Zusammenfassung: **Über den Abschluss der Brutperiode der Vögel in Finnland.**

Der Aufsatz bringt ein Verzeichnis der späten Brutbeobachtungen der Verfasser nebst einigen allgemeinen Gesichtspunkten auf den Abschluss der Brutperiode. Die Brutbereitschaft der einzelnen Arten scheint ziemlich pünktlich zu erlöschen, und extreme Spätgelege sind sehr selten. Der Abschluss der Brutperiode ist zeitlich deutlich von ihrem Beginn abhängig: Setzt die Eiablage wegen niedriger Frühjahrstemperaturen verspätet ein, so rücken die Nachgelege und die zweiten Gelege entsprechend weiter vorwärts. Aus gleichem Grunde dauert das Brüten in Lappland und auf den Ausseninseln erheblich länger als in den übrigen Teilen des Landes fort. Ist wiederum der Frühling warm, so mag es eintreffen können, dass diese und jene normalerweise nur einmal brütende Art teilweise noch im gleichen Sommer ein zweites Gelege gründet (so z. B. *Phylloscopus trochilus* i. J. 1963), wonach also auch in diesem Falle eine Verlängerung der Brutperiode die Folge ist. Im Verzeichnis ist der Beginn der Eiablage (1. muna = erstes Ei) auf Grund des Alters der Nestjungen, der Brutdauer bei der betreffenden Art, der Gelegegrösse sowie des Legeabstandes geschätzt worden.

Quantitative observations on the bird fauna in the fjeld area of Paistunturit (InL) in summer 1960 and 1964

TORSTEN SILVOLA

GRANIT (1938) has published quantitative data on the birds in the area of the Viipustunturi fjelds. As, in addition, we already have corresponding information for the area of the Maarestunturit fjelds (BAGGE *et al.*, 1963), it may also be of certain general interest to publish my records concerning the birds of the fjeld area of Paistunturit (69° 30′ N and 26° 20′ E).

Between June 27 and 30, 1964, I walked together with Veikko Normaja from the Subarctic Research Station at Kevo to Outakoski on the river Teno. The route (cf. Fig. 1) measured almost 100 km in length. Observations were made only in daylight between 2 a.m. and 6 p.m. within a strip 100 metres in width. On June 29, the weather was cold with rain and strong winds prevailing; the other days, however, were warm and calm and sunny. The birds encountered along the route are presented in the tables below by regions and habitats.

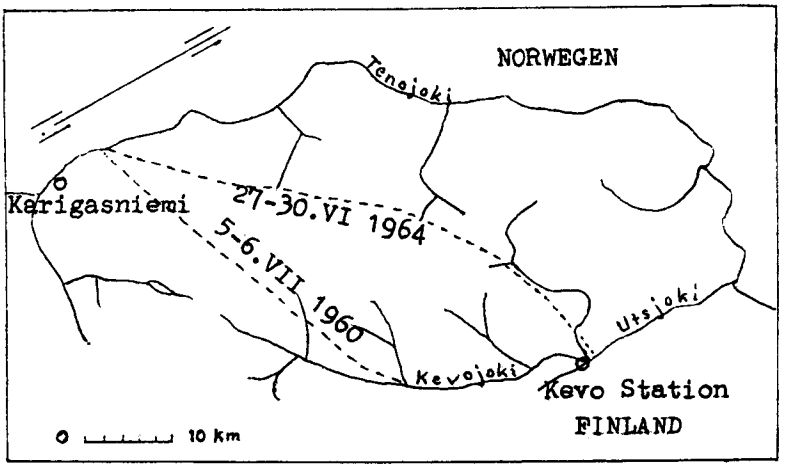

Fig. 1. Paths studied. *Kuva 1. Kulkureitit.*

On July 5 and 6, 1960, I walked with A. and E. Silvola from the mouth of Kamajoki river at Kevojoki to Rovisuvanto. The weather was warm, clear, and almost calm. Along this route, too, the observations were made in daylight within a strip 100 metres in width. The length of the route, however, was not measured with sufficient accuracy. This strip covered parts of both the subalpine and the alpine region, while, on the other hand, the strip investigated in 1964 was located at altitudes about 100 metres higher and for the most part in the alpine region.

