

selection of the site would only seem to be in terms of the final few inches.

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The numbers of waterfowl in Estonia

SVEN ONNO

Institute of Zoology and Botany, Academy of Sciences of the Estonian S.S.R.

Summary

About 27,000 pairs of ducks of 14 species, 500 pairs of Greylag Geese and 10 pairs of Mute Swans have bred annually in Estonia in recent years. Mallard (10,000 pairs) are most numerous, though they and Velvet Scoters (1,100) and Pochard (400) are decreasing. Eiders (3,500 pairs), Shoveler (2,500) and Scaup (90) are increasing. Much larger numbers occur on passage in spring and autumn, including over a million Long-tailed Ducks and Velvet and Common Scoters, over 100,000 Bean Geese and over 50,000 Whooper Swans. Few wildfowl winter, 3,000 Mallard being the most plentiful.

Introduction

The intensive ornithological research of the last ten years may now be summed up to furnish provisional data on the numerical strength of the waterfowl in Estonia.

Counts of local breeders have been taken in a number of Estonian habitats. The most accurate returns we possess cover the bird population nesting in the archipelago. Estonia possesses nearly 800 small islands with a surface area not exceeding 100 hectares (250 acres), of which the majority are densely populated. Ornithological researches of a more detailed character have been carried out in the four areas where the population is densest. Together they contain some 180 islets, sandbanks, etc. (Figure 1). In each of these areas counts have been taken in from two to six years in the course of the past decade

(Table I), and the nests of most of the local breeding ducks have been traced.

The data for the littoral are less complete. At least two-thirds of the Estonian coast, that extends for about 3,400 kms (2,100 miles), are uncongenial as a breeding ground for the majority of the geese and ducks, which exhibit a marked preference for the deeply indented shores of the numerous coastal lakes and those sectors of the western seaboard and the south coast of Saaremaa Is., where coves, inlets and bays are thickest. Counts of the waterfowl in these regions were mainly taken along chosen routes during the nesting season. But more exact figures are available for the ducks in the Matsalu National Park, where most of the nests in a number of sample areas were traced and charted. The information obtained was sufficiently re-

