

## Brief reports · Tiedonantoja

### The bird community of an abandoned field

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The number of abandoned fields in Finland increased rapidly with the Field Reservation Act of 1969, the purpose of which was to stop over-production in agriculture. By 1975, the area of the reserved fields amounted to 182 000 hectares or 8 % of the cultivated area.

Most of the abandoned fields are left without management (Hokkanen 1979), and the secondary succession is thus undisturbed.

The ecosystem of an abandoned field (Ruoke, 62°14', 25°36') near the city of Jyväskylä has been investigated intensively since 1973 (Törmälä 1982). The field has open ditches and is bordered by a lake and mature *Myrtillus*-type forest. The census area was 4.1 ha, as the southern part of the field was not included. The field was established in the 1920s, and has lain uncultivated since 1969. Part of the field (*b*) was mown in 1978; on the other part (*a*) the vegetation in the ditches was cut in 1973 and thinned in 1981, when only birches and spruces were left uncut.

In 1979, when the censuses were initiated, the bushes grew mainly along the ditches. Gradually the willows spread to the strips, and by 1983 they formed patchy thickets. The bushes cut in part *a* in late summer of 1981 grew up again very rapidly. In 1983 the height of the willows (mainly *Salix phylicifolia*) averaged about 2.5 m, and the tallest birches were about 6 m. Slow-growing spruces (by 1983 less than 0.8 m) have occurred in the ditches throughout the census period.

The vegetation of the field layer has been monitored since 1973 (Törmälä & Raatikainen 1976, Törmälä 1982). Since 1979 the proportion of large forbs (*Filipendula ulmaria*, *Geranium sylvaticum*, *Chamaenerion angustifolium*) has increased, while that of the grasses (*Deschampsia cespitosa*, *Agrostis capillaris*, *Poa pratensis*) has decreased.

The bird community of the field was censused between 18 and 24 June from 1979 through 1983 as a part of the ecology course at the University of Jyväskylä. First 10–25 persons walked in a chain along the strips trying to chase the adult birds from the nests by sweeping the bushes and herbs with long, slender sticks. All observations were marked on a map and also on the field, using colourful plastic bands. The birds were then observed through telescopes and binoculars in order to locate the territories and to find the nests. The bushes and spruces in the ditches were searched systematically for nests.

As the vegetation became denser, decreasing visibility and making it more difficult to find the nests, the annual census effort was gradually increased from 120 to 260 man hours (30 to 63 hours per ha). In all 51 nests were found, the finds of nests (or recently fledged broods) amounting to 39–89 % ( $\bar{x} = 0.64$  %) of the estimated number of breeding pairs.

In 1982 and 1983 the census was complemented by trapping the birds with mist nets. The birds caught were sexed, aged and banded with standard aluminium rings. Ten nets were used in both years, and the netting hours amounted to 80 in 1982 and 50 in 1983. The number of individuals trapped was 36 in 1982 and 17 in 1983. The number of breeding pairs was judged by combining the data from nest finds, territory mapping and trapping.

The number of pairs increased almost linearly during the census period ( $r = .98$ ,  $P < .01$ ), while the number of species remained relatively stable during the last three years (Table 1).

Species that increased in numbers were *Phylloscopus trochilus*, *Turdus iliacus*, *Sylvia borin*, *Carpodacus erythrinus*, *Acrocephalus schoenobaenus* and *Emberiza schoeniclus*, while *Motacilla flava* was not present during the last two seasons. *Saxicola rubetra* occurred in low numbers throughout the study period.

The bird density in Ruoke, especially in 1982 and 1983, was much higher than in abandoned fields in general. The mean density for abandoned fields of variable successional age (1–12 years) was only 6 pairs/10 ha (Törmälä 1982), which is less than a tenth of the density in Ruoke. Even in the most productive forest types of the region the bird densities are lower than in Ruoke (Helminen & Väisänen 1980).

