SPRING MIGRATION OF THE *FALCONIFORMES* FAUNA IN THE SOUTH OF RUSSIAN KARELIA

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The species composition, abundance, timing of arrival and spatial distribution of birds of the order *Falconiformes* in the spring season was studied for several years in southern Karelia. There currently occur 21 diurnal raptor species in the territory. For most species in question the present-day status was determined, and the timing of arrival, seasonal dynamics of the abundance and its variation among years were identified using data from counts.

Key words: spring migration, *Falconiformes*, southern Karelia, species composition, abundance.

ВЕСЕННИЙ АСПЕКТ ФАУНЫ ПТИЦ ОТР. *FALCONIFORMES* ЮЖНОЙ КАРЕЛИИ (РОССИЯ). Лапшин Н.В., Артемьев А.В., Зимин В.Б. *Институт биологии Карельского научного центра РАН, Петрозаводск, Россия.*

На протяжении ряда лет в весенний период изучался видовой состав, численность, сроки прилета и распределение по территории представителей отр. Соколообразных *Falconiformes* в южной Карелии. Установлено, что в настоящее время на территории обитает 21 вид дневных хищных птиц. Для большинства изученных видов установлен современный статус, а на основании данных количественных учетов определены сроки прилета, сезонная динамика численности и ее изменчивость по годам.

Ключевые слова: весенний аспект, соколообразные, южная Карелия, видовой состав, численность.

INTRODUCTION

Material was gathered from an area in the very south of Russian Karelia, in the Olonets district, 18 km east of Lake Ladoga shore. It is one of republic's main agrarian districts. Farmland occupies ca. 18,000 ha of drained fields. In April–May, during the spring migration, it is one of the largest staging areas for *Anseriformes* in northern Europe. When monitoring *Anseriformes* in the area for over 10 years, we had a chance to simultaneously gather material on other groups of birds (Zimin et al. 1997a, 1997b). In this period, availability of open habitats (fields, meadows, mires) surrounded by forests, and vicinity of Lake Ladoga are quite favourable also for raptors of the order *Falconiformes*. The main aim of the study was to assess the present-day status of diurnal raptors in the study area, and the following tasks were fulfilled to this end:

- updating the bird species checklist,
- determination of the time of the birds' arrival in and departure from (for passage migrants) the study area,
- determination of the relative abundance of the species and their dynamics over the spring season, as well as dynamics of the abundance across years.

MATERIAL AND METHODS

Reconnaissance 2–3-week trips to the Olonets plain began in 1993. Since 1997, the dates of starting the activities have depended on the characteristics of the spring and the time of geese's stay in the study area, the work usually continuing from mid-April to 25–26 May (time when last geese leave southern Karelia). The techniques of gathering the material remained nearly unchanged since 1997 (Zimin et al. 1998). The procedure included daily bird counts following three methods: 1) circular plot counts (from a birding tower) in the first 4 hours after sunrise, and in the first two years – additional 4-hour afternoon counts, 2) transect counts by walking a fixed 10-km route, 3) from 50–60 to 120 km transect counts by a car. In all cases, birds seen and heard were counted.

RESULTS

As the result of the activities, data on the species composition of *Falconiformes* in southern Karelia were updated (Zimin et al. 2001). There currently occur 21 species (tab. 1) of diurnal raptors, of which 1 species (*Buteo lagopus*) is a passage migrant. The status of 3 species (*Aquila clanga, A. pomarina, Falco peregrinus*) has not been definitely determined, and 1 species (*Circus macrourus*) is a regu-

lar visitor. The rest of the species breed either in the study area or in adjacent regions.

Many of the species registered from the study area are red-listed at various levels (tab. 2).

Osprey. The abundance of the Osprey *Pandion haliaetus* in Karelia at large and especially in its southern part causes no serious concern today. Locally, although mainly in protected areas (Tolvajärvi, Suojärvi District), breeding birds can even be said to concentrate. In all periods of the year the species is quite closely associated with waters and appears in agricultural habitats rather rarely.