The end of June and the first half of July can be considered the best period for bird census-taking in Lapland. The above-mentioned material from Maarestunturit was collected between June 27 and July 10 (cf. BAGGE *et al.*, 1963). The numbers of pairs and the sources of error were estimated according to MERIKALLIO (1946 and 1955).

The alpine region

I. Stony ground (57 ha). 5 pairs = 9 pairs/sq.km.

1. Kaimioaivi, June 29 (50 ha). 4 pairs = 8 pairs/sq.km.

Plectrophenax nivalis 4 pairs

2. Koutoaivi, June 29 (7 ha). 1 pair = 14 pairs/sq.km.

Lagopus mutus 1 pair

Thus, the abundance in areas of stony ground in the vicinity of Paistunturit is considerably lower than that of the Maarestunturit area, where it reaches 47 pairs/sq.km according to BAGGE *et al.* (1963). It was probably due to the prevailing weather conditions that so few birds were observed at Paistunturit. The corresponding abundance in the area of Viipustunturit is 21 pairs/sq.km (GRANIT, 1938).

II. Alpine region without bush vegetation (154 ha). 23 pairs = 15 pairs/sq.km on an average. The vegetation is mainly dwarf shrubs and grasses, the soil partly stony.

3. Kaimioaivi, June 29 (22 ha). 7 pairs = 32 pairs/sq.km.

Charadrius apricarius	1 pair
C. morinellus	1 »
Numenius phaeopus	1 »
Plectrophenax nivalis	1 »
Oenanthe oenanthe	1 »
Anthus pratensis	1 »
Motacilla alba	1 »
	7 pairs

4. Koutoaivi, June 29 (66 ha). 5 pairs = 8 pairs/sq.km.

Charadrius apricarius	2 pairs
C. morinellus	2 »
Anthus pratensis	1 pair
	5 pairs

5. Kuivi, June 29 (55 ha). 7 pairs = 13 pairs/sq.km.

Charadrius morinellus	3 pairs
C. apricarius	2 »
Anthus pratensis	1 pair
Oenanthe oenanthe	1 »
	7 pairs

6. Stuorrapiesvaara, June 30 (11 ha). 4 pairs = 36 pairs/sq.km.

Charadrius morinellus	2 pairs
Eremophila alpestris	1 pair
Oenanthe oenanthe	1 »
	4 pairs

The average abundance, 15 pairs/sq.km, of the present data is about the same as in the Maarestunturit area, where it, according to BAGGE *et al.* (1963), reaches 19 pairs/sq.km. The corresponding abundance in the Viipustunturit area is 11 pairs/sq.km (GRANIT, 1938). The results of MERIKALLIO's (1951) censuses (14 and 20 pairs/sq.km) in the area of the Ailigas fjeld do not differ to any large extent from mine, and according to LEHTONEN (1955), the abundance in this habitat is 10–40 pairs/sq.km.

III. Alpine region with bush vegetation (61 ha). 21 pairs = 34 pairs/sq.km. The most common plant is *Betula nana*, among which *Juniperus communis* is often encountered. These species can reach one half metre in length.

7. Linkkinjäeggi, June 28 (16 ha). 8 pairs = 50 pairs/sq.km.

Charadrius apricarius	2 pairs
Stercorarius longicaudus	2 »
Numenius phaeopus	1 pair
Anthus cervinus	1 »
Motacilla flava	1 »
Calcarius lapponicus	1 »
	8 pairs

8. Kamaoaivi, June 29 (20 ha). 6 pairs = 30 pairs/sq.km.

Stercorarius longicaudus	2 pairs
Anthus cervinus	2 »
Charadrius apricarius	1 pair
Calcarius lapponicus	1 »
	6 pairs

9. Eeärnävadha, June 30 (25 ha). 7 pairs = 28 pairs/sq.km.

Charadrius apricarius	2 pairs
Anthus pratensis	2 »
Stercorarius longicaudus	1 pair
Carduelis flammea	1 »
Calcarius lapponicus	1 »
	7 pairs

In the data on birds found in the fjelds of the Maarestunturit area, no habitat of this kind is represented, and the abundance (10 pairs/sq.km) in the Viipustunturit area (GRANIT, 1938) is clearly lower than that of Paistunturit (34 pairs/sq.km). Several authors seem to combine habitats II and III.