How can the richness of the bird community in Ruoke be explained? The efficiency of the census method and effort was probably high. For practical reasons, the time spent per hectare in most censuses is considerably shorter (e.g. Järvinen & Väisänen 1976, Enemar et al. 1976, Törmälä 1980), which results in at least slight underestimates.

The vertical structure of the habitat was relatively simple; e.g. there was no real tree layer. The field was fairly heterogeneous, however; open areas alternated with dense scrubby areas, because the succession proceeded at an uneven rate. Of the species that require at least a semi-open habitat, only *Motacilla flava* had disappeared, while many species that require partly

Table 1. The breeding bird community of the 4.1-ha abandoned field in 1979–1983.

Species	No. of pairs				
	1979	1980	1981	1982	1983
<i>Anas crecca</i>	—	—	—	1	—
<i>Gallinago gallinago</i>	1	—	2	2	1
<i>Actitis hypoleucos</i>	—	—	1	1	—
<i>Turdus iliacus</i>	—	—	1	1	2
<i>Saxicola rubetra</i>	2	2	1	2	1
<i>Acrocephalus schoenobaenus</i>	1	1	1	4	6
<i>Sylvia borin</i>	—	—	1	2	3
<i>S. communis</i>	—	1	1	1	1
<i>Phylloscopus trochilus</i>	—	—	3	5	5
<i>Prunella modularis</i>	—	1	1	1	1
<i>Motacilla flava</i>	—	1	1	—	—
<i>Lanius collurio</i>	—	—	—	—	1
<i>Carpodacus erythrinus</i>	1	1	3	5	7
<i>Emberiza schoeniclus</i>	2	2	2	3	5
Total no. of pairs	7	9	18	28	33
Density (pairs/10 ha)	17	22	43	67	80
No. of species	5	7	12	12	11

