

MONITORING AND CONSERVATION OF THE GYRFALCON (*FALCO RUSTICOLUS*) IN FINLAND

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Metsähallitus has organized an effective monitoring project of the Finnish Gyrfalcon population since the late 1990s for conservational purposes. During recent years all known territories have been controlled systematically, and new nest-sites have been searched for continuously. Territories have been controlled throughout the year to prevent disturbance and robbing of eggs and young. Except for a few tree-nesting pairs, practically all regularly occupied territories (22–32 per year) have been found. The number of pairs starting to nest, as well as the breeding success, varies considerably from year to year, probably mostly due to density of the Willow Grouse *Lagopus lagopus*. The number of nestlings per occupied territory fluctuated from 0.91 to 2.00 in 2000–2005.

Key words: Gyrfalcon, monitoring, conservation, Finland.

МОНИТОРИНГ И ОХРАНА КРЕЧЕТА (*FALCO RUSTICOLUS*) В ФИНЛЯНДИИ. М. Мела, П. Коскимиес. Служба лесов и парков Финляндии, Рованиеми, Финляндия.

С конца 90х годов прошлого века Служба лесов и парков Финляндии успешно реализует проект по мониторингу популяции кречета в Финляндии, направленный на охрану вида. В последние годы ведется систематический контроль всех известных гнездовых территорий, а также постоянный поиск новых гнездовых участков. Контроль за территориями ведется круглогодично, чтобы предотвратить повреждение гнезд и кражи яиц и птенцов. Были обнаружены практически все регулярно занимаемые территории (22–32 в год), за исключением территорий нескольких пар, гнездившихся на деревьях. Количество пар, приступающих к гнездованию, а также успех воспроизводства существенно колеблются в разные годы, вероятнее всего, в связи с плотностью населения белой куропатки (*Lagopus lagopus*). Среднее количество птенцов на одной занятой гнездовой территории варьировало в 2000–2005 гг. от 0.91 до 2.00.

Ключевые слова: кречет, мониторинг, сохранение, Финляндия.

INTRODUCTION

Until the late 1990s, the monitoring of the Gyrfalcon in Finland relied on a few voluntary ornithologists and ringers (Koskimies 2006). There was, for example, no comprehensive national survey or coordination of nest controls by environmental authorities, who in fact are responsible for conservation of Gyrfalcons and other endangered species (Rassi et al. 2001). The Gyrfalcon is listed as a species in need of special conservation concern (Annex I species of EU Birds Directive). Because there was, for example, some proof of illegal robbing of Gyrfalcon eggs and young in Scandinavian countries, the Ministry of The Environment decided to intensify and integrate monitoring and protection of the Finnish population.

The breeding range of the Gyrfalcon is restricted almost exclusively to the three northernmost municipalities in Finland: in Enontekiö, Utsjoki and Inari. Most of the land in this area belongs to the

state and is governed by Metsähallitus. Thus, it was natural that the Ministry of The Environment transferred the responsibility for the coordination of the monitoring and protection of the Gyrfalcon to Metsähallitus. In Metsähallitus, the work has been run by its northernmost regional unit, the personnel of which also work for many other species and projects in the breeding range of the Gyrfalcon throughout the year.

Metsähallitus founded a monitoring group in 1998 to control and to compose an integrated programme for the effective monitoring of the Gyrfalcon. This group meets annually in order to discuss the results of nest-site controls and other field-work, and to plan the guidelines of the work for the following year (fig. 1). This expert group, directed by Metsähallitus, consists of environmental authorities and researchers studying the species, and of representatives from several units of Metsähallitus.