IV. Wet ground with shrubbery of *Betula nana* and *Salix* spp. reaching one metre in height. Grassy spots occur between the bushes. 34 ha, 42 pairs = 124 pairs/sq.km.

10. Njiljokkmokavtohetshobma, June 28 (25 ha). 27 pairs = 108 pairs/sq.km.

Tringa glareola	6 pairs
Charadrius apricarius	5 »
Anthus cervinus	4 »
Calcarius lapponicus	3 »
Gallinago gallinago	2 »
Luscinia svecica	2 »
Emberiza schoeniclus	2 »
Lymnocryptes minimus	1 pair
Stercorarius longicaudus	1 »
Phylloscopus trochilus	1 »
	27 pairs

11. The vicinity of Eärnavaara, June 30 (9 ha). 15 pairs = 167 pairs/sq.km. This habitat differs from the last-mentioned (10) because of some ponds and muddy shores which are encountered there together with peat hills (palsa) reaching 1—3 metres in height

Phalaropus lobatus (9 exx.)	5 pairs
Calidris temminckii (5 exx.)	3 »
Charadrius hiaticula	1 pair
Gallinago gallinago	1 »
Lymnocryptes minimus	1 »
Tringa totanus	1 »
Philomachus pugnax	1 »
Luscinia svecica	1 »
Carduelis flammea	1 »
	15 pairs

According to BAGGE *et al.* (1963), the abundance in this habitat is 92 pairs/sq.km or lower than that of the Paistunturit area (124 pairs/sq.km). The difference can be due to a possible lack of swamps with ponds (habitat 11) in the Maarestunturit area or to the fact that the birds that abound on the Paistunturit (*Phalaropus* and *Calidris*) possibly have no nests, an hypothesis supported by their behavior. The abundance in the swamps (IV) of the Viipustunturit is 40 (GRANIT, 1938) and that of Ailigassuo is 74 (MERIKALLIO, 1951).

V. Also observed on the banks of creeks and rivers were:

12.	*Charadrius hiaticula*	2 pairs
	Sterna paradisaea	2 »
	Larus canus	1 pair
	Motacilla alba	1 »
		6 pairs

The average abundance, 33 pairs/sq.km, in the alpine region is somewhat lower than the corresponding abundance in the Maarestunturit area, which is 56 (BAGGE *et al.*, 1963).

The subalpine region

The results obtained from forests of different kind have been grouped as follows. The data is, however, from the surroundings of Shirratshokka.

13. Dry and sparse birch forest near the alpine region (62.51 ha). In this association the undervegetation consists of lichens and *Empetrum hermafroditum*. The birch (*Betula pubescens*) reaches 3 metres in height. 34 pairs = 54 pairs/sq.km.

Fringilla montifringilla	10 pairs
Charadrius apricarius	5 »
Numenius phaeopus	3 »
Phylloscopus trochilus	3 »
Turdus iliacus	2 »
Phoenicurus phoenicurus	2 »
Lagopus lagopus	2 »
Stercorarius longicaudus	2 »
Oenanthe oenanthe	1 pair
Anthus pratensis	1 »
A. cervinus	1 »
Carduelis flammea	1 »
C. hornemanni	1 »
	34 pairs

14. Birch forest of medium dryness and density with *Empetrum hermafroditum* and lichens in the undervegetation (19.42 ha). The height of the birches 3 – 5 metres. 28 pairs = 144 pairs/sq.km.

Fringilla montifringilla	12 pairs
Phylloscopus trochilus	8 »
Turdus iliacus	4 »
Lagopus lagopus	1 »
Phoenicurus phoenicurus	1 »
Luscinia svecica	1 »
Anthus pratensis	1 »
	28 pairs

In addition, two *Cinclus cinclus* were observed in creeks in this region.

