

Observations on Gyr Falcons *Falco rusticolus* in North-east Greenland

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(Med et dansk resumé: Jagtfulkeobservationer i Nordøstgrønland)

INTRODUCTION

In 1974 a pair of Gyr Falcons *Falco rusticolus candicans* bred in the Tunnelev gorge, about 10 km from Mestersvig, N. E. Greenland (72° 16' N, 23°55' W). Three young were reared successfully: a fourth infertile egg was visible in the nest. The immediate vicinity of the gorge and the surrounding valley itself were still covered in snow during early July, with only isolated patches of exposed vegetation. The gorge is situated in an area frequented by Arctic Fox *Alopex lagopus*, Arctic Hare *Lepus arcticus*, Lemming *Dicrostonyx groenlandicus*, Snow Bunting *Plectrophenax nivalis* and Wheatear *Oenanthe oenanthe*. Seventeen nests of Pink-footed Geese *Anser brachyrhynchus* were located along the top of the gorge.

We first visited the nest on 7 July and subsequently watched it for a total of 40 hours on the 7, 11 & 18 July (table 1). We watched from a position on the opposite side of the gorge, a distance of approximately 45 m. The same nest site was used in 1970, when three young were reared (R. O'Grady, in Smart & O'Brien 1971) and in 1972, when four young were reared (Summers & Green 1974). The extensive accumulation of droppings and growth of the orange nitrophilous lichen *Caloplaca elegans* below the site suggests many years use. The nest site is a roughly triangular ledge about 0.5 m² in extent situated 15 m above the bottom of the gorge, which is 40-50 m deep. It is overhung above which may afford protection from rock or snowfall. It faces almost due south and is therefore exposed to the sun during summer days and in shadow during the cooler hours of late evening and early morning. On sunny days the chicks appeared to suffer from overheating during the hottest hours and sought whatever shade was available or lay panting on the ledge.

PLUMAGE AND DEVELOPMENT OF CHICKS

The adult birds were predominantly white, with black markings on the upper parts of the wings and tail, and yellowish colouring on the cere, legs and feet. One had fewer dark markings than the other to such an extent that we could usually identify them individually, even when they were not together. In fact, they were seen together only once, on 28 June about 100 m from the nest, when the paler bird was seen to be smaller than the other. Cade (1960) and Mattox (1969), reviewing various evidence, conclude that there is a weak tendency for male Gyr Falcons to be paler than females and they present data showing mean weights to be about 1.1 kg (males) and 1.5 kg (females), with standard deviations of about 0.1 kg. Hence, we conclude that the smaller, paler bird of the Tunnelev pair was the male.

Laying must have taken place around 10 May and hatching around 8 June, since the young left the nest on either 25 or 26 July and the incubation and fledging periods are 28-29 days and 46-49 days (Brown & Amadon 1968). Therefore by 7 July, when the nest was first visited, the chicks were approximately four weeks old. They were then roughly half the size of the parents and largely covered in down, with some feathers showing on the wings and tail. There were differences in both size and development of the chicks, one in particular being considerably smaller than the others. By 18 July the young were almost completely feathered although some down was still visible on the wings of the smallest chick. The juveniles were more heavily and irregularly marked than the adults and their markings were browner, this being particularly noticeable in one of the larger chicks, not only compared to the adults, but also to the other chicks.



Fig. 1. Female Gyr Falcon feeding young at nest, Tunnelelv Gorge, Mestersvig, 7th July (photo D. J. Fletcher).

Hunnen fodrende unger på reden, den 7. juli.

Table 1. Prey brought to the falcons' nest.
De gamle fugles aflevering af bytte på reden.

Date and time of observations Weather conditions <i>Dato og tidspunkt</i> <i>Vejrdata</i>	Time <i>Klokkeslet</i>	Prey <i>Bytte</i>	Parent <i>Han/hun</i>
7 July 14.00-22.30	17.40	Lemming	Male
Visibility good (<i>god sigt</i>)	19.10	Lemming	Female
Wind 0	19.40	?	Female
Cloud (<i>skyer</i>) 0/8			
11 July 10.00 to 12 July 10.00	10.35	Lemming	Female
Visibility good (<i>god sigt</i>)	12.57	Snow Bunting	Male
Wind 0-1	14.12	Snow Bunting	Male
Cloud (<i>skyer</i>) 0/8	19.18	Hare (young)	Male
	04.02	Lemming	Male
	06.45	Lemming	Male
	09.32	Lemming	Female
18 July 12.00-20.30	12.10	Lemming	Male (?)
Visibility poor (<i>Dårlig sigt</i>)	12.50	Lemming	Male (?)
Wind 0-1	14.03	Hare (young)	Female
Cloud (<i>skyer</i>) 7/8			
Showery (<i>byger</i>)			

