Wilson Bull., 105(1), 1993, pp. 188–190

Increase in breeding population of Tundra Peregrine Falcons in the central Canadian Arctic.—The Tundra Peregrine Falcon (*Falco peregrinus tundrius*) is a pale race breeding in tundra regions of northern Canada, Alaska, and Greenland (White 1968). Tundra peregrine populations underwent a population decline in the years around 1970 as a result of pesticide contamination (Kiff 1988) and currently are listed as "threatened" by the U.S. Endangered Species Act and were downlisted from "threatened" to "vulnerable" in 1992 by the Committee on the Status of Endangered Wildlife in Canada. In the 1980s, increasing numbers of tundra peregrines were noted in Alaska (Ambrose et al. 1988), western Greenland (Mattox and Seegar 1988), southern Greenland (Falk and Møller 1988), northern Quebec (Bird and Weaver 1988), and the Canadian Arctic (Bromley 1988). By contrast, the breeding population at Rankin Inlet, on the coast of Hudson's Bay, has shown no obvious trend since 1982 (Bradley 1988; Court et al. 1988; R. Johnstone, pers. comm.), and the small population of tundra peregrines on the Yukon North Slope no longer exists (David Mossop, pers. comm.). In 1982–1991, we monitored occupied territories of Peregrine Falcons at two coastal areas in the central Canadian Arctic. In this note, we report increases in numbers of occupied tundra peregrine territories.

The two study areas are 400 km apart, and at both nest sites are abundant, vegetation is low-arctic tundra, and weather is variable and often severe. The first, Hope Bay, is situated on the coast of the Arctic Ocean in the central Northwest Territories (68°10′N, 106°15′W). The area comprises approximately 2000 km^2, exclusive of major water bodies. Numerous opportunities for nesting are provided by granitic outcrops and diabase dykes and sills (Fraser 1964) which dominate the topography. Poole and Bromley (1988) presented a detailed description of the Hope Bay study area. The second study area comprises approximately 4000 km^2 of tundra surrounding the community of Coppermine (population 956) (67°49′N, 115°12′W). Sparse black spruce (*Picea mariana*) forests occur in protected places in the southern part of the study area. The northern part of the study area is dominated by diabase dykes (Stockwell et al. 1981) providing numerous nesting ledges.

Occupied peregrine territories were counted during helicopter surveys for Gyrfalcons (*F. rusticolus*) in early or mid-July, near the time of hatch for peregrines. The surveys were conducted by different observers and pilots. Because peregrines use traditional nest sites, cumulative catalogues of nest sites were collected, and all peregrine nesting locations occupied in previous years were checked. Scrapes made by tundra peregrines are difficult to locate because they are rarely in the same spot from one year to the next and are not commonly marked by "white-wash" or lichen growth. Peregrines were included in the analysis when eggs, nestlings, or adults incubating nests were seen or when individuals or pairs exhibited nest defense in the vicinity of previously known or suitable nest sites.

The number of occupied peregrine territories at Hope Bay and Coppermine increased significantly between 1982 and 1991 (Table 1). The growth rates appear to be exponential with doubling times of 6–7 years for the Hope Bay population and 5–6 years for the Coppermine population. It is possible that peregrines were missed in the early years of the study and that the apparent breeding population size increased because of the greater survey efficiency provided by experience and the growing inventory of nest sites. A test of the hypothesis can be made by comparing survey results for peregrines and Gyrfalcons. Gyrfalcons have different nest-site requirements but are similar in having traditional nest sites. Accordingly, we have compiled a cumulative site inventory for them similar to that of peregrines. We reason that if the increase in number of territories observed were solely a function of greater survey efficiency, Gyrfalcons and peregrines should both exhibit yearly

TABLE 1

NUMBER OF OCCUPIED PEREGRINE FALCON TERRITORIES IN JULY AT HOPE BAY AND COPPERMINE BETWEEN 1982 AND 1991

Year	Hope Bay	Coppermine
1982	17	—
1983	17	25
1984	28	28
1985	17	29
1986	24	18
1987	29	39
1988	25	35
1989	37	58
1990	34	61
1991	51	52

increases in number of breeding pairs observed. However, linear regressions of number of occupied Gyrfalcon nest sites for 9–10 years show slopes not significantly different from 0 (Hope Bay $t = 0.525$, $P = 0.614$, df = 8; Coppermine $t = 0.067$, $P = 0.948$, df = 7) suggesting both that number of breeding Gyrfalcons is not changing and that the observed increase in occupied peregrine territories is not a result of greater familiarity with the study area. This conclusion is bolstered by the observation that many new peregrine nests were found on cliffs thoroughly searched in previous years.

Acknowledgments.—Our research was supported by the Government of the Northwest Territories, the Polar Continental Shelf Project, the Arctic Institute of North America, and the Boreal Institute. We were assisted in the field work by C. Adjun, R. Cotter, G. Erickson, A. Gunn, K. Hickling, L. Jones, N. MacLean, and L. Wakelyn. D. Heard and C. White commented on an earlier version of this paper.