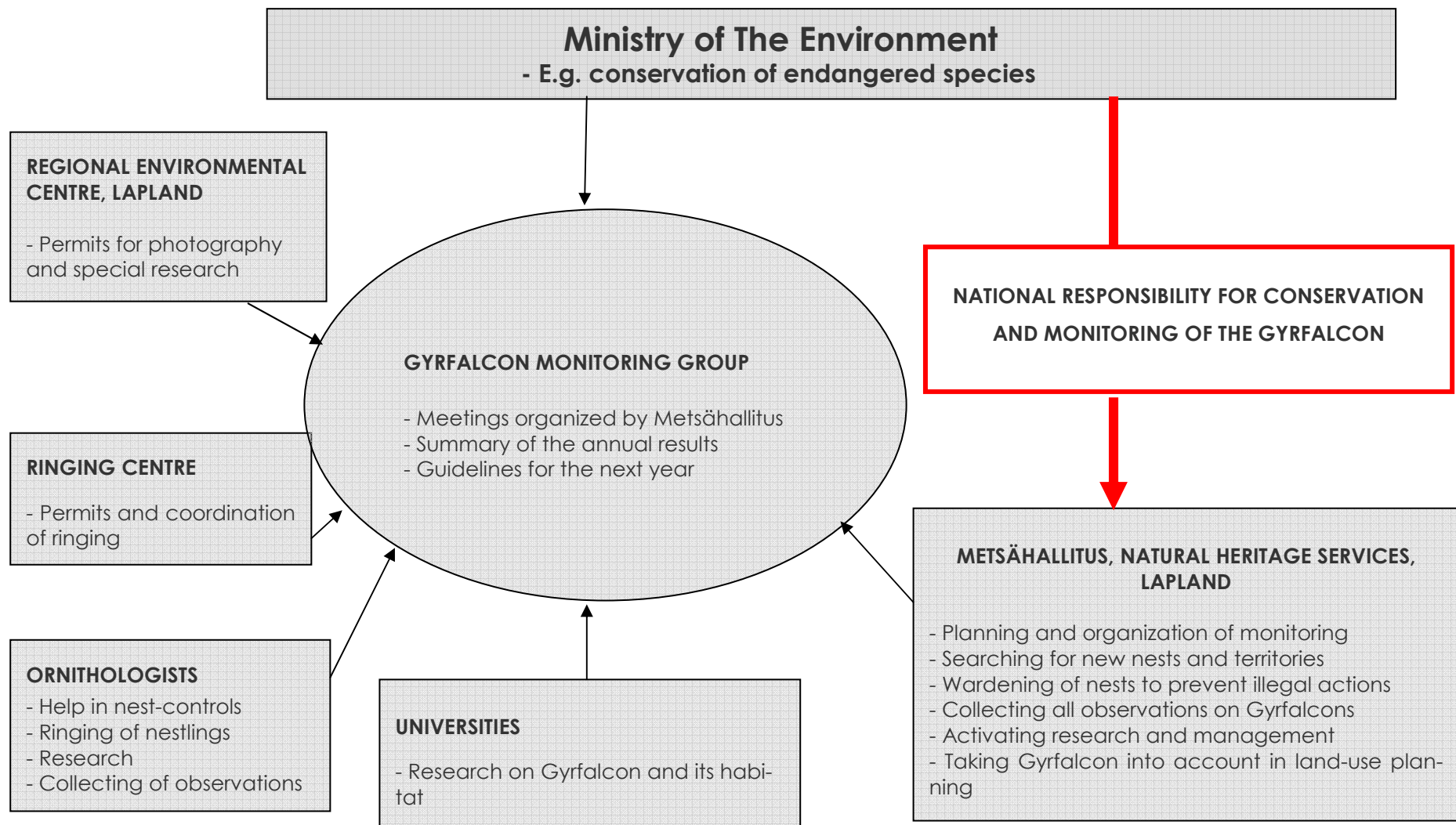


Figure 1. Organization of the Finnish Gyrfalcon monitoring project.

MATERIAL AND METHODS

Monitoring is based on round-the-year controlling and recording of the Gyrfalcons in their home ranges and nest-sites. Number of breeding pairs and young produced are the most important objects of the monitoring project. New pairs and nest-sites are searched for every year. Field work has been done by researchers Pertti Koskimies and Björn Ehrnsten, and the field personnel of Metsähallitus, especially Jari Kangasniemi, Risto Korkalo, Petteri Polojärvi and Jyrki Vähä-Lummukka. Lasse Iso-livari has monitored and ringed Gyrfalcons locally in Utsjoki. Matti Mela has coordinated the field work and collected results for annual reports.

When developing the nation-wide and intensive monitoring system, we started by looking for all the potential nest-sites within the range of the Gyr-

falcon and visiting them systematically, as Koskimies (2006) had done in part of the territories since the early 1990s. Occupied territories from recent decades were listed as comprehensively as possible by interviewing people knowing the species. To find previously unknown nest-sites, we mapped and inventoried hundreds of cliffs, the great majority of which proved to be unsuitable for the Gyrfalcon.

The monitoring group has chosen about 75 separate areas with about 150 suitable cliffs to be monitored every year, part of them including occupied territories of the Gyrfalcon (table 1, fig. 2). However, as a typical Gyrfalcon pair has a couple of alternative nest-sites, and as the availability of twig-nests alters annually forcing some pairs to change their breeding site, we continuously have to evaluate the list of the sites to be monitored during the next year.

Table 1. The number of nesting and territorial Gyrfalcons and the breeding productivity in Finland from 2000 to 2005.