BEHAVIOUR AT THE NEST

Both parents fed the chicks (Table 1). When the female brought food she stayed at the nest to feed the chicks, apparently distributing the prey about equally between them (Fig. 1). She remained on the nest for at least 30 minutes after feeding them and once remained for nearly an hour and a half. In contrast the male left immediately after delivering prey and the chicks then fed themselves, even on 7 July, when they were only four weeks old. On these occasions the two larger chicks obtained more food than the smaller one, although as noted by Brown & Amadon (1968), the older chicks were not directly aggressive towards the younger one. Unfortunately there were insufficient observations to determine whether there was a decrease in the number of feeds during the colder period of late evening and early morning. It is true that there were no feeds between 19.18 hrs (11 July) and 04.02 hrs (12 July) but this may be because the feed at 19.18 was comparatively large — the hind quarters of a young hare. Only on one occasion, on 11 July, was a parent (male) seen to visit the nest without food.

Neither parent remained at the nest at night but on several occasions one of the parents was seen perched near the gorge up river from the nest. It is possible that perching positions nearer the nest were not used because of the presence of the hide.

The chicks could perceive the parents from a considerable distance and greeted the arrival of food with a harsh mewing note which was continued during feeding. The adult birds were quiet although on one occasion the female gave a weak, tremulous cry.

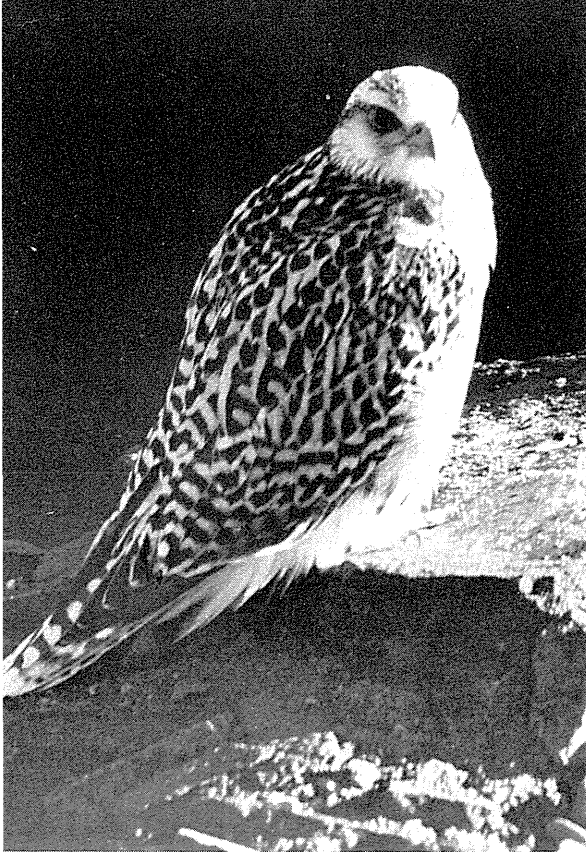
Between feeds there was considerable movement about the ledge with frequent preening and wing stretching. Occasionally the chicks stood on the edge of the ledge scanning the skies and mewing noisily when the parents were not in sight. There was a noticeable decrease in activity during the early hours of the morning when the chicks lay asleep in a group at the back of the ledge.

POST-FLEDGING ACTIVITY

On 27 July we visited the nest and found it empty. Despite their differences in size they had fledged together. The young were about

Fig. 2. See caption to Fig. 3.
Se tekst til fig. 3.





Figs. 2, 3, and 4. The three juvenile Gyr Falcons shortly after leaving the nest, Tunnelev, 27th July (photos D. J. Fletcher).

De tre unger kort efter de har forladt reden, den 27. juli.

300 m up river (Figs. 2, 3 & 4). During the next 24 hours we attempted to maintain visual contact with them. For most of this time, they remained within 100 m of each other and within 1 km of the nest, although towards the end of the period they were moving noticeably further afield. There was considerable movement within this area as the young falcons tested their wings, making short flights close to the ground, or using the air currents above the gorge for more sustained gliding. Between the hours of 22.00 (27 July) and 05.00 (28 July) the three chicks roosted in a group on the cliff face about 150 m up-river from the nest.

The female remained near the nest area for much of this 24 hour period, usually perched on a pole about 1 km away from the nest and occasionally flying to a position on the ground nearer the young. Four prey were brought to the young during this period although it is likely that other feeds occurred

out of our sight. All those we saw were provided by the female. It is possible that she received the prey from the male.

During July the adult falcons were not seen near the camp or close to the coast. Indeed, the parents invariably arrived at the nest with prey from father inland (to the south-west) and when leaving the nest they flew away from the coast. However, after the young falcons had fledged both they and the adults were seen near Mestersvig on several occasions. Two juveniles were generally seen together often accompanied by a single adult, when the juveniles mewed repeatedly. On 2nd August the three juveniles were seen together near the gorge, feeding on a carcass which may have been an Arctic Fox. The last sighting was of a single juvenile in the Nyhavn hills on 20th August — there being no observers present after 30th August.

