

# ORNIS FENNICA

SUOMEN LINTUTIETEELLISEN YHDISTYKSEN JULKAISEMA

XLI

UTGIVEN AV ORNITOLOGISKA FÖRENINGEN I FINLAND

TOIMITUS REDAKTION: G. BERGMAN, G. NORDSTRÖM

No 3—4. 1964

## Censuses of the nesting birds of the island Lappören in Björkö, W. Finland

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In the following paper, the results are reported of bird censuses performed during the summers of 1957, 1959, and 1961, on uninhabited island Lappören situated in the Gulf of Bothnia. In particular, attention is paid to the changes in the population densities during the research period.

The island of Lappören ( $63^{\circ}22' N$ ,  $21^{\circ}14' E$ ) in the parish of Björkö, is the outermost of the inner islands and has no islands and shoals on its northern and western shore (Fig. 1).

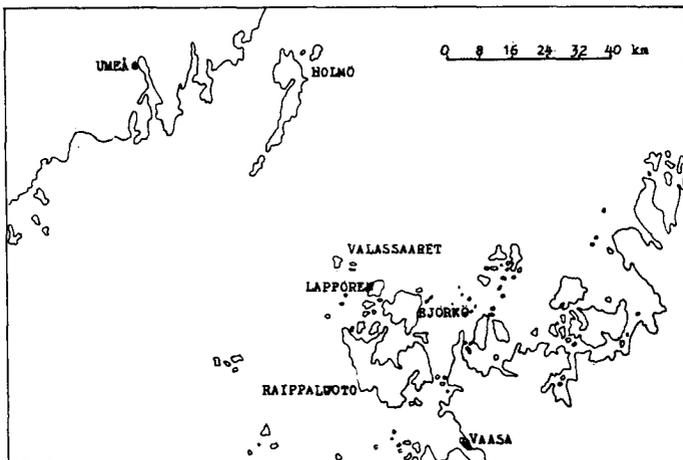


Fig. 1. The location of the island Lappören in the Gulf of Bothnia.

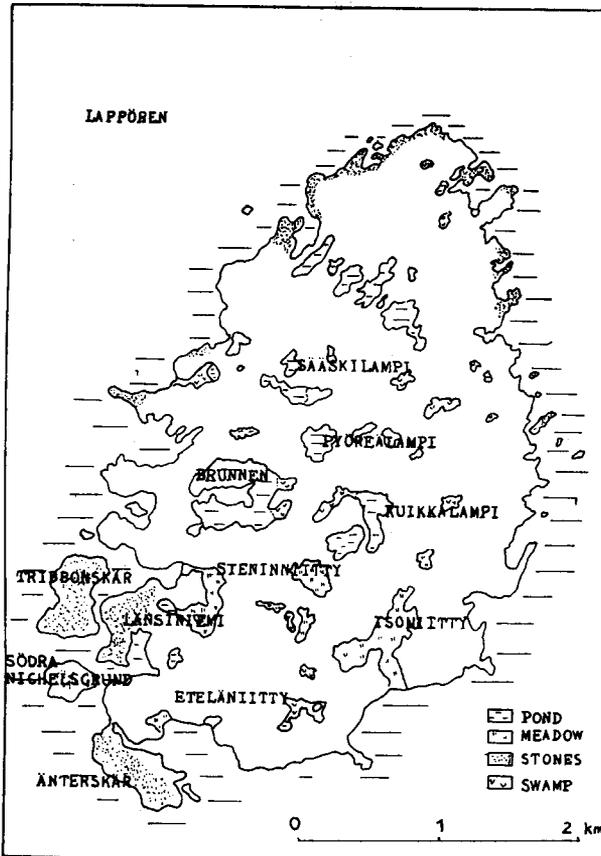


Fig. 2. Lappören and the nearby shoals which were included in the research area.

Lappören is very low in its relative altitudes (0–7 meters) and irregular in its shoreline. The loose earths covering the bedrock form numerous bays and points and there are many ponds and bog patches on the island (Fig. 2).

In addition to the main island the small shoals on its immediate vicinity are included in the research area (Fig. 2). According to the calculations made from the aerial photograph the total area is c. 8.5 km<sup>2</sup>. Forest covers 83 % of it. The remainders consist of reefs, rocky beaches, ponds, patches of bog, meadows and dry areas with xerophilous vegetation.

