

YEAR BOOK FOR 1961

WILDFOWL RESEARCH AND CONSERVATION IN EUROPE IN 1961

Introduction

National activity and international co-operation in problems of research and conservation have quickened in recent years. The purpose of the series of reports presented here is to show what has been happening in various parts of Europe. From an insular point of view this may be useful in putting the efforts of the Wildfowl Trust and other British organisations into the European setting from which they cannot properly be separated. From a wider viewpoint it may be helpful to have available a summary showing what research work is actively in progress and, in the field of conservation, to be able to see how far the problems of different countries are common ones.

The form of this symposium has been largely determined by the way in which it was provoked. A questionnaire was sent to authorities in 21 countries and elicited 13 replies, set out in a standard order, but differing greatly in length. We are very grateful for the help afforded by all the authors and correspondents whose names appear with their appropriate national accounts. It is hoped to deal with some of the outstanding omissions—the U.S.S.R., Poland and Germany—in a later Report.

International co-operation in the field of wildfowl conservation is achieved primarily within the wider activities of the International Council for Bird Preservation, which has active National Sections in 20 European countries. Since 1947 a subsidiary organisation of the I.C.B.P., the International Wildfowl Research Bureau (known until 1954 as the Research Institute) has been especially concerned with wildfowl problems. Dr. Edward Hindle, F.R.S., a member of the Wildfowl Trust Scientific Advisory Committee, was Hon. Director of the Bureau from its formation until the end of 1961. In the Bureau's Newsletter No. 12, published in December 1961, Dr. Hindle has given an account of the work accomplished by the I.C.B.P. and I.W.R.B. from 1936 to 1961. With the appointment of Dr. L. Hoffmann to succeed Dr. Hindle as Hon. Director, the headquarters of the Bureau have been transferred from London to the Station Biologique de la Tour du Valat, le Sambuc, Bouches du Rhone, France. With this move, Miss Phyllis Barclay-Smith, M.B.E., relinquished her onerous role of Secretary to the Bureau. The cause of wildfowl conservation has owed much to the efforts of Dr. Hindle and Miss Barclay-Smith.

There is a second organisation concerned with the co-operation of research, the International Union of Game Biologists. This is primarily an assembly of professional biologists and technicians concerned with all kinds of sporting animals, in which wildfowl specialists form only a minority. They have banded themselves into a "waterfowl working group." During 1961 it was agreed that, though the membership of this group differed somewhat from that of the working group of the I.W.R.B. set up in 1960, it would be economical and convenient for the two bodies to act as one in arriving at detailed plans for co-ordinated research projects. Examples of joint action were provided by meetings at the I.W.R.B. meetings in Paris in April, 1961

and again during the 5th Congress of the I.U.G.B. in Bologna in September, 1961, which resulted in agreed programmes for research on geese. The main barrier to progress in research on an international scale is certainly not difficulty in co-operating, but the acute shortage of wildfowl biologists, due largely to lack of funds.

Wildfowl Research and Conservation in Iceland

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THE Icelandic section of the I.C.B.P. is the only organisation actively concerned in bird conservation, including that of wildfowl. Ringing and other research are organised by the Náttúrugripasafnid (Museum of Natural History).

Ringing. Large numbers of ducks have been ringed, nearly all at Myvatn, and Pink-footed and Greylag Geese have also been marked in useful numbers. But in recent years shortage of money and staff has led to a great reduction in ringing and the accumulation of much recovery material awaiting publication.

Other research. No censuses of breeding or wintering populations are being made at present. Arnthor Gardarsson has been making a study of the waterfowl populations at Myvatn for the last two years. He has been particularly concerned with the catching of ducks in fishing nets as a mortality factor.

Conservation. The bird-protection act which came into force on 1st January, 1955 has not required amendment in recent years. There is an open season for geese from 20th August to 31st October. For most ducks the open season is from 1st September to 31st October, with an extension to 29th February relating to the Mallard, Wigeon and Long-tailed Duck. Breeding colonies of the Eider are given extraordinary protection. The taking of duck eggs in Myvatnssveit and other areas where ducks breed in great numbers is permitted, with the rule that at least four eggs shall be left in each nest. This provision does not apply to eggs of the Shoveler or of swans and geese.

The most serious threats to wildfowl are presented by drainage schemes, overgrazing and the wild mink.

Wildfowl Research and Conservation in Finland in 1961

Pekka Grenquist

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THE Game Research Institute of the Finnish Game Foundation receives government appropriations for investigations on game and fur animals in Finland. This financial aid is given annually through the Bureau of Fishing and Hunting Administration of the Ministry of Agriculture. Only about one-tenth of the money annually available for game research is used for investigations on ducks, geese and swans, corresponding approximately to the proportion of wildfowl in the total production of hunting in Finland.

Wildfowl investigations are also conducted by the zoology departments of the Universities of Helsinki, Turku and Oulu, by the State Veterinary Medical Institute and by independent researchers. Initiation and proposals for new investigations can be made, for example, by the Government Supervisor of Hunting, by the Government Inspector for the Protection of Nature, by the Finnish Sportsmen's League, by the Finnish League for the Protection of Nature and by the Ornithological Society as well as by other scientific societies in Finland.

A list of waterfowl studies carried out by the Institute and published in the years 1945-1957 was presented at the fourth Congress of the International Union of Game Biologists in the Netherlands in 1959 (Grenquist 1960) and some studies still in progress were reviewed even earlier, at the Congress of Game Biologists in Denmark in 1957 (Grenquist 1958).

