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BANDING GYRFALCONS (FALCO RUSTICOLUS) IN GREENLAND, 1967

By WILLIAM G. MATTOX

INTRODUCTION

This paper will summarize the results of a project to band gyrfalcons in Greenland in 1967. For fuller details on some aspects of the falcon-banding project, reference is made to other publications of the author listed at the end of the article.

The gyrfalcon (*Falco rusticolus*) is the largest and most beautiful of the true falcons. It inhabits the north circumpolar regions, mainly in the treeless areas of the Arctic, but also in the sub-Arctic, where some of the population are tree-nesters. A race of dark gyrfalcons is found as well in the Altai Mountains of the Soviet Union, separated from the main circumpolar population.

The gyrfalcon is not as well known as other birds of prey because it nests in remote areas and begins nesting quite early in the season at a time when it is difficult for field workers to move about in northern areas. The gyrfalcon also exhibits polymorphism of color (and possible sexual dimorphism of color and pattern) which has presented a difficult taxonomic problem for ornithologists.

The author taking a white gyrfalcon from the net.

Because of this scientific interest in gyrfalcons and because few gyrfalcons have been banded, the author and a colleague (Maj. Richard A. Graham, U. S. Air Force) decided in 1967 to initiate a program of banding these falcons in Greenland. Other parts of the banding program thought to be desirable were a record of weight and wing length, plus a photographic record of each falcon trapped.

No gyrfalcons were banded in Greenland before 1946. Between 1946 and 1965, 51 gyrfalcons were banded there, 5 of which were later recovered (*Beretninger* 1966). Two other birds of prey species were banded in Greenland between 1946 and 1965: the peregrine falcon, *Falco peregrinus* (35 banded, 3 recovered), and the grey sea eagle, *Haliaeetus albicilla* (54 banded, 19 recovered). The total number of birds banded in Greenland (1946-1965) was 89,258, so it can be seen that falcon bandings have comprised an insignificant part of the total banding effort.

METHODS

The best results are obtained when falcons are banded as nestlings. This method not only fixes the exact geographic origin of the birds banded, but also can yield valuable supplementary data on the color of both parent birds and their offspring, sex ratios of nestlings, and prey preference. In addition, such items of interest as nesting success, non-breeding, nesting density, and site orientation and environment preference can also be obtained when banding nestling falcons.

TABLE 1. SEX, COLOR PHASE, AND FIELD COLOR DESCRIPTION OF THE GYRFALCONS TRAPPED (1967).

Falcon no.	sex	Color Phase	Field Color Descr
1	M	candicans	white
2	F	obsoletus	light grey
3	M	obsoletus	light grey
4	F	candicans	white (lightest)
5	F	candicans	white
6	F	candicans	light dark-white
7	F	candicans	medium dark-white
8	M	candicans	white
9	F	candicans	white
10	F	candicans	white
11	F	candicans	white
12	F	obsoletus	grey (darkest)
13	F	obsoletus	grey
14	M	candicans	white

Bertelsen (1932) found 30 pairs of gyrfalcons nesting in the Umanak District, West Greenland. This is an average of one pair for every 400 km.^{2} of ice-free land in the district. At this nesting density, Greenland as a whole would have about 855 pairs of gyrfalcons, a projection which compares favorably with Cade's (1960) rough estimate of 1,000 pairs of gyrfalcons in Greenland.

Because of this nesting density in a rugged land of uncertain and irregular transportation facilities, we decided not to band nestling falcons at the eyrie, but to attempt trapping the juveniles on their autumn wanderings. This could be done at a few favorable locations with a minimum need for transportation.

Although our results compared favorably with previous trapping efforts, we caught and banded only 14 different gyrfalcons, which was fewer than anticipated and not so successful as a program of banding nestlings might have been.

The trapping methods we used were similar to traditional falcon-catching methods (nets, snares, and nooses). So that we could weigh, measure, and photograph each bird caught, we outfitted each falcon with a temporary set of falconry equipment: jesses, swivel, leash, and hood. After completing the observations, the falcon was banded with an aluminum ring supplied by the Zoological Museum of Copenhagen. The falconry gear was then removed and the falcon released. The whole process took close to an hour from the moment the falcon was trapped until it was released.

We remained at a stationary trapping location for eight days. During this period we observed 29 different gyrfalcons, some of which were chasing prey at a distance. Out of the 29 falcons

TABLE 2. MEAN WING LENGTH OF GYRFALCONS IN MM. (NO. OF SPECIMENS IN PAREN.)

Male	Dark	Grey	White
Mattox-Graham (1967)	—	382.0 (1)	377.3 (3)
Schiøler	366.8 (4)	366.2 (45)	362.4 (87)
Todd & Friedmann	—	—	372.3 (15)
Female			
Mattox-Graham (1967)	—	412.0 (2)	415.0 (7)
Schiøler	408.1 (10)	406.4 (61)	401.3 (100)
Todd & Friedmann	—	—	410.5 (23)

observed, we trapped 13 individuals, but 17 times we re-captured falcons we had banded previously during our stay. One falcon was trapped later at another location in Greenland. This gave a total of 30 falcons observed, 14 trapped, 17 re-trapped, for a grand total of 31 falcons caught. All of these gyrfalcons were juveniles. Ten were females, four males. Ten of the fourteen were of the lightest color phase (*candicans* type); four were darker (*obsoletus* type).