Year	2000	2001	2002	2003	2004	2005
Potential cliff areas monitored	64	62	63	66	75	75
Unoccupied areas	52	50	49	48	57	52
1. Successful nests	11	10	8	13	16	13
2. Unsuccessful nests	1	1	2	1	1	4
3. Probable nesting attempts	0	1	4	4	1	6
Active nests min (1+2)	12	11	10	14	17	17
Active nests max (1+2+3)	12	12	14	18	18	23
4. Non-breeding adult(s)	4	11	9	4	13	9
Occupied territories	16	23	23	22	31	32
Adult(s) outside known territories	1	2	12	4	22	17
Nestlings	24	25	21	44	51	39
Nestlings/successful nest (1)	2.18	2.50	2.63	3.38	3.19	3.00
Nestlings/active nest min (1+2)	2.00	2.27	2.11	3.14	3.00	2.29
Nestlings/active nest max (1+2+3)	2.00	2.08	1.50	2.44	2.83	1.70
Nestlings/occupied territory (1+2+3+4)	1.50	1.09	0.91	2.00	1.65	1.22

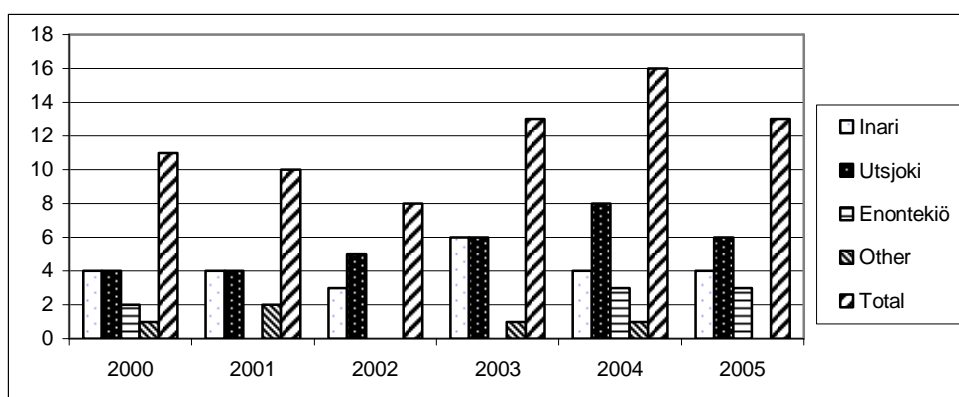


Figure 2. The number of successful Gyrfalcon pairs in municipalities of Finnish Lapland from the year 2000 to 2005.

The natural variation of the number of breeding pairs is quite notable, reflecting, above all, population fluctuations of the Willow Grouse *Lagopus lagopus*, the main prey. Our monitoring system will enable us to monitor changes in the pair numbers and the nesting success of the Gyrfalcon effectively in the long run, too, independent of these natural fluctuations. It provides us enough information on reproductive output even in years with unfavourable breeding conditions.

RESULTS AND DISCUSSION

There are some special features of the nest-sites of the Finnish Gyrfalcons. As the bedrock is – with the exception of the northwestern part of Enontekiö (Kilpisjärvi region) – very old and worn, cliffs are quite low, and the rocky areas are not as abundant as in northern Norway and Sweden, for example. This increases somewhat the risk of nest robbery and other disturbance, although, on the other hand, controlling and wardening of the nesting areas is easier in such a flat country like Finland.

Many of our high cliffs, as uncommon in the landscape, have become popular objects by late-winter skiing excursions, snowmobiling, rock-climbing and camping. These kind of outdoor activities cause unintentional disturbance for several Gyrfalcon pairs annually. Metsähallitus can steer those kinds of people who need a permit for a certain tourism or other activity in the wilderness, but it is more difficult to guide and oversee those who ski or wander in nature on the basis of the public right of access. Metsähallitus uses data on the Gyrfalcon to guide hiking, building of cottages and other disturbing activities to areas further away from nest-sites.

The Gyrfalcon has also been observed to breed in twig-nests in trees because there are so few cliffs in their home range – if any. However, we

have found only 0–3 occupied tree nests each year, but, as nests in trees are much more difficult to detect, and their localities vary from year to year, tree-nesting falcons must be more numerous than documented.

For effective conservation of the Finnish Gyrfalcon population, we consider it important to have international cooperation especially with the agencies which are responsible for monitoring in the neighbouring countries. We stress also the importance of continuous contact with police, frontier guard, customs, and other respective authorities who work to prevent possible falcon and egg trade, which is most probably of international scale.

In the future years, our monitoring effort will be increased to find the last Gyrfalcon's nest-sites, which have so far remained unnoticed, many of them probably in trees. We can also improve the cooperation between researchers of the Gyrfalcon in northern Fennoscandia. Metsähallitus is able, for example, to assist researchers with collecting round-the-year observations from laymen, and with providing help in various studies which give necessary data for more effective conservation of the Gyrfalcon and its habitat. Nest-specific monitoring will be intensified by an increasing use of automatic cameras in the next few years.

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