According to the types of habitat the island can be divided into the following regions:

Forests	Area	% of forest
mixed forests (birch dominating)	4.7 km <sup>2</sup>	46 %
mixed forests (spruce dominating)	1.6 »	16 %
groves	55 hectares	
spruce forests	21 »	
Dry areas	46 »	
Reefs	16 »	
Bog patches	7 »	
Ponds	47 »	

In mixed forests, birch dominating, the birches grow especially on the northern shore and on certain western points very crooked, resembling the subarctic birch in Lapland. The thickets of *Juniperus communis* often form an impenetrable undergrowth.

The spruce forests are tall scattered groves without clearings and these are few in birds. Pines do not form forests on the island.

Luxuriant groves are numerous, situated either on the seashore or in the immediate vicinity of ponds and meadows. The hollow trees are plenty on the island.

The dry plains are nearly treeless. The treeless islands Tribbonskär, Länsiniemi and Änterskär are entirely covered by *Calluna vulgaris* and *Empetrum nigrum* and other xerophilous species.

The largest meadows have been cultivated. Only on the seaside there are some natural meadows.

Bog patches are not numerous and not large in their areas. The greater part of ponds are oligotrophic in nature. Only a few smaller are eutrophic in nature.

The island has been at the disposal of the residents of Björkö for a long time (SMEDS 1953). There are about 75 small barns and fishermen's cottages, most of which are still used. Except for casual holiday makers and hunters in the fall, the island has its own peace.

### The bird census

The bird census was carried out in the research area at the same time each year, viz. from the first of June to the last of the same month during the years 1957, 1959, and 1961. The windy, foggy and rainy days were not included.

In counting birds in an area with such variable habitats as those of Lappören, one of the possible methods is that used by VÄLIKANGAS (1937) and ENGSTRÖM (1955). This method was adopted for the present study. The area was divided into small squares linked by means of terrain marks. The numerous ponds, swamps, meadows etc. served for this purpose. The only area where the birds were difficult to count

and where they were scarce lies immediately south of the ponds on the northern side of the island. It was necessary to study this area along marked compass lines. The general direction of the lines ran from northwest to southeast and the distance between them was 25–75 meters depending on the density of the forest.

It was possible to join together that small squares formed in this way, so that they covered the whole of Lappören. Every summer the counting was begun on the north end of the island, and performed only once. The counting took place in the morning from 3 to 9 o'clock.

A pair of birds seen, or a female, or a singing male were counted as one unit (= a pair). Waterfowls were counted on the basis of the seen pair or clutches seen on the ponds or on the shores of the island. The cuckoos were counted on the basis of female birds seen (VISAKORPI 1949). In the flock of crossbill five birds have been taken as a pair (MERIKALLIO 1946).

The censuses have been performed every summer in the same way and the results are thus comparable. One of the greatest source of error is that some singing male birds do not nest (VÄLIKANGAS 1937, KALELA 1938, MERIKALLIO 1946, v. HAARTMAN 1952). In addition some species are easier to count than others. In the present study one of the possible errors is no doubt the movements of the birds from the line already counted to the line being on counting.

### Results

The total number of species found in the research areas was 145 of which 104 were nesting. In 1957 the number of pairs and species were 2 544 and 92, in 1959 2 390 and 87, and in 1961 1 933 and 83 respectively. The density was greatest in 1957, when it was 299 pairs/km<sup>2</sup>, in 1959 it was 280 and 1961 227 pairs/km<sup>2</sup>. A general observation is that the numbers of pairs have decreased during this period. To determine the significance of this decrease, 25 such species were selected, which had definitely arrived by the beginning of June in the islets of Valassaaret (HILDÉN 1958), and *t* – tests for dependent measures were performed between the census years. The test between the years 1957 and 1959 showed that the difference is not significant with the margin of error of 5 % (*t* = 0.387). The test between the years 1959 and 1961 showed that the difference was significant with a margin of error 0.1 % (*t* = 2.54). It is clear that the difference was significant also between the years 1957 and 1961.