To explain the high number of re-captures, it should be pointed out that one falcon was re-trapped nine times and that this bird and two others accounted for 14 of the 17 re-traps. On one occasion we were able to trap two falcons at the same time, and again on another occasion we almost captured two falcons together, but this latter attempt failed.

Each falcon trapped was given a control number and was photographed in several positions with color and black-and-white film. Where possible, the falcon was photographed in front of a black, matte-finish background screen with the white control number in one corner.

Wing length (arc) was taken by pressing the closed wing flat along a metric rule and measuring from the end of the carpal joint to the tip of the longest primary. Each falcon was weighed on a spring scale calibrated in 1/4-ounces. None of the falcons trapped had any discernible crop contents, but, of course, stomach and intestinal contents could have varied, but no allowance could be made for this.

We were able to determine the sex of each falcon by apparent size. A subsequent plot of weight vs. wing length (Fig. 1) confirmed our guess in each case.

OBSERVATIONS

The small sample we worked with makes any of our possible conclusions of limited value. For more detailed discussions of taxonomic questions about the gyrfalcon, the reader is referred to summaries by Cade (1960), Dementiev (1960a & b), Mattox (1969),

TABLE 3. MEASUREMENTS OF *F. rusticolus* IN GREENLAND, 1967.

	Sex	n.	Extremes	Mean & St. Err.	Std. Dev.	Coeff. of Var. (%)
Wing arc (mm.)	M	4	370—386	378.5±3.0	6.06	1.60
	F	9	404—420	414.3±1.9	5.70	1.37
Weight (grams)	M	4	1021—1219	1112.7±36.6	73.2	6.57
	F	10	1262—1687	1470.0±37.3	124.4	8.46

Mattox and Graham (1968), Salomonsen (1950-1 and 1967), and Vaurie (1961 and 1965).

The following tables (1-4) summarize our results. Table 1 lists each falcon trapped by number, sex, color phase, and brief field color description.

Table 2 lists the mean wing length of the falcons trapped, comparing these with the means published by Schiφler (cited in Salomonsen 1950-1) and by Todd and Friedmann (1947). It is important to note here that dry museum specimens appear to have shorter wing lengths than live birds, presumably because of shrinkage in drying.

Table 3 summarizes the weight and wing length measurements of our 1967 study, while Table 4 illustrates the degree of sexual dimorphism of our 1967 sample compared with mean measurements published by Friedmann (1950).

In our small sample of 14 falcons (10 females and 4 males) we did not discern the sexual dimorphism of color and pattern claimed for the gyrfalcon by Cade (1960) and hinted at by Dementiev (1960b).

BANDING RETURNS

Of the fourteen falcons banded, we have received notification of two recoveries (14%). One falcon (our no. 6) was "found dead" 240 miles (390 km.) south-southwest of the banding location four weeks after banding. It was found by a Danish workman near one of the coastal settlements of Greenland.

The other return was falcon no. 13, shot seven weeks after banding 90 miles (160 km.) south-southwest of the banding location by a Greenlandic hunter.

SUMMARY

Preliminary results of a banding project of *Falco rusticolus* in Greenland have been presented, including weights, measurements, and banding recoveries. More banding work is needed in the future, as well as more detailed studies of the ecology of this raptor.

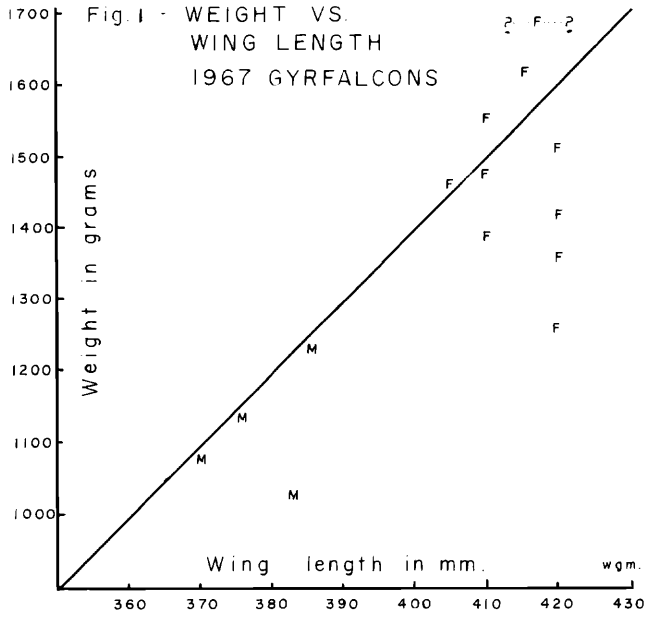
Our few banding recoveries indicate that the gyrfalcons of West Greenland migrate only to a limited extent and remain mostly within Greenland. They do not, therefore, invade with any regu-

TABLE 4. SEXUAL DIMORPHISM IN GREENLAND FALCONS

	A*	B**	A/B x 100 (Dimorph. Index)
Mattox-Graham (1967)			
F.r. candicans	37.7	396.1	10.5
F.r. obsoletus	30.0	387.0	12.9
All Falcons	35.8	396.3	11.0
Friedmann (1950)			
F.r. obsoletus	38.3	383.5	10.0

*A = Mean of females minus mean of males in mm.
**B = Mean of males divided by 2 plus mean of females divided by 2.

larity the areas man has polluted with his pesticides. They may, however, take a small amount of migratory prey and become affected in this way. This problem remains to be investigated. At present, unlike the effect on the peregrine falcon, there is little indication of the adverse effect of pesticides on gyrfalcon populations.



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