Honey Buzzard. The Honey Buzzard *Pernis opivorus* is rather rare in the fields, usually occurring as a passage migrant only, although the species is quite common in the region in general.

Black Kite. During the spring migration period the Black Kite *Milvus migrans* is registered from SE Ladoga area in low numbers every year; it was only in 2001 that the species was more common (tab. 1).

Table 1. List of species and number of individuals of order *Falconiformes* registered in farmland in the Olonets District, Karelia in 1997–2005.

Species	Years									
	1997	1998	1999	2000	2001	2002	2003	2004	2005	Total
Circaetus gallicus	0	1	0	0	0	0	0	1	0	2
Aquila chrysaetos	0	1	6	3	0	2	1	1	0	14
Aquila clanga	0	3	0	2	0	0	0	2	0	7
Circus cyaneus	340	72	24	27	16	103	39	86	135	842
C. macrourus	8	12	1	3	8	0	0	3	1	36
C. pygargus	7	42	17	13	7	11	0	10	3	110
C. aeruginosus	69	69	20	31	7	10	19	66	9	300
Circus sp.	69	21	14	18	6	14	1	17	7	167
Haliaeetus albicilla	43	16	82	33	16	43	8	31	33	305
Milvus migrans	2	3	1	5	17	2	1	2	1	34
Pernis apivorus	2	2	1	4	2	8	0	9	0	28
Buteo buteo	139	16	19	13	4	29	4	87	33	344
B. lagopus	220	12	11	2	2	18	11	38	46	360
Buteo sp.	94	4	0	1	0	7	1	18	12	137
Accipiter gentiles	4	1	0	2	0	1	0	1	1	10
A. nisus	32	16	29	25	4	18	5	21	19	169
Pandion haliaetus	2	4	4	0	3	3	0	0	0	16
Falco tinnunculus	196	67	7	31	52	92	24	222	99	790
F. columbarius	19	37	31	47	51	26	15	39	26	291
F. subbuteo	4	4	4	2	6	2	1	0	0	23
F. vespertinus	0	0	0	0	0	1	0	0	0	1
F. peregrinus	15	18	25	1	3	2	3	2	0	69
Falco sp.	1	2	0	0	0	0	0	0	0	3
Total	1266	423	296	263	204	392	133	656	425	4058

Table 2. Nationally and regionally red-listed bird species of the order *Falconiformes* registered in the Olonets District.

Species	Species category in the Red Data Book	
	Russian Federation	Republic of Karelia
Pandion haliaetus	3	3
Milvus migrans		3
Circus macrourus	2	
Circaetus gallicus	2	1
Aquila pomarina	2	
Aquila clanga	2	2
Aquila chrysaetos	3	2
Haliaeetus albicilla	3	2
Falco rusticolus	2	1
Falco peregrinus	2	1
Falco columbarius		4
Falco tinnunculus		4

Harriers. Two species – the Hen Harrier *Circus cyaneus* and the Marsh Harrier *C. aeruginosus* – are common in farmlands in southern Karelia, but the former one is twice as abundant as the latter. Two recently registered species – Montagu's and the Pallid Harriers (*C. pygargus* and *C. macrourus*) – continue colonizing the territory of southern Karelia. Montagu's Harrier can already be definitely classified as a breeder in Karelia, whereas for the other species no reliable evidence of breeding is available yet, but there is a video record of display by a male.

Hawks and buzzards. High density of prey birds and abundance of voles in farmland attract raptors breeding in surrounding forests, the Goshawk *Accipiter gentilis,* the Sparrowhawk *A. nisus* and the Common Buzzard *Buteo buteo*. During the spring migration, Rough-legged Buzzards *B. lagopus,* mostly already gone during the study period, also concentrate in the fields. The abundance of *Buteo* species remained rather low throughout the period of studies with among-year variations.