The following changes have occurred during the research period in the various forest types:

	p			s			p		
	p	s	km <sup>2</sup>	p	s	km <sup>2</sup>	p	s	km <sup>2</sup>
Mixed forest (birch dom.)	1 481	37	306	1 250	43	266	956	39	202
Mixed forest (spruce dom.)	406	39	259	403	36	258	316	35	194
Groves	441	29	799	470	25	850	356	30	645
Spruce	26	11	124	36	14	176	39	17	186

p = pairs

s = species number

As the times of counting have been exactly the same and the possible errors caused by the late migratory birds (numbers in parenthesis, Table I) have not been taken into account, it may be concluded that besides the changes concerning the single species, there are also quite apparent changes concerning the bird world in the whole research area.

The species nesting on Lappören are shown in Table I in the order of their densities in 1957. The densities computed by MERIKALLIO in the region of Vaasa (1951) and in Eastern Bothnia (1955 and 1958) are presented for comparison. Densities are pairs/km<sup>2</sup>.

Table I	1957	1959	1961	Vaasa	Eastern Bothnia
<i>Fringilla coelebs</i>	72	63	55	30	
<i>Phylloscopus trochilus</i>	57	45	35	36	
<i>Muscicapa striata</i>	(24)	(18)	(17)	3.6	
<i>Sylvia borin</i>	(20)	(17)	(8)	3.6	
<i>Parus major</i>	12	12	10	4.3	
<i>Anthus trivialis</i>	11	14	9	7.5	
<i>Fringilla montifringilla</i>	8	7	3.3	0.2	
<i>Phoenicurus phoenicurus</i>	7	8	3.3	1.4	
<i>Sylvia curruca</i>	(7)	(3)	(2.4)	0.7	
<i>Turdus musicus</i>	7	9	4.6	1.4	
<i>Emberiza citrinella</i>	6	7.3	5.7	8.6	
<i>Ficedula hypoleuca</i>	5	2.7	1.1	1.4	
<i>Dendrocopos major</i>	5	0.8	1.6		0.1
<i>Parus atricapillus</i>	5	5.3	3.5	11	
<i>Carduelis spinus</i>	4.8	5.5	2.8	4.3	
<i>Turdus ericetorum</i>	3.7	3.9	3.9	2.1	
<i>Erithacus rubecula</i>	3.6	5.9	8.7	3.6	
<i>Lyrurus tetricus</i>	2.1	2.3	0.9	0.7	
<i>Regulus regulus</i>	2.1	1.8	1.7	3.6	
<i>Sylvia communis</i>	1.9	1.7	1.7	2.1	
<i>Turdus pilaris</i>	1.6	3.4	3.2	2.9	

	1957	1959	1961	Vaasa	Eastern Bothnia
<i>Corvus cornix</i>	1.6	1.4	1.7	0.4	
<i>Phylloscopus collybita</i>	1.5	2.1	1.5	3.6	
<i>Motacilla alba</i>	1.5	2.1	3.7		1.7
<i>Anas platyrhynchos</i>	1.5	0.8	1.9		
<i>Hirundo rustica</i>	1.4	1.6	1.7	2.1	
<i>Iynx torquilla</i>	1.1	1.8	1.9		0.1
<i>Aythya fuligula</i>	1.1	0.8	0.9		
<i>Sylvia atricapilla</i>	(1.1)	(0.3)	(0.8)		
<i>Anthus pratensis</i>	1.1	0.9	0.8	0.7	
<i>Larus canus</i>	1.1	0.5	0.4		
<i>Sterna macrura</i>	1.1	0.5	0.7		
<i>Actitis hypoleucos</i>	0.9	1.9	1.1		
<i>Emberiza schoeniclus</i>	0.9	1.8	1.1		
<i>Phylloscopus sibilatrix</i>	(0.8)	(0.2)	(0.4)		
<i>Bucephala clangula</i>	0.8	1.2	1.2		
<i>Turdus merula</i>	0.8	2.6	1.1		
<i>Gavia arctica</i>	0.7	0.2	0.2		
<i>Cuculus canorus</i>	0.7	1.9	0.7		0.1
<i>Spatula clypeata</i>	0.6	0.3	0.2		
<i>Capella gallinago</i>	0.6	0.9	1.1	1.4	
<i>Tringa totanus</i>	0.6	0.3	0.3		
<i>Columba palumbus</i>	0.6	0.3	0.5	2.1	
<i>Dendrocopos minor</i>	0.6	0.2			
<i>Delichon urbica</i>	0.6	0.9	0.7		
<i>Oenanthe oenanthe</i>	0.6	1.1	2.3	1.4	
<i>Anas crecca</i>	0.5	0.6	0.7		
<i>Mergus merganser</i>	0.5	0.6	1.2		
<i>Certhia familiaris</i>	0.5	0.6	1.2	0.7	
<i>Saxicola rubetra</i>	0.5	0.3	0.5	5.0	
<i>Lanius collurio</i>	0.5	0.6	0.8		
<i>Anas querquedula</i>	0.4				
<i>Melanitta fusca</i>	0.4	0.5	0.9		
<i>Pandion haliaetus</i>	0.4	0.4	0.4		
<i>Arenaria interpres</i>	0.4	0.2	0.1		
<i>Scolopax rusticola</i>	0.4	0.2	0.7		
<i>Apus apus</i>	0.4	0.4	0.2		
<i>Parus caeruleus</i>	0.4	0.5	0.9		
<i>Pyrrhula pyrrhula</i>	0.4	0.9	1.5	0.7	
<i>Loxia curvirostra</i>	0.4	0.4	0.4		
<i>Emberiza hortulana</i>	0.4	0.9	0.5		1.0
<i>Pernis apivorus</i>	0.2	0.4	0.1		
<i>Falco subbuteo</i>	0.2	0.4	0.2		
<i>Lagopus lagopus</i>	0.2	0.2			
<i>Grus grus</i>	0.2	0.2	0.2		
<i>Aegolius funereus</i>	0.2	0.2			
<i>Picoides tridactylus</i>	0.2	0.2	0.1		