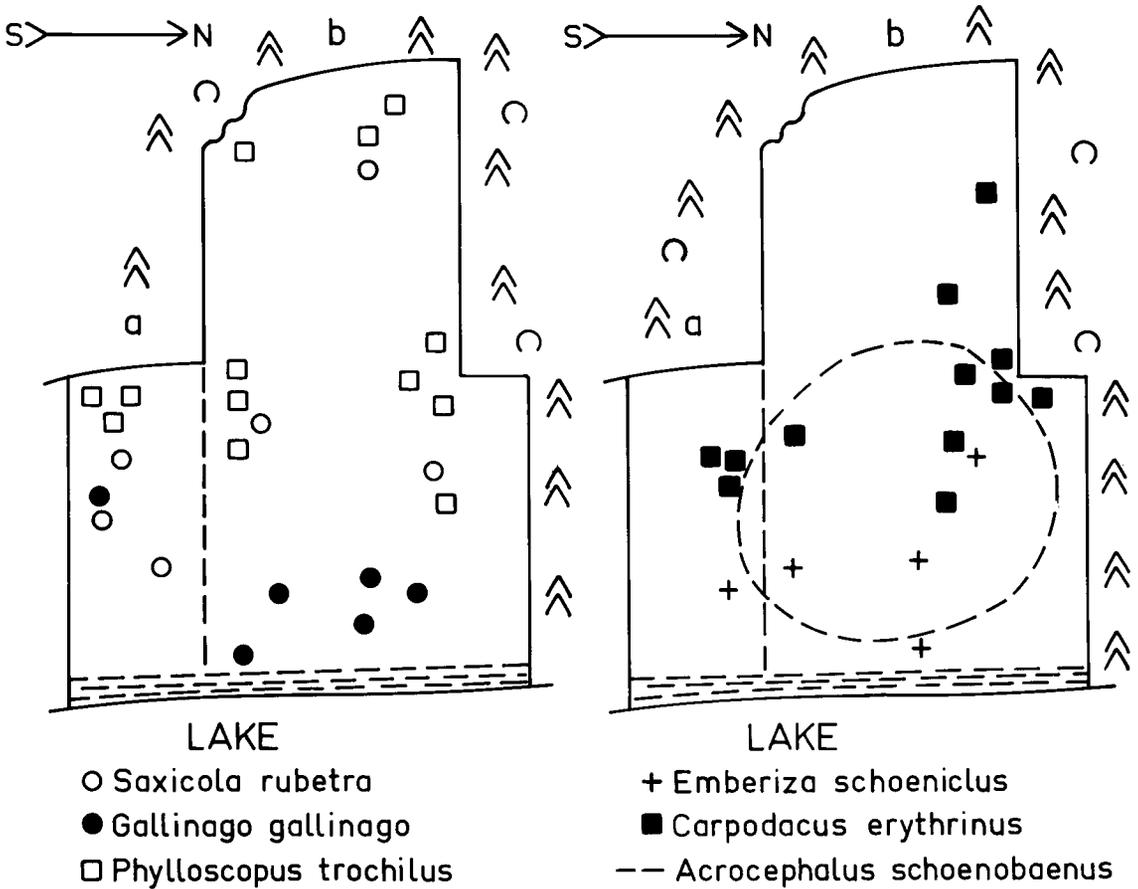


Fig. 1. Nest sites of some common species in the abandoned field in 1979–83. The dashed line describes the combined ranges of the sedge warblers. *a* and *b* refer to the management of the field (see text).

closed vegetation had been able to invade the field. The gradient from the drier west to the moister east part of the field enabled the co-existence of many species that normally do not co-occur in more uniform fields. *Gallinago gallinago* and *Emberiza schoeniclus* nested and foraged in the lower part of the field, and *Saxicola rubetra*, *Phylloscopus trochilus* and *Carpodacus erythrinus* preferred the drier part (Fig. 1). Only two nests of *Acrocephalus schoeniclus* were found, but the territories could be roughly estimated by observation and trapping, and it seemed that *Acrocephalus* avoided the driest part of the field.

The field offered nest sites in abundance. Small spruces partly covered with bushes were ideal sites for *Prunella modularis* and *Carpodacus erythrinus* (v. Haartman 1969, Stjernberg 1979). The flourishing herbaceous vegetation also provided excellent cover for the species that nest on or close to the ground.

The edge effect (Helle & Helle 1982) obviously contributed to the richness of the bird community, too. The territories of e.g. *Prunella modularis*, *Phylloscopus trochilus* and *Carpodacus erythrinus* included the edge of the forest. Tiainen et al. (1983) observed an increase in the density of *Phylloscopus trochilus* with an increasing amount of edges. *Prunella* used the spruces at the forest edge as singing posts, but occasionally also sang in the field.

*Emberiza schoeniclus* and *Gallinago gallinago* obviously benefited from the shore-field transition zone.

The niches of the passerines in the field were partly separated spatially by the moisture gradient. The bigger passerines (*Turdus iliacus* and *Lanius collurio*) probably did not compete with the smaller species. *Carpodacus* is mainly herbivorous (Stjernberg 1979). The food resources for insectivorous birds were abundant. Indeed, the biomass of the invertebrates of the vegetation and soil in Ruoke was among the highest measured in the temperate zone (Törmälä 1979, 1982), and nothing suggested severe competition for food during the breeding season.

The increase in bird densities cannot continue very long, and the bird community will probably become poorer as the bushy vegetation closes up and forms a uniform thicket.

#### Selostus: Keskiuomalaisen pakettipellon linnustosta

Jyväskylän lähellä sijaitsevan rehevän, vuonna 1969 paketoitun pellon linnusto on takseerattu vuosina 1979–83. Noin 4 hehtaarin laskenta-alueetta rajoittavat mustikatyyppin metsä ja järven ranta.

Parimäärän selvittämiseksi lintujen liikkuma-alueet kartoitettiin ja niiden pesiä etsittiin intensiivisesti. Kahden viimeisenä vuonna lintuja pyydettiin myös verkoilla.