Short-toed Eagle. Another representative of the southern avifauna – the Short-toed Eagle *Circaetus gallicus,* which is also red-listed in Russia and other counties – was registered in the past decade as a vagrant spring visitor. In the spring of 1997, however, Short-toed Eagles were many times sighted near Olonets. All records come from about the same locality – near Sarmyagi and Rypushkalitsy villages and Chupasuo mire. In June, the birds were encountered there again, but there was a pair of them now, one carrying a snake in its talons. There is thus a probability that Short-toed Eagles nested in the area that year.

Eagles. Since 1997, only 7 reliable spring contacts of the Spotted Eagle *Aquila clanga* have been known from SE Ladoga area. Accurate data on the species breeding in the republic are still missing. A single Lesser Spotted Eagle *A. pomarina* was observed in May 2000 over Olonets grasslands. Two individuals of the species were presumably seen in the same area in the early 1990s (not included in tab. 1). In northern Europe, the Golden Eagle *A. chrysaetos* usually nests in dark coniferous boreal forests. At least 2 pairs of the species now nest around the Olonets grasslands. Single individuals were seen hunting wounded geese over the fields nearly every year.

White-tailed Sea Eagle. In most districts of Karelia, the White-tailed Sea Eagle *Haliaeetus albicilla* population remains very scant (the exception is the Vodlozero National Park), but results from several latest years indicate that the species' abundance in southern Karelia has stabilized and possibly even increased somewhat. New settlements of White-tailed Sea Eagle pairs were detected on Lake Ladoga, in the Olonets and Pitkäranta districts. In April and May, when up to several tens of thousands of geese gather in the Olonets district farmland simultaneously, White-tailed Sea Eagles come there from Lake Ladoga shores to prey on wounded geese. Up to 6 Sea Eagles of different age were seen at a time, and 8 different individuals were identified by a set of features (age-related and individual traits of the plumage) within a short time period.

Falcons. Single Peregrine Falcon *Falco peregrinus* individuals occur in the spring staging areas of waterfowl and shorebirds near Olonets virtually every year. All registrations, however, were made before the end of the spring migration only. No signs of breeding behaviour or observations suggesting the possibility of the Peregrine breeding in the area are known. The Hobby *F. subbuteo* is a typical representative of the district forest avifauna, and occurs in the farmland as an uncommon migrant only.

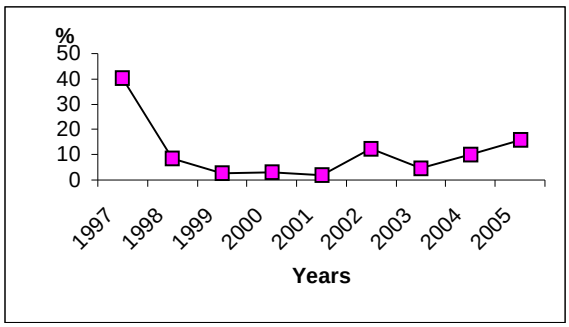
The most abundant species among falcons is the Kestrel *Falco tinnunculus*. It has almost recovered its former numbers after the depression in the 1970s–1980s, and now nests regularly in fields near Olonets. Another species also breeding there but less abundant is the Merlin *F. columbarius.* The Red-footed Falcon *F. vespertinus* was registered only once, on 15 May 2002. The species is known to have nested for several years at the southern border of the Olonets district, on a tree-grown islet in a mire in the Nizhne-Svirskiy reserve (Kovalev et al. 1996).

Since table 1 shows all data about bird contacts during counts, one can hardly speak about the absolute abundance of the species in the study area. Nonetheless, given that the method remained the same throughout the study period and activities continued annually from mid-April to 25 May, i.e. similar as well, it appears possible to analyze tendencies in the relative abundance of the counted species among years and within seasons. The data on the most common species are shown in fig. 1 and 2.