The average abundance in the birch forests mentioned above is 76 pairs/sq.km. The data from the Maarestunturit gives as result 56, which is remarkably lower (cf. Bagge *et al.*, 1963). There are still fewer birds in the birch forests of the Viipustunturit (cf. Granit, 1938). According to Lehtonen (1955), the average abundance in the subalpine region is 30 – 70 pairs/sq.km. It is possible that other writers would not consider all forests belonging to habitat 14 as a subalpine region, and this would explain the differences in the results.

In summer 1960, the survey path crossed the borderland between the alpine and subalpine region as mentioned above. We wandered for the most part on dry heath, sometimes on treeless ground, sometimes in the birch forest. Near Kirjeeädna we crossed a large swamp. Table 1 includes the species encountered on this 40 km hike. The numbers do not include birds from the Kevojoki and Tenojoki valleys. *Prunella modularis* and *Muscicapa striata* were observed in the Fiellugeädgejoki valley.

Table 1. Birds encountered in summer 1960.

Taulukko 1. Kesällä 1960 tavatut linnut.

	Pairs *Pareja*	%		Pairs *Pareja*	%
Anthus pratensis	30	21	*Perisoreus infaustus*	2	1
Charadrius apricarius	21	15	*Phoenicurus phoenicurus*	2	1
Phylloscopus trochilus	20	14	*Motacilla alba*	2	1
Fringilla montifringilla	11	8	*Carduelis hornemanni*	2	1
Oenanthe oenanthe	7	5	*Tringa hypoleucos*	1	1
Tringa glareola	5	4	*Tringa nebularia*	1	1
Carduelis flammea	5	4	*Cuculus canorus*	1	1
Stercorarius longicaudus	4	3	*Asio flammeus*	1	1
Luscinia svecica	4	3	*Corvus corax*	1	1
Calcarius lapponicus	4	3	*Parus cinctus*	1	1
Numenius phaeopus	3	2	*Muscicapa striata*	1	1
Turdus iliacus	3	2	*Prunella modularis*	1	1
Lagopus lagopus	2	1	*Lanius excubitor*	1	1
Tringa totanus	2	1	*Emberiza schoeniclus*	1	1
				139	100 %

Table 2. The species in the dry alpine region.

Taulukko 2. Kuivassa regio alpinassa tavatut lajit.

	Viipustunturit (Granit 1938)	Maarestunturit (Bagge 1963)	Paistunturit Silvola 1960	Paistunturit Silvola 1964
Plectrophenax nivalis	20 %	2 %		10 %
Lagopus mutus	2	6		2
Charadrius morinellus	3	2		17
Numenius phaeopus	2	2		4
Charadrius apricarius	6	10	36	21
Eremophila alpestris	13			2
Oenanthe oenanthe	16	12	12	6
Buteo lagopus	2			
Anthus cervinus				6
Calcarius lapponicus		15		6
Anthus pratensis	38	51	52	10
Motacilla alba				2
Stercorarius longicaudus				10
Motacilla flava				2
Carduelis flammea				2
%	~100	100	100	100
pairs *pareja*	42	52	58	49

Table 3. The dominance of all the birds encountered in the alpine region.
Taulukko 3. Kaikkien regio alpinassa tavattujen lajien dominanssi.

	Maarestunturit (Bagge et al. 1963)	Paistunturit Silvola 1964
Charadrius apricarius	9 %	16 %
Charadrius morinellus	1	9
Anthus cervinus	–	8
Tringa glareola	1	6
Stercorarius longicaudus	1	6
Calcarius lapponicus	10	6
Phalarobus lobatus	–	5
Anthus pratensis	51	5
Plectrophenax nivalis	1	5
Charadrius hiaticula	–	3
Gallinago gallinago	8	3
Calidris temminckii	–	3
Oenanthe oenanthe	8	3
Luscinia svecica	–	3
Lymnocryptes minimus	–	2
Numenius phaeopus	4	2
Sterna paradisaea	–	2
Motacilla alba	–	2
Carduelis flammea	–	2
Emberiza schoeniclus	1	2
Lagopus mutus	4	1
Limosa lapponica	1	–
Tringa totanus	–	1
Philomachus pugnax	1	1
Larus canus	–	1
Eremophila alpestris	–	1
Phylloscopus trochilus	–	1
Motacilla flava	1	1
	% ~ 100	100
pairs *pareja*	77	97