tion data for Valassaaret (HILDÉN 1958, 1959) the species which are still migrating can be discerned. At Valassaaret the migration of *Muscicapa striata* is at its maximum on the first June. *Sylvia borin* also migrates very late on the archipelago of Valassaaret, the maximum rate being around the first of June. *Sylvia curruca* is an earlier migratory bird compared with the former species, but even its migration may be prolonged to late June. On the outer shoals at the archipelago of Turku in S.W. Finland migrating *Sylvia curruca* have been seen as late as between 4th and 8th June (TENOVUO 1958).

When examining the densities it can be seen that for many species there is considerable variation. When the species are divided into groups according to the magnitude of the change in the course of the research period, to the first group (change very marked) belong the following species: in 1957—1959 decreased *Sylvia curruca*, *Ficedula hypoleuca*, *Sylvia atricapilla*, *Dendrocopos major* and in 1959—1961 *Sylvia borin*, *Fringilla montifringilla*, *Phoenicurus phoenicurus*, and *Turdus musicus*. To the same group belong also during both intervals *Fringilla coelebs* and *Phylloscopus trochilus*. Those species which have been increasing in number are: *Erithacus rubecula*, *Motacilla alba*, *Capella gallinago*, *Oenanthe oenanthe*, *Mergus serrator*, *Pyrhula pyrrhula*, and *Prunella modularis*. There are also species which were most numerous in 1959, as example: *Turdus pilaris*, *Actitis hypoleucos*, *Turdus merula*, *Cuculus canorus*, *Emberiza schoeniclus*, and *Emberiza hortulana*.

When the present results are compared with those of Merikallio in the region of Vaasa and in Eastern Bothnia, it appears that only in the last year is the density of *Phylloscopus trochilus* the same on Lappören as in Vaasa region. The density of *Emberiza citrinella* is less on Lappören than in Eastern Bothnia, probably because of the lack of open spaces. The density of *Parus atricapillus*, *Regulus regulus*, *Sylvia communis* *Phylloscopus collybita*, and *Saxicola rubetra* is smaller than in the region of Vaasa. It can be concluded that the species typical for spruce forests and for open species are less frequent than usual in E. Bothnia.

Two species common in E. Bothnia, viz. *Parus cristatus* and *Tetrastes bonasia* are lacking on the island. The most probable reason for the lack of *Parus cristatus* on Lappören is the scarcity of pine. According to TENOVUO (1952) in the archipelago of Nauvo in SW-Finland, the occurrence of pine is a condition for the distribution of the Crested Tit on the island.

Before the summer of 1958 *Garrulus glandarius* was not found on

Lappören, although on Björkö this species is common. *Hippolais icterina* is an interesting species for the reason that its number fluctuates considerably annually on the edges of its distribution area. One of the causes of this is the temperature of the spring and early summer (KALELA 1938).