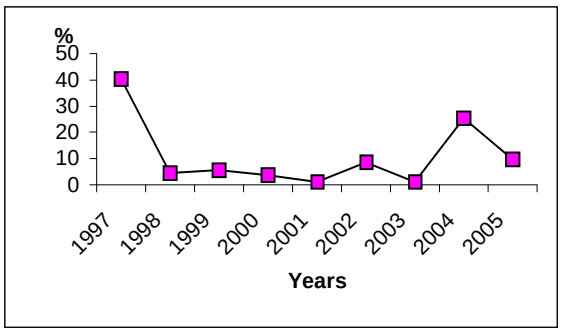
In the late 1990s and beginning of this century, many species of diurnal raptors whose life is associated with farmland experienced a sharp decline, and the depression still continues (for *Circus pygargus, Buteo lagopus, F. peregrinus,* partially for *Circus cyaneus*), apparently due to the processes underway in the agrarian management techniques of Russia, Karelia included. Thus, burning last-year's grass in April–May lowers the food resources and eliminates the grassland as a foraging habitat for a prolonged (up to 2 weeks) period of time. In addition, it destroys the birds' nests situated on the ground (*Circus sp.*) or low above the ground (*Falco tinnunculus, F. columbarius)*.

Other species which had also undergone a dramatic decline in the same period managed to recover later on (*Buteo buteo, Circus aeruginosus, Falco tinnunculus*). Abundance variations in the latter three species, which are closer associated with shore (*Haliaeetus albicilla*) or forest (*Accipiter nisus, Falco columbarius*) habitats than other raptors, appear to be less dependent on the changes ongoing in farmlands.

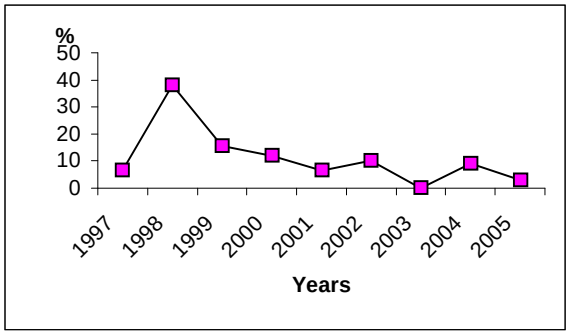
C. cyaneus (n=842)



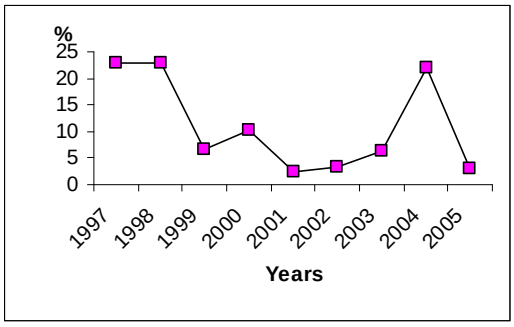
B. buteo (n=344)



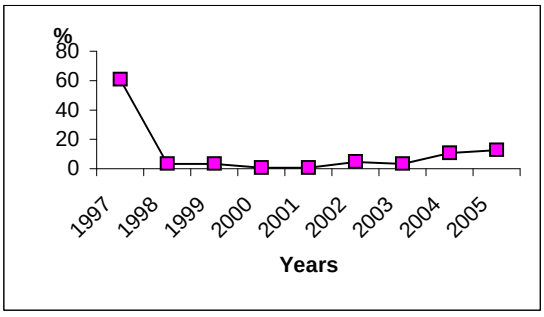
C. pygargus (n=110)



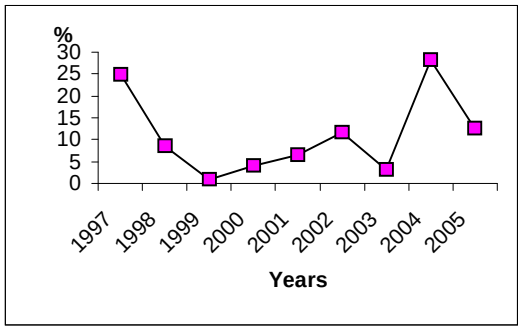
C. aeruginosus (n=300)