Some features of the species

Table 1 includes several species of the birch woods. This is due to the fact that the survey path often ran through a birch wood. Because the route was not estimated accurately enough in 1960, the abundances cannot be calculated and compared with other writers' results (Table 1).

Table 2, which is compiled on the basis of the results of 1964, includes the species of the dry alpine region in the fjelds of Viipustunturit,

Maarestunturit, and Paistunturit. The true species of the alpine region are listed first in the table. The comparison of the results follows beneath:

Table 4. *Taulukko 4.*

	Viipustunturit (GRANIT 1938)	Maarestunturit (BAGGE et al. 1963)	Paistunturit SILVOLA 1964
a)	absent		
	puuttuu		
	Calcarius lapponicus	*Eremophila alpestris*	*Buteo lagopus*
	Anthus cervinus	*Buteo lagopus*	
		Anthus cervinus	
b)	scarcely		
	niukasti		
	Charadrius apricarius	*Plectrophenax nivalis.*	*Oenanthe oenanthe*
			Anthus pratensis
c)	in large numbers		
	runsaasti		
	Plectrophenax nivalis	*Calcarius lapponicus*	*Charadrius morinellus*
	Eremophila alpestris		*Charadrius apricarius*
			Stercorarius longicaudus
			Anthus cervinus

The list of the species in the Paistunturit is larger than that of the other fjelds; the absence of *Buteo lagopus* is due to the lack of nesting places because the other species that feeds on micromammalians, *Stercorarius longicaudus*, appears so abundantly. A nest of *S. longicaudus* with two eggs was found on July 5, 1960 in the neighbourhood of the western slope of Fiellugeädgeskaidi. Table 2 also shows that the dominance of *Anthus pratensis* is much greater in the Viipustunturit and Maarestunturit areas than that of *Charadrius apricarius*, but the difference is smaller in the data from the Paistunturit collected in 1960, and in the data collected during the summer of 1964, *Charadrius apricarius* has taken first place. Is this due to the fact that the Paistunturit area lies farthest to the north and the survey path of 1964 runs highest? Or is there any difference between the years? The rare *Charadrius morinellus* was observed in surprisingly great numbers and even a nest with three eggs was found among lichens and 5 cm high *Betula nana* at Koutoaivi on June 29, 1964.

In Table 3 we can find all the birds that have been encountered in the alpine region, thus, the birds of swamps, too. The list of the Paistunturit (1964) lacks only one species of the Maarestunturit, *Limosa*

lapponica. On the other hand, the Maarestunturit area lacks several species encountered in the Paistunturit which actually appear in the subalpine region of the Maarestunturit, such as *Calidris temminckii, Luscinia svecica, Lymnocryptes minimus, Carduelis flammea* and *Phylloscopus trochilus. Anthus cervinus* was not observed at all in Maarestunturit, but it was listed rather extensively in the Paistunturit area and in the neighbourhood of Lake Pöyrisjärvi (TENOVUO 1959). It was, however, observed neither on the route of 1960 nor in its neighbourhood in 1954 (cf. TENOVUO 1959). Table 3 also shows that the birdfauna of the Paistunturit (1964) have no species which is very superior in numbers, but the dominance values are in a dense succession.