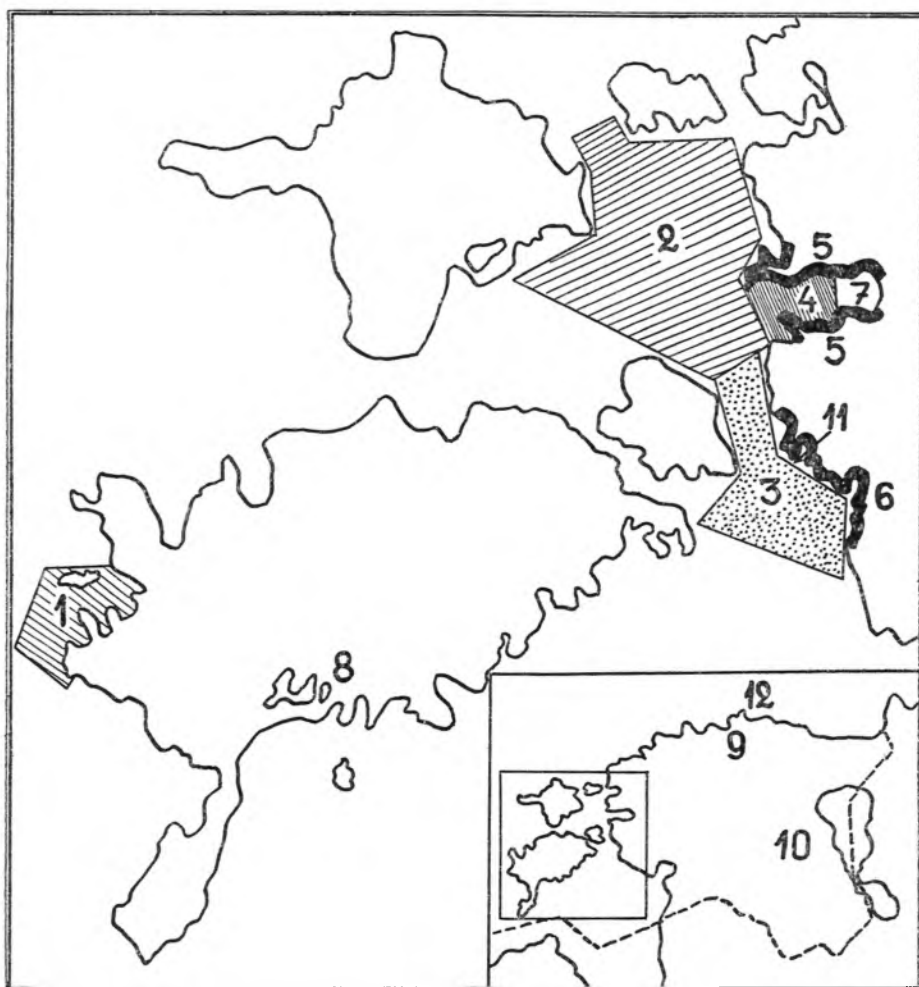


Figure 1. The Estonian SSR – I maritime islands covered by ornithological research: 1. Vilsandi and environs. 2. The Väinameri (Muhi Sound). 3. The Suur Väin (Great Sound). 4. Matsalu Bay. II Investigated sectors of the littoral: 5. Matsalu National Park. 6. Environs of Puhtu Bird Station. III Bays and coastal lakes rich in vegetation 7. Matsalu Bay, 8. L. Linnulaht, 9. L. Kahala, 10. L. Soitsjärv. IV Counts of migratory ducks: 11. Puhtu, 12. Viinistu.

presentative to justify the use of correction coefficients to calculate population densities. Apart from Matsalu, where counts have been made every year, beginning from 1957, a number of other short stretches of the coast have been similarly dealt with from time to time (see Figure 1 and Table II).

There are about 1,100 lakes in Estonia with a surface area exceeding one hectare. Most of them are oligotrophic and sparsely vegetated, with the result that they are unable to support any considerable population of waterfowl. On the other hand we have about 50 eutrophic lakes, and about the same number of bays, inlets and coastal

lakes that merge with the sea at high water. These have dense breeding populations, and most of our lacustrine and maritime ducks are concentrated here. The largest of the bays is Matsalu, with about 2,000 hectares (5,000 acres) of reed beds, where the bird population has been calculated with reasonable accuracy over a number of years. At the same time we have data for the breeding populations of most of the so-called Estonian 'bird-lakes' in certain years. The larger and better known of them are marked in Figure 1, and a few indications concerning the predominant species will be found in Table III.

Only approximate figures can be given

Table I. The population of breeding geese and ducks on the smaller maritime islands of Estonia

	<i>Environs of Vilsandi</i>	<i>Väinameri (Muhu Sound)</i>	<i>Suur Väin (Great Sound)</i>	<i>Matsalu Bay</i>
number of islands	50	70	50	10
<i>Somateria mollissima</i>	2500	450	5	—
<i>Aythya fuligula</i>	5	220	300	80
<i>Melanitta fusca</i>	150	250	100	—
<i>Anas clypeata</i>	50	110	150	35
<i>Mergus merganser</i>	150	130	10	5
<i>Anas platyrhynchos</i>	50	90	90	40
<i>Anser anser</i>	120	40	5	15
<i>Mergus serrator</i>	60	80	25	2
<i>Anas querquedula</i>	5	35	30	20
<i>Anas acuta</i>	10	15	15	2
<i>Aythya marila</i>	50	5	5	1
<i>Tadorna tadorna</i>	20	30	5	—
<i>Anas crecca</i>	5	10	10	—
<i>Aythya ferina</i>	—	—	5	1
<i>Anas strepera</i>	—	—	—	2

Table II. The population of breeding geese and ducks on the most suitable stretch of the Estonian shore

	<i>Matsalu National Park (120 kms.)</i>	<i>Puhtu Bird Station and environs (30 kms.)</i>
<i>Anas platyrhynchos</i>	165	20
<i>Anas clypeata</i>	160	20
<i>Mergus merganser</i>	55	50
<i>Anas querquedula</i>	160	10
<i>Melanitta fusca</i>	2	70
<i>Aythya fuligula</i>	2	15
<i>Anas crecca</i>	—	5
<i>Anas acuta</i>	35	1
<i>Mergus serrator</i>	—	—
<i>Tadorna tadorna</i>	2	1
<i>Anser anser</i>	5	3
<i>Somateria mollissima</i>	—	—