B. lagopus (n=360)



F. tinnunculus (n=670)



F. peregrinus (n=69)

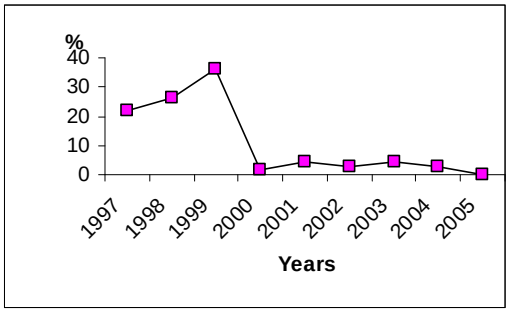
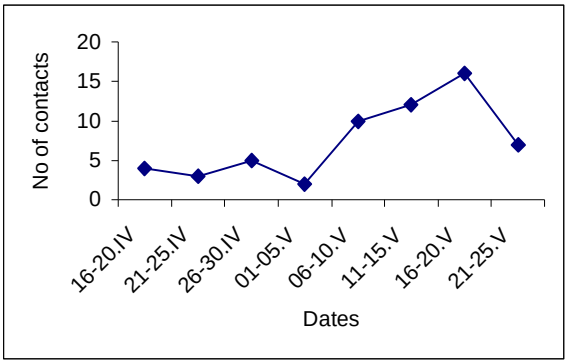
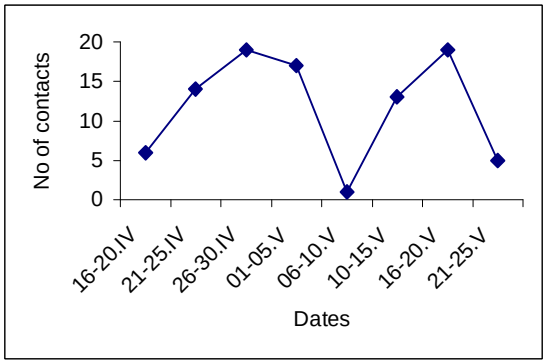


Figure 1. Relative abundance dynamics of some *Falconiformes* species in southern Karelia (1997–2005) (n=number of individuals).

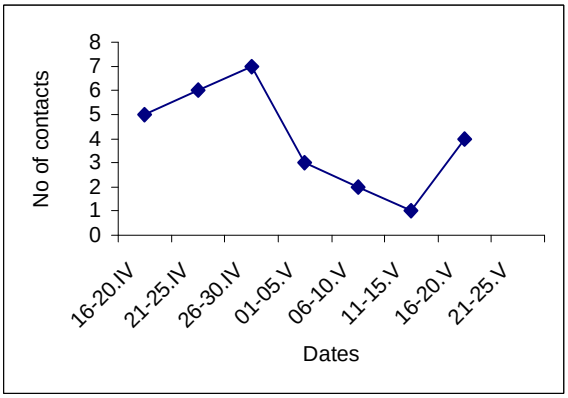
Circus cyaneus (1997, n=59, transect count, walking)



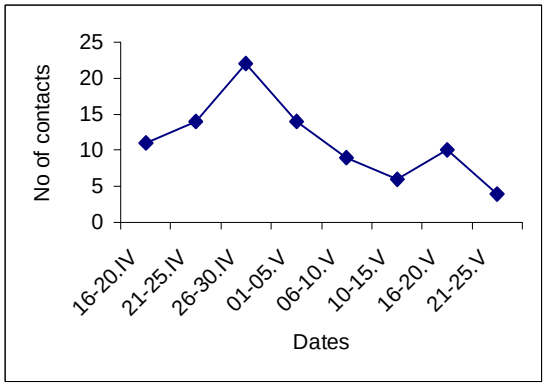
F. tinnunculus (2004, n=93, transect count, walking)