Current research. The reproductive biology of a Velvet Scoter population in the outermost archipelago in the Gulf of Finland has been dealt with in several papers by J. Koskimies. Studies by M. Sirén on the Goldeneye in the inland lakes are being continued and supplemented by investigations on two Goldeneye populations in the southwestern archipelago by P. Grenquist and T. Ormio. J. Koskimies is conducting investigations on the bioenergetics of artificially-reared ducklings at the Evo Game Research Station. Since 1960 Miss K. Bassin has been studying the following reaction of the ducklings of Eider and Tufted Duck at the Zoological Research Station of Tvärminne. A paper by T. Lampio (1961) deals with the migration and breeding population of the Bean Goose in Finland, mainly on the basis of questionnaire data collected by the Game Research Institute and the Finnish Sportsmen's League. The question of overcrowding and its influence on reproduction is studied by P. Grenquist on some small islands in the outer archipelago.

Since the spring of 1960 migrating populations of Long-tailed Duck and Common Scoter have been studied by means of radar and their numbers estimated in the area of the Gulf of Finland (Bergman & Donner 1960, Bergman 1961). Yearly censuses of the breeding wildfowl populations, mainly on the basis of nest counts, have been conducted since 1948 by the Game Research Institute on more than 300 islands in six areas in the outer archipelago. Grenquist 1961). Yearly counts of adult birds, broods and ducklings have been made by the Institute in early August in two archipelago areas. Duck populations of more than 200 lakes in an area in southern Finland have been censused by P. Linkola between 1948 and 1960. Counts were based on males observed at the beginning of the breeding season (Linkola 1959, 1960, 1961).

The winter bird census organised annually by the Zoological Museum of the University of Helsinki since the winter 1956-57 has revealed a continuously increasing number of wintering Mallard in the cities, towns and villages in southern Finland. The Mallard is the only anatid species wintering regularly and in considerable numbers. About 5000 Mallard were counted in Helsinki in December, 1960. The ethology of reproduction of the wintering Mallard was studied by K. Raitasuo during the 1950s. I. Stén has carried out frequent counts of wintering Mallard in Helsinki since the latter half of the 1950s and investigated the changes in the population throughout each winter.

The eastern expansion towards the mainland of the breeding area of the Mute Swan in the southwestern archipelago is being followed with great interest (Tenovuo 1960, 1961). G. Bergman is studying the ethology of the seabirds in mixed colonies in the archipelago. Wildfowl are also included in the investigations carried out since 1949 by O. Hildén on the bird fauna of the island group Valassaaret in the Gulf of Bothnia.

Marking of birds with rings has been carried on since 1913 by the Zoological Museum of the University of Helsinki. Wildfowl have mainly been ringed as full-grown, some of the Mallard apparently as flightless juveniles. The Finnish Game Foundation commenced marking gallinaceous birds and wildfowl with wing tags in 1947. *Anas* species and Goldeneye have been marked mainly as pulli, and many nesting females of Velvet Scoter, Goldeneye, Eider and other diving ducks have also been marked with wing tags. The marking work, both with rings and wing tags, has from the beginning of 1962 been concentrated at the Zoological Museum of the University of Helsinki. The marking data from 1913 to 1961 are given in the table below (Rajala 1959 and Koivisto in writing, Nordstöm 1961 and by letter).

Numbers of wildfowl marked in Finland 1913-61

	Marked with rings			Marked with wing tags		
	1913-60	1961	Total	1947-60	1961	Total
<i>Anas platyrhynchos</i>	1821	26	1847	1117	149	1266
<i>A. crecca</i>	273	16	289	225	24	249
<i>A. querquedula</i>	3	—	3	10	3	13
<i>A. penelope</i>	99	1	100	88	—	88
<i>A. acuta</i>	188	—	188	108	1	109
<i>A. clypeata</i>	104	—	104	117	1	118
<i>Anas</i> sp.	17	—	17	195	6	201
<i>Aythya marila</i>	53	—	53	53	—	53
<i>A. fuligula</i>	296	2	298	104	22	126
<i>A. ferina</i>	17	—	17	10	11	21
<i>Bucephala clangula</i>	114	5	119	470	96	566
<i>Clangula hyemalis</i>	8	—	8	3	—	3
<i>Melanitta fusca</i>	203	—	203	222	18	240
<i>M. nigra</i>	9	—	9	5	1	6
<i>Somateria mollissima</i>	412	27	439	111	132	243
<i>Mergus serrator</i>	166	13	179	145	22	167
<i>M. merganser</i>	76	—	76	69	46	115
<i>M. albellus</i>	—	—	—	11	1	12
<i>Anser anser</i>	18	—	18	4	1	5
<i>A. fabalis</i>	18	—	18	16	4	20
<i>A. erythropus</i>	1	—	1	—	—	—
<i>Cygnus olor</i>	2	—	2	—	—	—
<i>C. cygnus</i>	11	—	11	—	—	—
Total	3909	90	3999	3083	538	3621

Conservation and legislation. All Finnish wildfowl species are considered to be huntable game. Conservation of wildfowl by total protection of a species, by the length of the open season and other shooting regulations as well as by any other means of game management has thus to be achieved under the conditions of the Hunting Law. The Bureau of Fishing and Hunting Administration at the Ministry of Agriculture supervises the practical applications of the Hunting Law. The opening and closing dates of the hunting seasons are issued annually by this bureau. When setting the seasons attention is paid to the population status reports of the Game Research Institute and to reasonable proposals of the Finnish Sportsmen's League as well as of other interested organisations.