The following are observations on some of the most important species. Available bird observations on Lappören are surprisingly numerous because ornithologists have for a long time been interested in the birdlife on the migratory route over the islets of Valassaaret and Lappören. The earliest observations were made by Mr. T. KULTTI and Mr. NYKVIST. In the springtime the members of the Society of Ostrobothnia australis have made excursions to Lappören and islets of Valassaaret. Mr. G. HELLMAN has recorded the observations made during excursions and kindly put them at my disposal.

*Gavia stellata*. The species was found nesting on the island as late as in 1948 (KULTTI, oral comm.). During the research period every year the only pair nested on Säaskilampi. It was exceptional in 1957, that this species and Osprey nested close together, the latter having its nest in a pine growing on the edge of the pond.

*Podiceps auritus*. As recorded by KULTTI (oral. comm.) the species nested as early as 1930's on the island. In 1959 there was another pair nesting on the island. In 1961 there were two pairs.

*Podiceps griseigena*. The Red Necked Grebe was found on Lappören for the first time in 1957, when the species was found nesting on the eastern shore of Brunnen. In the years 1958 and 1959 the species nested on the same pond.

*Ardea cinerea*. In 1949 (KULTTI, oral comm.) a Heron was found fishing on a bay on the western shore of the island. The following year on 29th May the species was found on the island again. At the same time a thick layer of reeds appeared in an old Osprey's nest on the shore of Pyöreälampi. Shortly thereafter the bird disappeared from the island and has not been seen since.

*Anas querquedula*. In 1957 3 pairs of Garganeys nested on the pond on the north-east end of the island. The species has not been seen before or since. It has been noted (MERIKALLIO 1958) that there is a great fluctuation in the densities of Garganey at the edges of its distribution area.

*Aythya ferina*. The Pochard was already nesting on the island in the late 1940's (KULTTI, oral comm.). In 1957 only one pair nested, but later there were three pairs.

*Clangula hyemalis*. The Long-tailed Duck has not been seen during migration time. In June 1961 two birds was seen on the west coast. The birds stayed there about two weeks.

*Anser anser*. This species is rarely seen during migration time on the islets of Valassaaret (HILDÉN 1958) and on Lappören. On 2nd June 1961 2 Grey-lag Geese flew over the island towards NE.

*Aquila clanga*. The Spotted Eagle was often seen on the island in the 1930's (KULTTI, oral comm.). In the same decade in the archipelago of Vaasa there were several breeding pairs (MERIKALLIO 1958). Later the species disappeared from the archipelago. 3rd June 1961 one Eagle was seen over Lappören.

*Milvus migrans*. On 15th May 1957 a migrating Black Kite was seen over Lappören (HELLMAN 1958). On 5th June 1961 one Black Kite flew towards the islets of Valassaaret.

*Haliaetus albicilla*. The Sea Eagle is one of the birds that nest on the island though the nesting takes place every other year or more rarely. The nesting places have varied from the roof of a barn to pines and aspens (KLOCKARS 1956). In 1959 a pair nested in an aspen near Sääskilampi and raised one fledgling. In 1961 a pair nested in an old Osprey's nest on the top of a spruce. The old birds stay on the island during the winter as well.

*Pandion haliaetus*. It has been confirmed that the Osprey nested on the island in the beginning of this century (NYKVIST, oral comm.) and at least in the 1930's the number of pairs was 3 as it is nowadays. The great density of Ospreys has been affected by the fact that Mr Nykvist has broken the tops of some spruces and the branches have grown sideways and then upwards thus forming a suitable base for the building of a nest. That these places are favoured is shown by the fact that 5 old and new nests are situated on the bases thus formed.

*Falco columbarius*. In 1953 a pair of Merlin nested on a spruce near Brunnen (KULTTI, oral comm.).

*Falco subbuteo*. There have been 2 to 3 pairs of Hobbys nesting on the island.

*Falco tinnunculus*. In the summer of 1957 a pair of Kestrel nested on Änterskär. In the same year rodents were very common in the archipelago.

*Grus grus*. The Crane is a regular nesting bird on the island. One pair breeds near the ponds of northern side of the island and the other breeds on the south end.

*Vanellus vanellus*. In 1932 2 pairs of Lapwing nested on Suoniitty and during the following years the number of nesting pairs was 3 (KULTTI, oral comm.). In the 1940's the species disappeared from the island and reappeared as a nesting bird in 1959, when both on Suoniitty and Eteläniitty there were one pair nesting. In 1961 there were three pairs.