Tables III. Ducks and geese breeding in richly vegetated biotopes (coves, bays, coastal lakes) near the Estonian coast

	<i>Reed-beds in Matsalu Bay</i>	<i>L. Linnulaht</i>	<i>L. Kahala</i>	<i>L. Soitsjärv</i>
area (in hectares)	2000	117	345	223
<i>Aythya fuligula</i>	—	50	70	15
<i>Anas platyrhynchos</i>	250	10	5	5
<i>Aythya ferina</i>	150	25	3	15
<i>Anser anser</i>	170	2	—	—
<i>Anas querquedula</i>	—	10	2	3
<i>Anas clypeata</i>	—	10	4	1
<i>Anas crecca</i>	—	2	1	1
<i>Melanitta fusca</i>	—	5	5	—
<i>Mergus serrator</i>	—	2	—	—
<i>Aythya marila</i>	—	3	—	—
<i>Cygnus olor</i>	2	—	—	—
<i>Anas acuta</i>	2	—	—	—
<i>Mergus merganser</i>	5	—	—	—
<i>Anas strepera</i>	2	—	—	—

for the numbers of breeding ducks in the remaining habitats, though the data for the peatbogs and about 100 of the bigger lakes may be regarded as fairly satisfactory. Elsewhere we can piece together little more than a fragmentary picture, in spite of the small size of the local nesting communities. As for the lakes and bogs investigated, no more than 17, or at the most 18, of the 35 species of geese and ducks (with 37 subspecies) found in Estonia can be shown to breed here. Approximate numbers giving a rough idea of the distribution of the breeding geese and ducks in the above-mentioned groups of biotopes are given in Table IV. In presenting the data, the figures, wherever possible, cover the past ten years. However, it should be borne in mind that important modifications are at present taking place in the numbers of several local breeding species. The Eider, and probably also the Scaup, shows a marked upward trend. The numbers of Shovelers have persistently risen during the last two decades. In recent years some species, such as the Mute Swan and Gadwall, have shown a tendency to expand over Estonian territory. On the other hand the numbers of Mallard, Velvet Scoters and Greylag Geese are steadily diminishing. The Pochard, which between ten and twenty years ago was rapidly increasing as a local breeder in Estonia, has during the last decade entered on a new decline.

As for the migratory geese and ducks which appear in Estonia as birds of passage only, 26 species have been recorded in transit. These are shown in Table V, arranged more or less in order of numerical strength.

During the last ten years the regular observations carried out at a number of points on Estonian territory during the autumn flight have produced abundant data for the numbers of migratory geese and ducks. Of particular interest are the results obtained at Puhtu and some of the observation posts along the north coast (Figure 1). For several years counts have been taken of the diving-ducks passing Puhtu in the spring, and of the ducks and geese halting to rest in the Matsalu National Park. The total strength of the migration is rather difficult to determine in the case of the surface-feeding ducks, which move mainly at night. All we have to go by here are the results of daytime counts taken at the more popular halting-places. The data for these species, therefore, represent no more than an approximate estimate.

With these reservations we may now proceed to sketch in a broad statistical

outline of the migration. The average figures for the spring flight at the Puhtu Bird Station are as follows: Long-tailed Ducks 300,000, Common Scoters 200,000, and Velvet Scoters 150,000. On 20th April, 1957, counts taken in the central part of Matsalu Bay yielded 40,000 Whooper and Bewick's Swans, 30,000 Goldeneyes, 20,000 Mallards, 12,000 Pintails, 10,000 Tufted Ducks, 9,000 Wigeon, 8,000 Scaups, 1,000 Shovelers and 800 Goosanders.

The autumn flight, observed at Viinistu on the north coast in 1960 and 1962 (16th September to 15th October), gave the following averages: Long-tailed Ducks 400,000, Velvet Scoters 23,000, Common Scoters 16,000, Wigeon 6,000, Scaups 6,000 and Brent Geese 4,000 (data supplied by A. Jogi). The 1957 figures for Puhtu and its immediate environs during the same period were: Long-tailed Ducks 100,000, Velvet Scoters 17,000, Scaups 12,000 and Common Scoters 10,000.