In Finland the hunting rights belong to the land owner, who may often have part of his best wildfowl areas protected as a reserve. If the duck population of an originally suitable wildfowl area is threatened for any reason, or if those having the hunting rights have not been able to agree upon a necessary management programme, the Bureau of Fishing and Hunting Administration may take the initiative to enforce protection. It may also give its official opinion about proposals for protection. Protection is established by a resolution of the district government, generally for a three year period. Regrettably, there are no figures available of the total area of the wildfowl reserves described. The Bureau approves about ten proposals a year.

On the mainland the practical management work of wildfowl as well as of other game is carried out by 240 game management associations, whose activities are supervised by the state government. There are altogether 1600 private hunting clubs of the Sportsmen's League working under these associations. Financial aid is given by the state to both management associations and hunting clubs for law enforcement, information and practical management work. Wildfowl management has chiefly comprised feeding of wintering ducks, protecting areas for migrating geese and in about 40 per cent of the clubs setting out nest boxes for Goldeneye.

There are 43 waterfowl protection associations in the southern and south-western archipelago. These associations have to keep fairly large areas protected in order to have permission to shoot in spring. Their activities have been described in detail by Grenquist (1951). The reserves of these associations comprise roughly one half of the southern and south-western archipelago excluding the province of Åland. There are in Åland many associations with similar activities, but additionally there are many totally closed areas, the bulk of them leased by a private bird protection society, "Ålands Fågelskyddsförening." The associations and protected areas of Åland have been described by Nordberg (1951) and Bergman (1951). The executive authority regarding hunting and conservation in Åland belongs to the provincial government "Landskapsnämnden."

In Finland a district government may also establish protection of a wildfowl area under the Law of Nature Protection. In such cases initiative may be taken or an official statement given by the Government Inspector for the Protection of Nature, at the Department of Nature Protection, Forest Research Institute, Helsinki. The archipelago areas protected as wildfowl breeding grounds were described by Bergman (1951). According to the Government Inspector there were in 1961 23 protected wildfowl areas in the archipelago

with a total land and water area of about 267 sq.km. and on the mainland 3 protected bird lakes in total at least 22 sq.km.

The Department of Nature Protection is in close co-operation with the Finnish League for the Protection of Nature. For instance, since the winter of 1957-58 keepers have been arranged and maintained in about 10 localities in different parts of the country for Whooper Swans delayed in their autumn flight and endangered by the winter.

It may be mentioned with satisfaction that wildfowl breeding populations have been increasing during the last decade. The numbers of wildfowl in archipelago reserves have about doubled since 1951 (Grenquist 1961). The duck populations of inland lakes have also increased, Mallard as much as the wildfowl populations of the archipelago on the average (Linkola 1961). Obviously these changes can to a considerable extent be ascribed to organised hunting, to less intensive spring shooting in the archipelago, and to the achievements of both game management and nature protection in evidently favourable climatic conditions. From the Finnish point of view oil death and winter shooting in the Baltic and North Sea areas seem to be the severest obstacles to wildfowl conservation.

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Wildfowl Research and Conservation in Sweden in 1961

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Organizations concerned in research and conservation

INVESTIGATIONS on wildfowl in Sweden are carried out by several institutions. In 1956 the Zoological Department of Nordiska Museet and Skansen started an ecological research programme on different species of vertebrates, which were of interest not only from biological viewpoints but also from economic angles, because these species constantly, or at least very often, are said to cause considerable damage to what is considered to be the property of man. Geese are accused of damaging crops, Mute Swans of feeding on fish and Eagles of preying on important game species, which man would like to monopolize for himself. Such was the background to the selection of species for ecological research. The Nordiska Museet and Skansen has also worked for many years on the ecology of vertebrates living in the Scandinavian mountain chain (mainly on the Swedish side from northernmost Swedish Lapland to northern Dalecarlia). Since ducks and geese are important factors in Scandinavian sub-alpine and alpine habitats much work has been concentrated on these species.

Other institutions working on wildfowl are the Svenska Jägarförbundet (The Swedish Sportsmen's Association) and the Sveriges Ornitologiska Förening (The Swedish Ornithological Society). While the former organization has studied the populations of the Greylag Goose *Anser anser* living along the Baltic coast and the reproduction of Mallard *Anas platyrhynchos*, the latter has chiefly dedicated its work to counts during the migration periods.

Organizations dealing with the conservation of wildfowl are the following: Kungl. Svenska Vetenskapsakademien (The Royal Swedish Academy of Sciences), which through its Committee of Conservation of Nature is responsible for the scientific approach to different problems of conservation as well as the scientific maintenance and administration of the National Parks. The Committee also organizes investigations in vast areas which are threatened by exploitation, as, for example, for hydro-electric purposes.

The Kungl. Domänstyrelsen (The Royal Board for Crown Lands) acts as co-administrator of the National Parks and has the direct supervision of these areas as well as of a large number of other nature reserves. The Board also annually submits to the Government proposals concerning close times for birds and mammals after having consulted the other organizations mentioned.

The Svenska Naturskyddsföreningen (The Swedish Society for Conservation of Nature) is officially charged to deal with all matters regarding the conservation of Sweden's nature. As to the birds the society co-operates closely with The Royal Swedish Academy of Sciences and The Swedish Ornithological Society. The latter organization's main activities are research and conservation and it is responsible for the Ottenby Bird Station on Öland as well as for the regular counts of waterfowl migrating through the Kalmar Sound. These counts are done from Skäggenäs on the Swedish mainland.

The Swedish Section of the International Council for Bird Preservation is composed of the Swedish Sportsmen's Association, the Swedish Ornithological Society and the Swedish Society for Conservation of Nature.

As ducks and geese belong to the most vulnerable species of birds (hunting pressure, oil pollution, water regulations for hydro-electric purposes, drainage

of habitats and so on) most activities in the field of ornithological conservation work in Sweden deal with wildfowl.