*Larus argentatus*. The Herring Gull is not now one of the nesting birds. Earlier there were some nests of Herring Gull on the big stones in swamps and ponds on the island (KULTTI, oral comm.). In 1949 30th June there were one nesting pair (HILDÉN, unpublished).

*Larus ridibundus*. In the 1930's there was a colony of 20–30 pairs of Blackheaded Gulls on Suoniitty (KULTTI, oral comm.) They vanished from the island at the end of the same decade. In 1948 on one shoal on the western coast there was a colony of 25 pairs (BÄCK, oral comm.). Since there the species has not been among the nesting birds on the island.

*Bubo bubo*. The Eagle Owl was earlier a regular nesting bird on the island. The last time the species nested there in 1957. There was a nest with 2 eggs on 17th May (HELLMAN, unpublished). The species has not nested since that year, but there is at least one Eagle Owl still on the island.

*Surnia ulula*. In 1958 the nest of a Hawk Owl was found (ROSELUS, unpublished). At the end of May there was 4 young. Since that year there have been some vagrants on the island.

*Aegolius funereus*. In 1957 and 1959 there were two nesting pairs but in 1961 there were no birds.

*Asio flammeus*. The Short-eared Owl is a common vagrant during the summer on the island and on the neighbouring shoals.

*Dendrocopos major*. The Great-spotted Woodpecker is one of those species the number of which fluctuates considerably. In 1957 44 nesting pairs were counted. During the winter bird census on the 1st January there were 82 individuals counted on the island. The following summer the number was perhaps as great as the summer before, but in the autumn a migration towards the islets of Valassaaret began and during the winter all the birds either migrated or died so that in 1959 there were only 7 pairs. In 1961 there were 14 pairs.

*Dendrocopos minor*. The number of Small-spotted Woodpecker has decreased from 5 in 1957 to 2 in 1959. On the last counting year there were no pairs.

*Dendrocopos leucotos*. The White-backed Woodpecker was not found on the island before 1961, when there were 2 pairs. One of the nests was situated in an aspen and at the beginning of June there were big young.

*Oriolus oriolus*. On 25th May the whistling of the Golden Oriole was heard on Lappören (KULTTI, oral comm.). On 8th June 1956 a Golden Oriole was seen flying overhead on the shore of Kuikkalampi. On 2nd June 1961 a young male was seen on the west coast.

*Locustella fluviatilis*. On 27th June 1958 the song of the River Warbler was heard on the west coast in a rich grove. The singer stayed there until the end of the same month.

*Aerocephalus palustris*. On 4th June 1961 the March Warbler sang on the north-east coast of the island.

*Aerocephalus schoenobaenus*. This species was found for the first time as a nesting bird in 1961. There were 2 pairs.

*Hippolais icterina*. The Icterina Warbler nested only in the summer of 1957 on Lappören. There were then 2 pairs, the one in the grove near Suoniitty and the other in the grove on the north end of Isoniitty.

*Sylvia atricapilla*. In 1950 there was only one pair of Blackcap on Lappören (KULTTI, unpublished.) During the bird counting the numbers of pairs have been 9, 3 and 7 respectively and some vagrants. The species prefers the groves around Brunnen.

*Phylloscopus trochiloides*. On 1st June 1961 the song of the Greenish Warbler was heard on the western coast. It was an unpaired male.

*Phylloscopus sibilatrix*. The Wood Warbler was already one of the nesting birds on the island in the 1930's (KULTTI, oral comm.). During the census the number of pairs has been 7, 2, and 4.

*Prunella modularis*. The number of Hedge Sparrow has increased each year and the same has also been true on the neighbouring islands, according to my observations. The number of pairs has been 1, 2, and 9. The most favoured area was the area around the northern ponds.

*Bombycilla garrulus*. The Waxwing was one of the nesting birds in 1957. In 1956 on 13th July there was 2 birds on Lappören (HILDÉN 1958). Every summer I have seen some non-nesting birds in June on Lappören.

*Carpodacus erythrinus*. On 6th June 1961 on the western coast the whistling of the Scarlet Grosbeak was heard.

*Loxia leucoptera*. A Two-barred Crossbill was seen on Lappören in a snowstorm on 3rd February 1957.

