis of 1987 occupied nests, calculated nest density is one pair per 486 km^2. Considering that this was a preliminary survey and that some nests were certainly missed, the actual density is likely to be higher. Mossop and Hayes (1985) estimate nesting density for the Yukon North Slope to be about one pair per 167-211 km^2. Our estimate for the NWT portion of the Richardson Mountains

Table 1. Number of Gyrfalcon nests and territories in the Northern Richardson Mountains. Old nests are those previously listed in the NWT Wildlife Division's data base. New nests are those located on this survey. Territories are the best estimate of the number of territories likely to occur in the survey area considering that several nests are clearly alternative sites used by the same pair in different years.

MAP	OLD NESTS	NEW NESTS	TERRITORIES
106M	1	1	2
116P	2	1	2
107B	2	2	2
117A	4	3	6
TOTAL	9	7	12

is roughly comparable. It would be inappropriate to suggest precise density estimates for the NWT portion of the Richardsons on the basis of this single survey.

The proportion of known nests seen to be occupied can indicate breeding success. However, proportional nest occupancy cannot be determined from this survey because the last comparison survey done was in 1976. Mossop and Hayes (1985) document proportional occupancies varying from .57-.86 on the Yukon North Slope.

Subjectively, it seemed that suitable nest sites were rare. Four of the 6 nests seen were in crumbly, unconsolidated material. Nest sites located far from river valleys tended to be on small cliffs. The possible effects of restricted nesting habitat might include lower nesting density than the prey base can support and high rates of nest failure resulting from predation, nest collapse, and exposure.

There were 20 chicks in the 6 nests examined. Fourteen chicks were leg-banded. The mean brood size of 3.33 (SD = 0.52) per productive nest is as high as ever recorded on the Yukon North Slope (Mossop and Ward 1985, Fig. 2). All chicks appeared to be grey phase.

The chicks varied in age from 11-30 days as determined by comparison with known age photos and from seventh primary length (Poole 1988). At 5 of the 6 nests, the chicks had hatched between 18-24 May. Most hatch therefore occurred at the end of the third week of May. Assuming a mean hatch date of 21 May, an incubation

period of 35 days, and an egg-laying period of 8 days, most egg-laying was initiated around 9 April. This is nearly two weeks earlier than the mean noted by Mossop and Ward (1985) for Gyrfalcons on the Yukon North Slope which might be expected to have a similar phenology. Mossop and Ward (1985) note that there is annual variability of about two weeks in mean hatch date which can be related to food abundance and production. Perhaps the earlier than expected initiation of breeding might be a result of a particularly favourable year with high ptarmigan abundance.

Other Species

The most commonly seen raptor in the study area was the Golden Eagle (Table 2). We cannot calculate eagle density because the survey did not target eagle nests. Ten nests and 35 individual adults were seen. Mossop et al. (1986) report one Golden Eagle nest per 195 km^2 on the Yukon North Slope. Density in the NWT portion of the Richardson Mountains is likely to be comparable.

At the date of the survey, the eagles were brooding very young chicks. The females were reluctant to get up as the helicopter passed making it impossible to count the number of chicks. Assuming a hatch date of ca. 10 June, incubation would have begun around 27 April. This is similar to dates noted both for the Yukon North Slope (29 April; Mossop and Ward 1985) and the central Arctic (mid-late April; Poole and Bromley 1987).

No Peregrine Falcons were seen and only a few raptors of other species were noted (Table 2). Ptarmigan were counted on the

Table 2. Numbers of other species seen incidentally to Gyrfalcon surveys in the northeastern Richardson Mountains, 15-17 June, 1987.

Species	No.
Golden Eagles adults	35
Golden Eagle nests	10
Roughlegged Hawks flying	1
Merlins flying	1
Merlin nests	1
Raven nests	5
Bald Eagles flying	2
Northern Harriers flying	2
Ptarmigan (2 days only)	72
Moose	2
Grizzly Bears	5
Dall Sheep	ca. 160

last two days of the survey and were notably more abundant in the northwestern portion of the survey area where Gryfalcon nest density was also greatest.

CONCLUSIONS

Initial indications are that Gyrfalcon density in the northeastern Richardson Mountains is comparable to that of the better-studied Yukon North Slope. Further surveys would refine these density estimates and would indicate trends in proportional occupancy of known territories. It is particularly important to thoroughly search areas near previously-known nest sites to determine whether the territories are still occupied. Subsequent work should address the question of possible nest site limitation through use of artificial nest boxes. Surveys should not be planned solely on the basis of the breeding dates documented here; they may be the anomalous result of a particularly favourable year. Consideration should be given to coordinating future surveys with the Yukon Division of Fish and Game.

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