Ringling activities

The ringing of ducks and geese has hitherto not been very successful in Sweden. Attempts made at the Ottenby Bird Station have failed, but in 1960-61 ducks spending the autumn and winter on the waters of Stockholm and Örebro have been ringed. On 18th September, 1961 an experimental duck decoy, based on the model in function at Station Biologique de la Tour du Valat in Camargue, France, was opened (Edberg 1961). The result was that, up to 10th December, 1961, 410 Mallards were captured and ringed (Edberg *in litt.*). This work was done by Mr. Ragnar Edberg, head of the Ottenby Bird Station. The idea is to build a similar decoy system at Ottenby, where ducks in large numbers gather during the summer and autumn migrations.

Mute Swans *Cygnus olor* and Mallards spending the winter in the open waters of Stockholm were ringed during the winters 1955-1961. These activities were organized by Mr. Olle Mauritzsson assisted by members of Sveriges Fältbiologiska Ungdomsförening (Youth Society for Field Biology of Sweden). Up to and including the season 1960-1961, 621 Mallards and 521 Mute Swans have been ringed.

The Swedish Sportsmen's Association's marking of Mallards in 1959 and 1960 covered 3,088 birds, which were raised in captivity and introduced at several localities in Central Sweden. There are 189 recoveries of these ducks, 72% from Sweden, 17% from Denmark, 4% from Germany, 4% from Great Britain and so on (Höglund *in press*). These figures show practically no differences from those based on wild Mallards in Sweden (cf. Olsson 1961).

Other species ringed by the same institution in 1959-1960, as well as the total numbers of ringed waterfowl since 1945 are according to Höglund (*in press*) as follows:

Species	Ringed birds			Recoveries		
	1959	1960	Total 1945-60	1959	1960	Total 1945-60
<i>Anas platyrhynchos</i>	2179	909	6487	129	67	388
<i>A. crecca</i>	38	—	186	4	1	22
<i>A. querquedula</i>	—	—	13	—	—	—
<i>A. penelope</i>	2	—	59	—	—	7
<i>A. acuta</i>	2	—	82	—	—	8
<i>A. clypeata</i>	—	—	77	—	—	5
<i>Aythya marila</i>	—	—	66	—	—	1
<i>A. fuligula</i>	16	1	170	1	—	5
<i>A. ferina</i>	—	—	42	—	—	—
<i>Bucephala clangula</i>	183	56	1306	27	25	157
<i>Clangula hyemalis</i>	—	—	6	—	—	—
<i>Melanitta fusca</i>	8	—	149	—	—	3
<i>M. nigra</i>	—	—	2	—	—	1
<i>Somateria mollissima</i>	191	113	749	29	26	94
<i>Mergus serrator</i>	2	—	74	—	—	4
<i>M. merganser</i>	14	1	232	2	1	19
<i>M. albellus</i>	1	—	2	—	—	1
<i>Tadorna tadorna</i>	22	—	113	1	—	4
<i>Anser anser</i>	68	15	228	13	10	33
<i>A. albifrons</i>	—	—	2	—	—	—
<i>A. erythropus</i>	—	—	10	2	—	3
<i>A. fabalis</i>	—	—	12	1	—	3
<i>Branta leucopsis</i>	1	—	7	—	—	—
<i>B. canadensis</i>	55	27	111	—	14	15
<i>Cygnus olor</i>	13	—	107	—	—	3
<i>C. cygnus</i>	—	—	10	1	1	1

From the Naturhistoriska Museet in Gothenburg the following figures are available (Fontaine, 1960):

Species	Ringed birds 1959	Ringed birds 1911-1959	Recoveries 1911-1959
<i>Anas platyrhynchos</i>	39	1,243	146
<i>A. crecca</i>	—	55	5
<i>A. querquedula</i>	—	—	—
<i>A. penelope</i>	—	1	—
<i>A. acuta</i>	—	122	13
<i>A. clypeata</i>	4	91	15
<i>Aythya marila</i>	2	31	11
<i>A. fuligula</i>	21	58	5
<i>A. ferina</i>	3	15	1
<i>Bucephala clangula</i>	7	37	5
<i>Melanitta fusca</i>	—	41	4
<i>M. nigra</i>	—	1	—
<i>Somateria mollissima</i>	8	468	109
<i>Mergus serrator</i>	4	45	4
<i>M. merganser</i>	—	34	7
<i>Tadorna tadorna</i>	11	63	—
<i>Anser anser</i>	—	111	14
<i>A. fabalis</i>	—	2	2
<i>Branta canadensis</i>	1	1	1
<i>Cygnus olor</i>	2	165	44
<i>C. cygnus</i>	—	18	6

From the Naturhistoriska Riksmuseet in Stockholm only the number of birds ringed during the period 1913-1949 and the years 1951 and 1960 are available (Sten Österlöf *in litt.*):

Species	Ringed birds 1913-1949	Ringed birds 1951	Ringed birds 1960
<i>Anas platyrhynchos</i>	1568	83	752
<i>A. crecca</i>	96	3	7
<i>A. querquedula</i>	8	—	—
<i>A. penelope</i>	3	—	6
<i>A. acuta</i>	57	3	27
<i>A. clypeata</i>	48	—	54
<i>Aythya marila</i>	12	—	—
<i>A. fuligula</i>	144	8	36
<i>A. ferina</i>	32	—	5
<i>Bucephala clangula</i>	154	26	61
<i>Clangula hyemalis</i>	1	—	—
<i>Melanitta fusca</i>	48	—	1
<i>M. nigra</i>	4	1	—
<i>Somateria mollissima</i>	84	30	10
<i>Mergus serrator</i>	26	3	2
<i>M. merganser</i>	51	5	15
<i>Tadorna tadorna</i>	29	1	16
<i>Anser anser</i>	43	—	24
<i>A. fabalis</i>	15	—	—
<i>Branta canadensis</i>	6	—	19
<i>Cygnus olor</i>	58	8	311
<i>C. cygnus</i>	18	—	1