The Long-tailed Duck and the Velvet and Common Scoters are mainly concentrated along a narrow route closely following the littoral, and muster in huge flocks on the north-western coast. Most of the birds keep to the west of the islands, though a considerable channel of the spring migration flows down the straits separating the islands from the mainland. Only a few individuals prefer to strike overland in the direction of Lake Peipsi (Peipus). Other species that cling to the seashore are the White-fronted and the Lesser White-fronted Goose, and the Barnacle and Brent Goose, the last of which is rarely met with outside the north-western coastal area. The other birds may be observed in almost any part of the country, while the Smew actually occurs most frequently in the region of Lake Peipsi.

In the last few years a special network of observers has taken counts of wintering ducks in Estonia. The most populous of these is the Long-tailed Duck, which may be seen flocking in tens of thousands in the open sea. Other prominent wintering ducks are the Goldeneye and Velvet Scoter. The Goosander, Eider and Red-breasted Merganser are somewhat less numerous. The Smew, Scaup, Tufted Duck and Common Scoter rarely winter in Estonia. When the weather is mild the Whooper Swan, and of recent years the Mute Swan also, may occasionally be met with on the seaboard.

The commonest duck wintering inland is the Mallard, of which about 3,000 individuals linger in the vicinity of the ice-free streams and watercourses, where they are accompanied by a few solitary specimens of the Teal and Bean Goose.

Table IV. The numbers of geese and ducks nesting in Estonia

	Small maritime islands	Coastal area open shore	bays & lakes	Other biotopes	Total of breeding pairs	Recent changes
<i>Anas platyrhynchos</i>	3	4	4	4	10,000+	decreasing
<i>Somateria mollissima</i>	4	1	—	—	3500	increasing
<i>Aythya fuligula</i>	4	2	4	1	3000	
<i>Anas clypeata</i>	4	4	2	—	2500	increasing
<i>Anas crecca</i>	2	2	1	4	2000	
<i>Anas querquedula</i>	2	4	3	2	2000	
<i>Mergus merganser</i>	3	4	1	—	1200	
<i>Melanitta fusca</i>	4	3	1	—	1100	decreasing
<i>Anser anser</i>	3	1	3	—	500	decreasing
<i>Aythya ferina</i>	1	—	3	—	400	decreasing after increase
<i>Mergus serrator</i>	3	2	1	—	400	
<i>Anas acuta</i>	2	3	1	1	350	
<i>Tadorna tadorna</i>	2	2	—	—	150	
<i>Aythya marila</i>	2	—	1	—	90	increasing
<i>Bucephala clangula</i>	—	—	—	2	50	
<i>Cygnus olor</i>	—	—	1	—	10	increasing
<i>Anas strepera</i>	1	—	1	—	5	
<i>Anas penelope</i>	—	—	—	1?	?	

4 = numerous (over 500 breeding pairs); 3 = common (100–500 breeding pairs); 2 = scanty (25–100 breeding pairs); 1 = a few solitary individuals (less than 25 breeding pairs).

Table V. Strength of the passage of geese and ducks through Estonian territory

<i>Clangula hyemalis</i>	several millions
<i>Melanitta nigra</i>	} about 1 million
<i>Melanitta fusca</i>	
<i>Anas platyrhynchos</i>	} 100,000–500,000
<i>Bucephala clangula</i>	
<i>Aythya marila</i>	
<i>Anas penelope</i>	
<i>Anas crecca</i>	
<i>Anser fabalis</i>	} 50,000–100,000
<i>Cygnus cygnus</i>	
<i>Anas acuta</i>	
<i>Aythya fuligula</i>	
<i>Anser albifrons</i>	
<i>Branta leucopsis</i>	} 10,000–50,000
<i>Mergus serrator</i>	
<i>Cygnus bewickii</i>	
<i>Mergus merganser</i>	
<i>Branta bernicla</i>	
<i>Anser erythropus</i>	
<i>Aythya ferina</i>	5,000–10,000
<i>Anas clypeata</i>	} 1,000–5,000
<i>Anas querquedula</i>	
<i>Mergus albellus</i>	
<i>Somateria mollissima</i>	} less than 1,000
<i>Anser anser</i>	
<i>Anas strepera</i>	occasional strays