In addition to the species mentioned before, there were listed in 1964 in the auditory belt *Corvus corax* 13 exx., *Cuculus canorus* 2 exx., *Aquila chrysaëtos* 2 exx., and one *Lanius excubitor* and *Anas crecca.*

Summary

In this paper are published quantitative bird observations of two wandering routes in the Paistunturit area (26° 20'E and 69° 30'N) in Finnish Lapland. The 40 km route in summer 1960 (Fig. 1) runs in the borderland between the alpine and subalpine region, thus, about 400 m above the sea. The approx. 100 km route in summer 1964 was chiefly in the alpine region, and at 500 m above the sea level. The tables include birds from the 100 m wide main belt. The path was not estimated accurately enough in 1960 for calculations of the abundance values. The observations are made in the bright time of day between 2 *a.m.* and 6 *p.m.* The results in this paper are given region by region and habitat by habitat. The results of different writers agreed to some extent, and differences may be due to the fact the route covered in 1964 was the farthest to the north. It is also possible that there is a difference in grouping of the data or in the abundance between the years.

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Selostus: Kirjoituksessa esitetään kahden Utsjoen Paistuntureilla tehdyn retken havainnot. Kesän 1960 reitti kulki *regio subalpinan* ja *regio alpinan* rajamailla milloin koivikossa milloin puuttomalla nummella yhteensä 40 km matkan (kuva 1). Kesän 1964 noin 100 km pitkä laskentareitti kulki pääasiassa *regio alpinassa* noin 500 m korkeudella. Taulukoissa on 100 m leveän pääsaran linnut. Vuoden 1960 havainnoista ei voida esittää tiheyslukuja. Havainnot tehtiin vuorokauden valoisana aikana klo 02.00—18.00. Tulokset esitetään regioittain ja biotoopeittain. Vertailtaessa tuloksia aikaisemmin julkaistuihin havaitaan toisaalta melkoista yhtäläisyyttä, toisaalta merkittävältä näyttäviä eroja. Eroihin voi olla syynä biotooppien lievä erilaisuus tai vuosittainen kannanvaihtelu. Paistunturien sijainti pohjoisimpana voi myös aiheuttaa erilaisuutta. Pesälöydöistä mainittakoon tunturikihun 2-munainen pesä 5. VII. 1960 ja keräkurmitsan 3-munainen pesä 29. VI. 1964.

Lounais-Suomen suolinnustossa tapahtuneista muutoksista

Pekka Mustakallio

Lounaissuomalaisessa kohosuolinnustossa tapahtuu parhaillaan mielenkiintoisia muutoksia. Uusia lintulajeja on siirtynyt pesimään soille, toisia taas on kadonnut tai parhaillaan katoamassa. Tämän havaitsemiseen on tarvittu pitkäaikaisia retkeilyjä samoilla seuduilla. Kirjoitukseni perustuukin havaintoihin, jotka olen tehnyt vuosina 1955—1965 Yläneen-Karjalan vedenjakajan ja Pöytyän suurilla kohosoilla.

Tarkimmat yhtäjaksoiset havaintoni ovat Yläneen Isoltasuolta. Tämän tutkimusalueeni parhaimman lintusuon näkyvimmät lajit ovat olleet muuttohaukka ja harmaalokki.

Harmaalokki (*Larus argentatus*). Kuvasta 1 ilmenee lokkikolonian suuruus eri vuosina. Lokit ovat pesineet aina suon avoimessa, lampareisessa eteläosassa, jossa pesien löytäminen on suhteellisen helppoa. Kolonia oli suurimmillaan v. 1959, jolloin pesiä löytyi 18 kpl. Seuraavana vuonna tapahtui yllättävä romahdus. Esimerkiksi 29. V olivat pesät tyhjiä tai keskeneräisiltä näyttäviä. Ilmiö on vaikeasti selitettävissä. Omituisinta on, ettei kuutena viime kesänä ole löytynyt kuin kolme munapesää, ja viimeinen löytämäni poikanen on vuodelta 1962. Pesäkuoppia on kyllä näkynyt runsaasti, mutta ne ovat olleet avuttomia tekeleitä, ikäänkuin lintujen pesänrakennuskyvyssä olisi jokin häiriö (pesänrakennus jäänyt soidinpesäasteelle?). Vaikuttaa siltä kuin terveet, pesimiskykyiset yksilöt olisivat kadonneet. Lupaavasti alka-