The greater activity near the coast during August was also noted in 1972 (O'Brien and Greenwood 1974). Flocks of Snow Buntings form in the coastal areas during that month and juveniles in particular gather around the buildings at Mestersvig, apparently feeding on the seeds of »weedy« species of plants. It is probably these flocks that account for the frequent visits of the falcons to the Mestersvig station.

FEEDING

The Gyr Falcons were observed hunting only on 28th June, when they were first sighted. Both adults were flying up and down the gorge, in the vicinity of the nest, and plunging down, apparently perching briefly on the side of the gorge out of sight. Several pairs of Pink-footed Geese, nesting on rocky promontories along the gorge about 100 m down stream from the falcons' nest, appeared very alarmed. They continually flew up, only to return to the same area, calling repeatedly. Three adult geese were seen in a precarious position on a steep, shaly part of the cliff: one was crouched against a rock with three goslings lying close to it, apparently for protection, while the other two adults maintained a stiff, alert attitude. Although the falcons were not seen to make a direct attack on the goslings, the apparent panic of the geese suggests that the falcons were indeed hunting them.

During the periods of observation, a total

Table 2. Analysis of the falcons' pellets.
Undersøgelse af falkenes gylp.

Matrix* (Fur or feathers) <i>Hår eller fjer</i>	Remains of <i>Lepus arcticus</i> (Hare) <i>Snehare</i>	Remains of <i>Dicrostonyx groenlandicus</i> (Lemming) <i>Lemming</i>										Remains of <i>Lagopus mutus</i> (Ptarmigan) <i>Rype</i>	Remains of <i>Branta leucopsis</i> (Barnacle goose) <i>Bramgås</i>								
Number Length (cm) <i>Længde</i>	Claws <i>Klæer</i>	Foot Bones <i>Fodknogler</i>	Teeth <i>Tænder</i>	Feet <i>Fødder</i>	Vertebrae <i>Hvirvler</i>	Bone Fragments <i>Knoglerester</i>	Lower Jaw <i>Underkæbe</i>	Incisors <i>Fortænder</i>	Teeth Fragments <i>Tandrester</i>	Claws <i>Klæer</i>	Feet <i>Fødder</i>	Limb Bones <i>Lemmeknogler</i>	Vertebrae <i>Hvirvler</i>	Ribs <i>Ribben</i>	Scapula <i>Skulderblad</i>	Skull <i>Kranium</i>	Quills <i>Svingfjer</i>	Claws <i>Klæer</i>	Bone Fragments <i>Knoglerester</i>	Foot <i>Fod</i>	
Collected near the nest																					
<i>Fra reden</i>																					
1	5						3	5	22	6	2	2									
2	4								2	1	2	3									
3	8	6	1																		
4	7						1	11	9												1
5	7	4				11		2	5	1											
						2	2										20	4	11		
Collected from the hill																					
<i>Fra tuen</i>																					
1	6						2	1	5	1	1	3									1
2	7																				
3	7	5		1	1		2	2	4	1	1	5	1	4							
4	8	5	4			4	1	1			2	7	1	7	1						
5	7	9	8	1		12															
		8				6	1	2			1										

*Where there are two components of the matrix, the more abundant is shown first. The Barnacle Goose down was identified by M. A. Ogilvie, who also suggests that the foot was from a gosling about two weeks old. *Hvor der fandtes både hår og fjer, er den mest alm. komponent nævnt først. Bramgåsedunet blev bestemt af M. A. Ogilvie, som også mente at foden var fra 2-uger gammel unge.*

of 13 prey items were brought by the parents to the nest (Table 1). On 7th July a collection of five pellets and one prey item, the leg of a Ptarmigan *Lagopus mutus*, was made from beneath a perching stone opposite the nest site. On 18th July five more pellets were found on a hill top to the south of the nest. They were almost certainly Gyr Falcon pellets since there were falcon feathers in the same place. Their contents are shown in Table 2.