*Emberiza hortulana*. The year 1959 seems to have been very favourable for this species, because there were twice as many Ortolan Buntings than during the other counting years. An extraordinary phenomenon was the fact that two pairs had settled on two points on the west coast, where the trees are scattered and the undervegetation consists of *Juniperus communis*, *Empetrum nigrum*, *Vaccinium myrtillus* etc.

*Emberiza rustica*. On 26th May 1951 the Rustic Bunting was seen on the south coast (KLOCKARS, unpublished).

### Summary and conclusions

During the summers 1957, 1959, and 1961 censuses of the total bird population of the uninhabited island Lappören on the Finnish west

coast were performed. The area was divided into small squares linked by means of terrain marks. Thus formed areas were counted along parallel lines. The size of the island (c. 8.5 km<sup>2</sup>) and the occurrence of many various habitats makes the method used the most suitable for the census of the total bird population of the island.

The present results show the great qualitative and quantitative differences in the bird population of the island between different years of census.

Both landbirds entirely representative for the mainland and species characteristic to the outer islets e.g. *Arenaria interpres*, *Mergus serretor* and *Tringa totanus* are found here. The birds of prey are very numerous both species and individuals. Because of the luxuriant vegetation of the island such southern species as *Phylloscopus sibilatrix* and *Sylvia atricapilla* nest on the island although these species are not seen in corresponding places on the nearby mainland.

Very numerous are in hollow trees nesting birds such as Woodpeckers, Owls, Goldeneyes etc.

The relatively isolated position of this uninhabited island makes it possible for such species as *Haliaetus albicilla*, *Pandion haliaetus* and *Bubo bubo* to nest there undisturbed.

A general observation made on basis of the present material is that there have been fewer birds during the last year than during the earlier census years. The eight most frequent species have decreased sharply. On the other hand there are seven species which have become more numerous. This however influences but little the change observed in the totality of the nesting birds.

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### Selostus: **Kvantitatiivinen lintulaskenta Lappören-saarella Merenkurkussa.**

Kesinä 1957, 1959 ja 1961 suoritettiin kvantitatiivinen lintulaskenta Lappören-saarella. Saari on asumaton ja 83 %:sti metsän peittämä. Alue jaettiin pieniin ruutuihin maasto-merkkejä, kuten lampia, niittyjä ja soita hyväksi käyttäen. Ruudut takseerattiin yhden-suuntaisia linjoja kulkien, jotka olivat 25—75 metrin etäisyydellä toisistaan. Kunakin laskentavuonna suoritettiin laskenta vain kerran kesäkuun alusta kesäkuun loppuun samalla menetelmällä. Tulokset osoittavat suurehkoja sekä kvalitatiivisia ja kvantitatiivisia eroja. Saarella esiintyy tyypillisiä maalintuja ja aitoja ulkokarien lajeja kuten karikukko, lapa-sotka ja punajalkaviklo. Saaren suhteellisen eristetty asema ja asumattomuus tekevät mahdolliseksi sen, että nykyisin harvinaiset petolinnut, kuten merikotka, huuhkaja ja kolme paria kalasääskiä pesivät säännöllisesti. Koska alue on säästynyt metsähakkuilta on kolopuiden runsaus tehnyt mahdolliseksi kolopuiden runsaan pesimisen tällä saarella.

## ***Calidris*-, *Crocethia*- ja *Limicola*- lajien muutto Porin edustalla vv. 1951-60**

ILKKA LILJA

Porin rannikko ja varsinkin Yyteri pitkin hiekka- ja lieterantoinen on tunnettu kahlaajien muuton vilkkaudesta. Jo 1927 ilmestyi kaksi alueen linnustoa käsittelevää tutkimusta: E. W. SUOMALAISEN »Kokemäenjoen laakson ja läheisen merenrannikon linnusto» sekä I. HORTLINGIN »Das Vogelleben bei Ytterö». Sen jälkeen ei ole julkaistu laajempaa esitystä kahlaajien muutosta eräitä tiedonantoja lukuun ottamatta, vaikka Yyteri yhä kasvavassa määrin on ollut maamme ornitologien mielenkiinnon kohteena.

Seuraavaa esitystä laatiessani olen käyttänyt runkona omia vv. 1951—60 tekemiäni retkimuistiinpanoja. Lisäksi ovat kuivaamoi-