The Nordiska Museet and Skansen has only ringed a limited number of *Anatidae*, mainly individuals which were nesting in freedom at the Skansen,

the Zoological Garden of Stockholm. The figures covering the period 1954-1961 are the following:

Species	Ringed birds 1954-1961	Recoveries
<i>Anas platyrhynchos</i>	2	—
<i>A. strepera</i>	5	—
<i>A. penelope</i>	2	—
<i>A. acuta</i>	2	—
<i>A. clypeata</i>	2	—
<i>Aythya marila</i>	2	—
<i>A. fuligula</i>	10	—
<i>A. ferina</i>	8	—
<i>Tadorna tadorna</i>	25	—
<i>Anser anser</i>	23	5
<i>A. albifrons</i>	8	—
<i>A. erythropus</i>	16	—
<i>A. fabalis</i>	15	—
<i>Branta leucopsis</i>	16	1
<i>Cygnus olor</i>	62	11

Censuses. In 1960 the Nordiska Museet and Skansen in co-operation with the Swedish Sportsmen's Association and the Swedish Royal Airforce organised an inventory of the Barnacle Geese *Branta leucopsis*, which rest along the coasts of Gotland during the spring migration. The result of this count has been published by Boyd (1961). In 1961 a census of the Greylag Goose was started in the archipelago of Norrbotten, organized by the local game warden Rune Almqvist of the Swedish Sportsmen's Association. The inventory will be continued in 1962.

During the winter 1961-1962 a census of the Long-tailed Duck *Clangula hyemalis* wintering in the seas along the Swedish coasts was organised by the Nordiska Museet and Skansen and the Swedish Society for Conservation of Nature. This scheme is a part of an international inventory on the Baltic Sea and the North Sea, promoted by the International Wildfowl Research Bureau and based on a proposal from Sweden.

Studies of particular species

Other inventories have been made in connection with the ecological investigations mentioned at the beginning of this article and they need some more comments. During the first six years of field work concerning the ecology of particular vertebrates and organized by the Nordiska Museet and Skansen five species of wildfowl have been involved. They are the Bean Goose *Anser fabalis*, the White-fronted Goose *A. albifrons*, the Barnacle Goose, the Canada Goose *B. canadensis*, and the Mute Swan. A similar scheme is under preparation and concerns the Greylag Goose.

The investigations on the ecology of wintering Bean Geese and White-fronted Geese were carried out in Scania, southernmost Sweden, in co-operation with the Zoological Institute of the University of Lund. The ecological field work was begun in 1956 and was finished in 1960 by Mr. Gunnar Markgren, who during certain periods was assisted by other people. Simultaneously Mr. Sven Mathiasson and his team studied the migratory movements of the two goose-species above Scania. Previously Professor Erik Dahl had been interested in the taxonomy of the population of *Anser fabalis* occurring in Scania during the winter, an essential aspect for a thorough understanding of

the geographical origin of the Scanian geese. His research on this topic continued as a third line of the goose investigations. Important results have been obtained and will be published in *Acta Vertebratica* as three separate papers by Dahl, Markgren and Mathiasson.

Long-term investigations on the grazing activities of Barnacle Geese along the coasts of Gotland were initiated in the spring of 1961. This species is accused of competing seriously with the sheep and is said to cause considerable damage during the periods the geese spend in these areas in spring and in autumn. Mr. Anders Bjärvall is working on this subject.

The increase of the introduced Canada Goose in Blekinge has been followed by increasing protestations from farmers, who state that the species is damaging their crops. Therefore, a long-termed study of this goose has begun at the end of 1961. Mr. Björn Nilsson is responsible for the field work.

Also in 1956 ecological research on the Mute Swan started in two different areas along the Baltic coast, one in Blekinge, south-eastern Sweden, the other in Östergötland. The selected areas represent brackish water localities, where dense populations of *Cygnus olor* occur. The ecological investigations have followed several lines of research: botanical, ichthyological, bacteriological, population dynamics, nutritional biology, and so on. Aerial counts in co-operation with the Royal Swedish Air Force were made every month during several years. The main work in Blekinge was carried out by Mr. Björn Berglund, while Mr. Viking Olsson was in charge of the research in Östergötland. In addition special studies were made by Professor Hans Luther, Professor Wilhelm Rodhe and Mr. Gunnar Sellerberg. The results will be published in *Acta Vertebratica* as five separate papers by Berglund, Luther, Rodhe, Olsson and Sellerberg.

Since the increase of the Mute Swan in Europe has been much discussed during the last years in relation to the consequences it may have on the environment, it is perhaps of interest to give here a preliminary summary of the investigations on this species and their results in Sweden.

Continuous analyses of bottom vegetation changes were made in fixed squares in depths of water between 0.3 and 1.5 metres. During the five years of observations few vegetation changes have been noted but ecological successions may be represented. In no cases were changes found to have any connection with the grazing intensity of the swans. In particular the vegetation-free bottoms for which the swans had been blamed were found to represent a stage in the natural vegetation succession. The most important factor is in fact ice erosion followed by wave erosion. (Similar conclusions were reached in Polish investigations on the southern coast of the Baltic).