To compare the contents of the pellets,

produced by the parents, with the prey items fed to the young is perhaps not entirely justified since it is possible that some of the pellets were from previous years, as pellets may decompose slowly in the Arctic. The Ptarmigan remains appeared particularly old and few Ptarmigans were seen in 1974. The absence of Snow Bunting remains suggest that the adult falcons were not feeding on this species although they formed part of the diet of the young whilst in the nest. Snow Bunting were

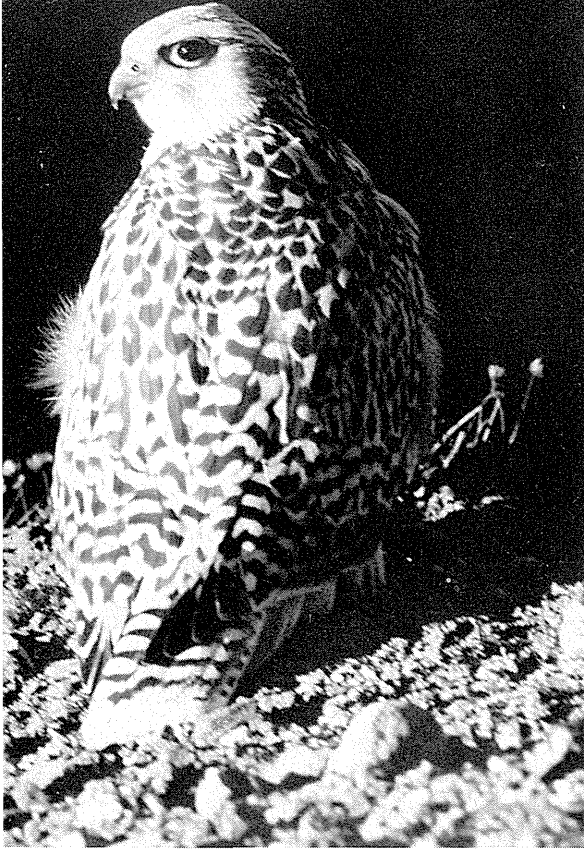


Fig. 4. See caption to Fig. 3.
Se tekst til fig. 3.

seen mobbing the adults on several occasions in the gorge and one pair was actually nesting in the rock face about 2 dm from the falcons' nest.

In 1972, Snow Buntings were an important prey of Gyr Falcons nesting at this site, but Lemmings were not found among remains of prey in the nest and only in small numbers in the pellets (Summers and Green, 1974). The abundance of Lemmings in the area in 1974 was intermediate between the high numbers of 1970 (Cotton, 1971) and their virtual absence of 1972 (Greenwood 1974; Ferns 1977). They were seen on a number of occasions and foxes were seen carrying Lemmings. Long-tailed Skuas *Stercorarius longicaudus* also attempted to breed in the area, another indication of the increase of the Lemming population compared with 1972. However, the late snow may have prevented any great increase in their numbers. Some authors (e.g. Salomonsen 1950) consider that the numbers of Gyr Falcons in North-east Greenland fluctuate in accordance with the size of the Lemming population. It is therefore interesting to

note that in the three years 1970, 1972 and 1974 — years in which the Lemming population fluctuated considerably — the number of young reared at this nest site has been three, four and three respectively. The average for Alaskan Gyr Falcons is only 2.3 (Cade 1960).

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SUMMARY

A pair of Gyr Falcons bred in 1974 in the Tunnelev gorge near Mestersvig and three young fledged successfully by 27th July. The plumage of the male parent was paler than that of the female whereas the plumage of the three juveniles was heavier and browner than that of both parents. Both parents carried food to the nest but only the female was observed to actually take an active role in the distribution of the prey between the young. The chicks were capable of feeding themselves, with the prey brought to the nest, at the age of four weeks. Their diet on the nest included Snow Bunting, Arctic Hare and Lemming. From the available observations Lemming formed the main part of the diet. The food of the Mestersvig Gyr Falcons in 1972 and 1974 suggest that they adapt their diet to the available prey, turning to other species when Lemmings are scarce.

The falcons showed increased activity on the coast during August which may be associated with the appearance of flocks of Snow Bunting during this period, in the coastal areas. After the chicks had fledged they initially remained in the immediate vicinity of the nest and prey was brought to them by the female.

DANSK RESUME

**Jagtfalkeobservationer
i Nordøstgrønland**

Et Jagtfalkepar ynglede i 1974 i Tunnelev kløften ved Mestersvig. Tre unger forlod reden ca. 27. juli. Den adulte han's dragt var lysere end hunnens, mens de tre ungers dragt var mørkere og mere brun end begge forældrenes.

Begge forældrene bragte føde til reden, men kun hunnen fordelte byttet mellem ungerne. I en alder af fire uger kunne ungerne selv æde bytte. Føde bragt til reden bestod af Snespurve, Sneharer og Lemminger. I de foreliggende observationer udgjorde Lemminger hovedparten af føden. Tilsvarende observationer ved samme rede i 1972 tyder på, at falkene tilpasser deres føde efter mængden af de forskellige byttedyr, idet de jager andre arter, når Lemmingerne er fåtallige.

I den første tid efter at ungerne var fløjet af reden, blev de i nærheden, og hunnen bragte føde til dem. Falkene sås oftere ved kysten i august, hvor flokke af Snespurve samtidig samlede.

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