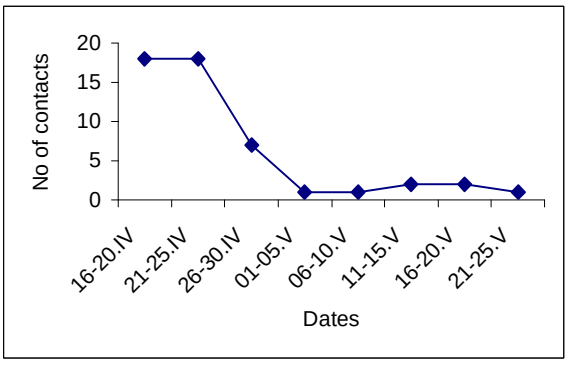
Buteo buteo (1997, n=28, transect count, walking)



F. tinnunculus (2004, n=90, transect count, car)



Buteo lagopus (1997, n=50, transect count, walking)



Haliaeetus albicilla (1999, n=36, transect count, walking)

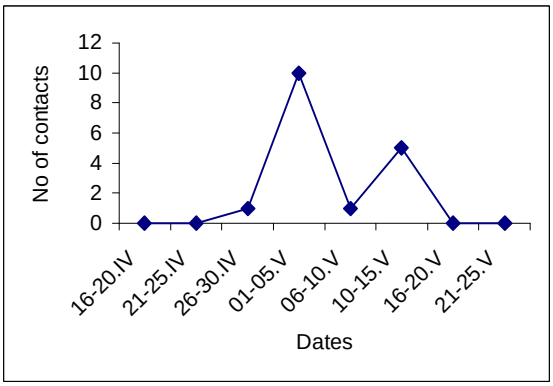


Figure 2. Abundance dynamics (no. of individuals) of some *Falconiformes* species in southern Karelia in the spring season.

Abundance dynamics in the spring season differs among species and depends on their status in the study area and the stage in the annual cycle. Passage migrants *(Buteo lagopus, Falco peregrinus*) totally disappear from counts after the migration is over. Among breeders, only local individuals stay to start producing offspring, becoming less noticeable.

Summarizing the above, the following notes can be made:

- farmland in southern Karelia, which is the core of the republic's agricultural land, is essential for conservation of *Falconiformes* species, many of which are rare, endangered and listed in national, international and regional Red Data Books;

- bird monitoring in grasslands of the Olonets plain should be continued;

- to ensure comparability of results, the material gathering technique should be made uniform;

- it would be good to involve birders, including those from abroad, in making counts.

REFERENCES

Kovalev, V.A., Kudashkin, S.I., Oliger, T.I. 1996. Cadastre of vertebrates of the Nizhne-Svirskiy strict nature reserve. Annotated species checklists. St. Petersburg. 43 p. [in Russian]

Zimin, V.B., Artemiev, A.V., Lapshin, N.V. 1997a. Wetlands of the Olonets farmland // Proceedings of the 1st Seminar on the Programme "Study of the Status and Trends of Migratory Bird Populations in Russia". Moscow – St. Petersburg. P. 20–32. [Eng., Russ.]

Zimin, V.B., Artemjev, A.V., Lapshin, N.V. 2001. Study of goose staging and spring migration of birds in the Olonets fields in 1999 // Study of the Status and Trends of Migratory Bird Populations in Russia. St. Peterburg: World & Family. P. 19–31. [summary in Russian]

Zimin, V.B., Lapshin, N.V., Artemiev, A.V. 1997b. Birds observed in the spring of 1996 in grasslands of the Olonets plain, Karelia // Russian Journal of Ornithology. Special Issue No 8, 1997. P. 13–16. [in Russian]

Zimin, V.B., Lapshin, N.V., Artemiev, A.V. 1998. Report on spring counts of birds in Olonets grasslands in 1997 // Proceedings on the programme "Study of the Status and Trends of Migratory Bird Populations in Russia" (2nd issue). Moscow. P. 36–46. [Eng., Russ.]