Estimations of the food consumption of swans have enabled calculations to be made of their effect on the bottom vegetation in relation to the productivity of the constituent plants. Consumption was found to represent an exceedingly small part of production.

Water samples for pollution control were taken seven times in a year from four localities with swan populations of 50-200 and also at two localities not visited by swans. Only small differences were found in ionic composition, pH, nitrate-nitrite-nitrogen concentrations. No correlations with the numbers of swans were found.

Bacteriological investigations covered agar and coliform bacteria and faecal streptococci. While swans probably do cause some alterations in the

bacteriological condition of the water, tidal interchange of water prevented any demonstrable pollution correlated with swan density.

Even locally it did not seem that swans had any effect on spawning of fish. Variations in fish populations are on a large scale and have quite different causes, such as changes in the hydrographical conditions.

A total of 51 swans were killed within Blekinge in 1959 for examination of their visceral contents. 19 were killed at the end of March (mainly in the outer archipelago), 13 at the end of April (in the inner archipelago and at the spawning time for pike and perch), 13 at the beginning of June (fish eggs still present) and 6 at the beginning of August. 95-100% of the stomach contents consisted of plants grazed from the submarine meadows. Animal matter occurred in very small amounts and apparently by accident. No fish eggs or fry were found. Parallel investigations were made in Östergötland by analysing swan droppings. These also showed that the food consists almost completely of vegetable matter. No shrimp remains were found in any of the stomachs examined. Variations in the frequency of shrimps are in all probability dependent on changes in the hydrographical conditions.

The Swedish investigations have not found any evidence that concentrations of swans are in any way harmful to coarse fishing interests.

Major difficulties hindering wildfowl conservation

The major difficulty hindering wildfowl conservation in Sweden has for many years been oil pollution. Every winter discharges of waste oil by ships cause heavy losses among the populations of ducks wintering in the Baltic Sea, especially those of *Clangula hyemalis*. The latest catastrophe of this kind took place in January 1962. Also the hunting pressure on ducks is considerable. All investigations on mortality factors in Fenno-Scandian *Anatidae* carried out hitherto indicate that human hunting is the dominating death cause (cf. Koskimies, 1956, Olsson, 1960). Even if the percentage of ducks killed by hunters is not entirely representative for a population chosen at random, it is sufficiently high to show that hunting is the primary mortality factor.

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Wildfowl Research and Conservation in Denmark in 1961

Knud Paludan

Game Biology Station, Kalø

THE following three governmental organisations are involved in wildfowl studies: The Game Biology Station, Kalø (G.B.S.) (ringing and field studies), Naturfredningsrådet (field studies), and Zoological Museum, Copenhagen (ringing). In addition private groups concern themselves with wildfowl occasionally, but there is no permanent organisation with this particular field of activity.

Ringling. Activity in 1961 is shown in tabular form:

	Zoological Museum *	Game Biology Station	Total
Mute Swan	64	—	64
Greylag Goose	61	107	168
Dark-bellied Brent Goose	—	30	30
Pale-bellied Brent Goose	—	1	1
Shelduck	21	20	41
Mallard	1158	613	1771
Teal	87	339	426
Wigeon	8	—	8
Pintail	1	—	1
Shoveler	30	4	34
Red-crested Pochard	38	—	38
Common Pochard	41	—	41
Tufted Duck	31	—	31
Common Eider	103	5	108
Common Scoter	—	1	1
Red-breasted Merganser	1	2	3
Total	1644	1122	2766

* The data on the ringing activity of the Zoological Museum were kindly supplied by stud. mag. N. O. Preuss.

Unfortunately, no information is available on the age groups of birds ringed by the Zoological Museum. Among the 107 Greylag Geese ringed by the Game Biology Station 39 were yearlings and the remainder flightless adults. We have now ringed a total of 910 individuals of this species and the resulting 182 recoveries will be published in the near future.

The 31 Brent were ringed along the perimeter of Jordsand, a small island in the tidal area off the SW coast of Jutland. The captures were made in flight-nets, 4 m. high, 24 m. long and with 19 cm. mesh size (knot to knot); they were suspended vertically between $\frac{3}{4}$ " galvanized iron pipes 6' high. We were taught the method by old wildfowlers who had used it until it was prohibited by the present Game Act of 1931, but, unfortunately, it proved to be less efficient than we had hoped.

All Mallard ringed by the G.B.S. were hand-reared birds released in various parts of the country (cf. J. Fog, 1958, *Danske Vildtundersøgelser* No. 8). The Teal were caught in a duck decoy on Fanø, an island off the SW coast of Jutland. Here the G.B.S. has restored one of the old duck decoys with a view to ringing activity. It was in the very same place that Hans Chr. Mortensen ringed the first Teal and Pintail during the years 1907-10. The duck decoy is not yet fully restored, hence we hope to increase the number of captures a good deal.

During recent years the G.B.S. has only ringed few Eiders but some older data have just been analyzed and sent to the press. This material, as well as that contributed by the Zoological Museum, consists of adult females taken on the nest.

Breeding studies. In 1954 the Danish breeding population of Mute Swan was censused (Paludan & Fog, 1956, *Danske Vildtundersøgelser* No. 5). We had then 750 pairs, but the population has much increased since. An unpublished census of breeding Eiders runs to 3000 pairs. These are the only attempts to census breeding populations in recent years.