Tutkimusjakson aikana linnuston parimäärä kasvoi voimakkaasti (taul. 1). Pensoittumisen myötä varsinkin pajulintu, punavarpunen, ruokokerttunen ja punakylkistarastat runsastuivat.

Linnuston korkeaan parimäärään (v. 1983 noin 80 paria/10 ha) vaikuttavat useat tekijät. Käytetty laskentamenetelmä oli tehokas. Kosteusgradientin vuoksi pellolla esiintyi sekä kuivaa että kosteaa ympäristöä suosivia lajeja (kuva 1). Esimerkiksi rannan läheisyys selittää pajusirkun ja taivaanvuohen runsauden. Pensaikko oli vielä 1983 varsin laikuttaista, ja aukkoisuutta vaativat lajitkin viihtyivät pelloilla. Monien lajien liikkuma-alue käsitti peltoa rajoittavan metsän reuna-alueita. Ojissa kasvavat kuuset ja rehevät pensaikko ja ruohokasvillisuus tarjosivat suojaisia pesäpaikkoja. Lisäksi pellolla oli erittäin runsaasti ravintoa hyönteissyöjälinnuille.

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## Adoption of a brood of Temminck's Stint *Calidris temminckii* by the Dunlin *Calidris alpina*

Torgrim Breiehagen

In waders interspecific adoption of young has been reported in only three instances in the wild: a Redshank *Tringa totanus* was observed brooding a single chick of the Common Snipe *Gallinago gallinago* (Hildén 1977), a male Spotted Redshank *Tringa erythropus* adopted 2 chicks of the Ruff *Philomachus pugnax* (later abandoned; Grobe 1977) and an incubating Redshank was seen accidentally brooding two young Avocets *Recurvirostra avosetta* in the nest (Håkansson 1978). In captivity, a pair of Black-winged Stilts *Himantopus himantopus* attempted to adopt chicks of the Ruff after they had lost two of their own chicks (Brunnering in Glutz *et al.* 1977).

A colour-ringed population of Temminck's Stint was studied in 1980 in the north-western part of the mountain plateau Hardangervidda (60°37'N—7°30'E), South Norway, at an altitude of about 1200 m. In July I discovered a brood of 4 young of Temminck's Stint adopted by a male Dunlin.

When found on 11 July, the brood was individually colour-marked, and aged with the aid of a growth curve (Breiehagen, unpubl.). The hatching date was estimated to be 8 July. A male Temminck's Stint was seen flying nervously over the brood, but disappeared later. The male Dunlin brooded the chicks during the next few days, but later was merely seen nearby, giving warning calls when I came near the site where the brood was supposed to be. The Dunlin adopted the Temminck's

Stint brood permanently and on 27 July I saw one of the fledglings near the place where the brood had been first located.

I found the Temminck's Stint brood near a feeding place of waders, where 5—7 Dunlins normally fed. The nearest Dunlin nest under incubation was about 150 m away. One possible explanation of the adoption is that a feeding male Dunlin had reacted to the discomfort calls of the Temminck's Stint chicks, which were also feeding in the area. Dunlins tend to brood foreign conspecific young (e.g. Soikkeli 1967). The similarity of the discomfort call in many waders possibly explains the interspecific adoption. The colouration of the chick plumage is apparently not very important in accidental adoptions (Hildén 1977). In this case the chicks' plumage closely resembled that of Dunlin chicks and it is uncertain which stimulus was the more significant. The adoption experiments performed by Rittinghaus (in Glutz *et al.* 1975) with the Ringed Plover *Charadrius hiaticula* and Kentish Plover *Charadrius alexandrinus* demonstrated that the chicks very quickly learn the warning call of the adoptive parents.

### Selostus: Suosirri adoptoi lapinsirripoikueen

Kirjoittaja havaitsi heinäkuussa 1980 Etelä-Norjassa,