LITERATURE CITED

AMBROSE, R. W., R. J. RITCHIE, C. M. WHITE, P. F. SCHEMPF, T. SWEM, AND R. DITTRICK. 1988. Changes in status of Peregrine Falcon populations in Alaska. Pp. 73–82 *in* Peregrine Falcon populations: their management and recovery (T. J. Cade, J. H. Enderson, C. G. Thelander, and C. M. White, eds.). The Peregrine Fund, Boise, Idaho.

BIRD, D. M. AND J. D. WEAVER. 1988. Peregrine Falcon populations in Ungava Bay, Quebec, 1980–1985. Pp. 45–50 *in* Peregrine Falcon populations: their management and recovery (T. J. Cade, J. H. Enderson, C. G. Thelander, and C. M. White, eds.). The Peregrine Fund, Boise, Idaho.

BRADLEY, M. 1988. Factors affecting the reproductive success of Tundra Peregrine Falcons (*Falco peregrinus tundrius*) in Rankin Inlet N.W.T. M.Sc. thesis, Univ. of Saskatchewan, Saskatoon, Saskatchewan.

BROMLEY, R. G. 1988. Status of Peregrine Falcons in the Kitikmeot, Baffin, and Keewatin regions, Northwest Territories, 1982–1985. Pp. 51–58 *in* Peregrine Falcon populations: their management and recovery (T. J. Cade, J. H. Enderson, C. G. Thelander, and C. M. White, eds.). The Peregrine Fund, Boise, Idaho.

COURT, G., D. M. BRADLEY, C. C. GATES, AND D. A. BOAG. 1988. The population biology of Peregrine Falcons in the Keewatin District of the Northwest Territories, Canada. Pp. 729–740 *in* Peregrine Falcon populations: their management and recovery (T. J. Cade, J. H. Enderson, C. G. Thelander, and C. M. White, eds.). The Peregrine Fund, Boise, Idaho.

FALK, K. AND S. MØLLER. 1988. Status of the Peregrine Falcon in south Greenland: population density and reproduction. Pp. 37–44 *in* Peregrine Falcon populations: their management and recovery (T. J. Cade, J. H. Enderson, C. G. Thelander, and C. M. White, eds.). The Peregrine Fund, Boise, Idaho.

FRASER, J. A. 1964. Geological notes on northeastern District of Mackenzie, Northwest Territories. Geol. Surv. Can., Ottawa. Pap. 63-40. Map 45-1963.

KIFF, L. F. 1988. Changes in the status of the peregrine in North America: an overview. Pp. 123–139 *in* Peregrine Falcon populations: their management and recovery (T. J. Cade, J. H. Enderson, C. G. Thelander, and C. M. White, eds.). The Peregrine Fund, Boise, Idaho.

MATTOX, W. G. AND W. S. SEEGAR. 1988. The Greenland Peregrine Falcon survey, 1972–1985, with emphasis on recent population status. Pp. 27–36 *in* Peregrine Falcon populations: their management and recovery (T. J. Cade, J. H. Enderson, C. G. Thelander, and C. M. White, eds.). The Peregrine Fund, Boise, Idaho.

POOLE, K. G. AND R. G. BROMLEY. 1988. Interrelationships within a raptor guild in the central Canadian Arctic. Can. J. Zool. 66:2275–2282.

STOCKWELL, C. H., J. C. MCGLYNN, R. F. EMSLIE, B. V. SANFORD, A. W. NORRIS, J. A. DONALDSON, W. F. FAHRIG, AND K. L. CURRIE. 1981. Geology of the Canadian Shield. Chapter IV *in* R. J. W. Douglas, Geology and Economic Minerals of Canada, Geological Survey of Canada, Dept. Energy Mines and Resources, Ottawa.

WHITE, C. M. 1968. Diagnosis and relationships of the North American tundra-inhabiting Peregrine Falcons. Auk 85:179–191.

CHRISTOPHER C. SHANK, ROBERT G. BROMLEY, AND KIM G. POOLE, *Wildlife Management Div., Dept. of Renewable Resources, Government of the Northwest Territories, Yellowknife, Northwest Territories, Canada X1A 2L9.* *Received 28 Jan. 1992, accepted 20 Aug. 1992.*

Wilson Bull., 105(1), 1993, pp. 190–193

Male-male nesting behavior in Hooded Warblers.—Intrasexual pairing by males has not been reported in natural populations of monogamous birds. Here I report a case of a male Hooded Warbler (*Wilsonia citrina*) that paired with color-banded males in two successive years and exhibited female behavior at the nest.

On 10 May 1988 at the Smithsonian Environmental Research Center, 12 km SSW of Annapolis, Maryland (38°53′N, 76°33′W), I saw an unbanded Hooded Warbler with male plumage land on a nest. It carried dead grass fibers in its bill and added them to the nest. It then sat on the nest, raised up, switched positions and sat again. This was repeated several times as it shaped the nest cup. The nest was within the territory of a banded male (X) which had engaged in territorial singing in the same area the previous summer.

With the exception of Prothonotary Warblers (*Protonotaria citrea*), nest building by male wood-warblers is infrequent, and males do not contribute to incubation or brooding (Kendeigh 1952, Morse 1989). Verner and Willson (1969) report two literature citations of male Hooded Warblers building nests and three records of their incubating. Hooded Warblers,