Winter numbers. The wintering populations are at present only being studied to a very limited extent. Although continuous counts have been made through several years in the Nature Reserve Tipperne in Ringkøbing Fjord, W. Jutland, this activity, carried out by the Naturfredningsråd, does not cover the winter months (cf. Hans Lind, 1956, *Dansk ornith. For. Tidsskrift*, 50). At the G.B.S. observation point on Jordsand counts of Brent, Shelduck, and Eider have been made during the last two years. A Danish-Swedish group of ornithologists (Birger Jensen, Gunnar Markgren and Sven Mathiasson) organized a census of White-fronted and Bean Geese in the autumn of 1960; the census will be published in *Vår Fågelvärld* (Sweden), but, unfortunately, it has not been planned to continue this work.

Conservation. In connection with the fact that the G.B.S. is often called upon to inspect areas where crop damage is claimed to have taken place an experiment was made in 1961. It was attempted to assess the extent of damage caused by the very large flocks of Pink-footed Geese foraging in grass fields in the early spring. Comparison with fenced plots did not enable us to demonstrate significant damage; but since the extent of damage may be subject to variation between years it has been planned to repeat the experiments in 1962.

During 1961 no changes have taken place in the nature reserves which affect wildfowl, but all over the country smaller areas are being drained, a feature which is likely to reduce the breeding possibilities for ducks. Two large reclamation projects are worth mentioning. The plans concerning Ulvedybet in the Limfjord will, when carried out, deprive migrating ducks of a very important resting place; and reclamation of the Skernå estuary, on the east coast of Ringkøbing Fjord, W. Jutland, will destroy an important breeding area.

The problem of oil pollution, which in recent years has called for some optimism, proved very serious again during the winter 1961-62; several cases of extensive pollution have been reported from the Baltic and the Kattegat, and several thousand diving ducks have succumbed. As far as is known at present Eiders and Long-tailed Ducks have suffered in particular.

In 1961 no changes in game legislation to affect wildfowl have been introduced except that, as in several previous years, the shooting season for surface feeding ducks did not commence until 15th August (instead of 1st August). In this connection it should be mentioned that a committee has been set up to draft a new Game Act.

Wildfowl Research and Conservation in Norway

H. Holgersen

Stavanger Museum

THE State Game Research Bureau is actively interested in research and conservation affecting ducks, geese and swans. This includes ringing of the birds, and ringing is also carried out by the Stavanger Museum, our main ringing centre.

Ringling is on a very small scale. The ringling of pulli is forbidden, but some ducks are caught as full-grown young. Only 38 ducks were ringed in 1961 with the Stav. Mus. rings; for the Game Research Bureau figures are not yet available, but they used to be equally small. In 1961 Mr. Hj. M-K. Lund succeeded in catching nearly 90 adult Greylags, moulting and flightless birds. He has also had certain success with catching adult Eider Ducks. This ringling will be continued. Expeditions by British students ringed nearly 600 geese in Spitsbergen some years ago, with our rings. For 1962 an Oslo University students' expedition to Spitsbergen also plans to ring geese.

Population studies. Early in 1961 a census was made by Mr. Lund of the wintering population of Whooper Swans. The results will soon be published. Other censuses have been made only occasionally and locally.

Conservation. A bay, Landekilen, and a fiord, Skogsfjorden, at Mandal, a town in the extreme south of the country, have been declared a reserve for waterfowl. This will provide a refuge for ducks being chased in the open season along the coast outside, but the breeding pairs are few.

Drainage of moors and lakes continues all over the country, and the increased regulation of rivers and lakes for hydro-electricity is also dangerous.

Oil pollution does not seem to be very important with us, except after occasional shipwrecks. Also, oil pollution seems to affect the Alcidae more than ducks.

Wildfowl Research and Conservation in Estonia

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THE organisation which deals with waterfowl conservation and research in Estonia is the Nature Conservancy Board, attached to the Council of Ministers of the Estonian SSR. It is assisted in its labours by the State Game Inspection Office of the Ministry of Agriculture. The Tartu Sporting Club also concerns itself to some extent with the scientific study of waterfowl. But this field is investigated on a far broader scale at the Matsalu National Park, which has been specially set up for purposes of waterfowl conservation and research. Sea birds (particularly the Eider) are studied at the Vaika National Park on the west coast of Saaremaa Is. This reserve celebrated its fiftieth

anniversary in 1960, and throughout the whole of its existence it has been engaged in the study and protection of the Eider.

Ringling. Pulli of the ducks and geese are at present marked in Estonia partly with rings (in the case of the adult individuals), and partly—more particularly during recent years—with wing marks, both of which are derived from the Moscow ringing scheme. In the past three years a beginning has been made with the trapping and ringing of breeding female ducks (especially Velvet Scoters) in their nesting haunts in the Matsalu National Park. Up to 1000 ducks (both adults and young) are ringed in Estonia in the course of the year, together with a few dozen geese (all Greylags, from Matsalu Bay). The main species ringed are the Mallard, Shoveler, Tufted Duck and Velvet Scoter. As yet, ringing has not been extended to cover migratory ducks and geese.

Breeding studies. Full and accurate censuses of ducks and geese are made every summer in their breeding haunts at Matsalu. On the islands here well-nigh 100% of the nests are traced and registered. Equally exhaustive observations are carried out at Vaika, which is an archipelago of small rocky islets. The chief species nesting here are the Eider, Velvet Scoter, Goosander and Red-breasted Merganser. Our ornithologists have arrived at the conclusion that the only possible way to form an accurate estimate of the duck population during the breeding season is to find and count the nests. In this laborious work we have been widely assisted by students and schoolchildren.

Winter censuses. We tackled the problem of studying the wintering population for the first time in the winter of 1960-61. Fortnightly counts were made on more than thirty bodies of water from the end of October till the beginning of April. A survey of the results obtained will appear in the next issue of the *Communications of the Baltic Commission for the Study of Bird Migration*.

Special studies. Intensive studies of the Greylag Goose, Mallard, Pochard, Tufted Duck, Shoveler and Velvet Scoter are in progress in Matsalu Bay. Researches are conducted both by the local staff and by workers of the Institute of Zoology and Botany attached to the Estonian Academy of Sciences. A selection of the results is to be published in our *Ornitoloogiline Kogumik III* (Articles on Ornithology, III). Over 150 pairs of the Greylag Goose nest in the Matsalu Bay. This is the largest colony of the species in the Baltic area, and has provided one of our research workers with a subject for his degree thesis.

The Eider, which is the most numerous of the breeding ducks at Vaika, with as many as 500 pairs, has also been made the object of special investigation.

Conservation. Provisions have been made for the creation of several new wildfowl reserves in 1961, and steps have been taken to prohibit shooting of the Brent Goose all the year round. One of the major problems facing wildfowl conservation in Estonia is the gradual loss of natural habitats as a result of the steady encroachment of cultivated areas. Oil pollution is undoubtedly a serious factor in reducing the number of sea birds.

Wildfowl Research and Conservation in the Netherlands in 1961

by

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Introduction

THE country of the Netherlands is small, but for wildfowl research and conservation very interesting. Numerous inland waters: lakes, broads, rivers, canals, fens, minor waters and marshland cover about 300,000 ha. (1160 sq. miles). That is about 8% of the 3,600,000 ha "land" of the Netherlands. In addition more than 150,000-250,000 ha of coastal waters (along the North Sea coast, in the Waddensea (with tidal flats) and the Delta-area) and the IJsselmeer-area of about 250,000 ha are also of great importance for wildfowl. More than 20% of the total 4,110,000 ha of the Netherlands, land, Waddensea and IJsselmeer included, are wildfowl habitat.

The Netherlands therefore holds large populations of wildfowl all the year round. The Mallard *Anas platyrhynchos* has the most numerous breeding population with, roughly estimated, more than 500,000 breeding pairs. The Shoveler *Anas clypeata*, the Garganey *Anas querquedula* and the Teal *Anas crecca* are also breeding in rather large numbers (each species however with less than 10,000 breeding pairs). Less numerous (under 500 pairs) or even rare are Pintail *Anas acuta*, Wigeon *Anas penelope*, Gadwall *Anas strepera* and Tufted Duck *Aythya fuligula*. Pochard *Aythya ferina* and Red-crested Pochard *Netta rufina* are rare breeders, as is the case with the wild Mute Swan *Cygnus olor*.

In autumn and in spring hundreds of thousands and probably more than a million ducks of all species, tens of thousands of geese and thousands of swans stay for shorter or longer periods in the Netherlands. When winters are not severe, which is often the case due to the maritime climate (mean temp. in January 1°C) great numbers of duck, geese and swans are wintering in the Netherlands.

It is not astonishing therefore that a great many ornithologists, sportsmen and biologists in the Netherlands are interested in wildfowl and their ways.

Several institutes are dealing with wildfowl research and much is done for the conservation of important breeding areas, resting places and foragegrounds in the wintering grounds.

Research Institutes

Wildfowl research is done mainly in three institutes: I.T.B.O.N., R.I.V.O.N. and Het Vogeltrekstation. Wildfowl research is for all three institutes only a part of their tasks.

The Department for Game Research of the I.T.B.O.N. (Instituut voor Toegepast Biologisch Onderzoek in de Natuur = Institute for Biological Field Research in Nature), Kemperbergerweg 11, *Arnhem*, does research on wildfowl problems connected with shooting. The institute is governmental and related to the Ministry of Agriculture and Fisheries.

The R.I.V.O.N. (Rijksinstituut voor Veldbiologisch Onderzoek ten behoeve van het Natuurbehoud = State Institute for Nature Conservation Research), Soestdijkseweg 33 N., *Bilthoven*, is as far as wildfowl is concerned dealing with the conservation of rare and threatened species and their habitats. It is a governmental institute, part of the State Forestry Service, but financed by the Ministry of Education.

The "Vogeltrekstation" (= Bird Ringing Institute), c/o Rijksmuseum voor Natuurlijke Historie, Raamsteeg, *Leiden*, has, in addition to other research work on migration the task of administering all bird ringing activities in the Netherlands. This institute distributes bird rings, keeps the records and works up the recoveries. When ringing results are needed for wildfowl research the Vogeltrekstation produces the basic data, e.g. for the I.T.B.O.N.

Conservation organisations

Concerned with conservation of wildfowl and wildfowl habitats are:

A. Governmental

1. Ministry of Agriculture and Fisheries

a) Dept. of Wildlife Management (Directie Faunabeheer) in The Hague. Dealing with "shooting law," shooting licences. Advised by a "Shooting Council"—part of the money from the "Shooting Fund" is used for wildfowl conservation.

b) State Forestry Service. This Service manages a great number of State Nature Reserves. Several of them are very important wildfowl reserves.

The Dept. for Nature Conservation of the State Forestry Service is very active in wildfowl conservation not only managing wildfowl reserves, but also advising in regional planning, reclamation and drainage schemes, etc. This Department cooperates very closely with the

2. *Ministry of Education* which also has a Department for Nature Conservation advised by a Council for Nature Conservation with two Commissions of Experts which are active in the field of wildfowl conservation whenever necessary: the Scientific Commission and the Fauna Preservation Commission.

B. Private organisations

The most important are:

a) *Vereeniging tot behoud van Natuurmonumenten in Nederland* (= Society for the Conservation of Nature Monuments in the Netherlands), Amsterdam. This Society owns and manages many important wildfowl reserves.

b) *Nederlandse Vereniging tot Bescherming van Vogels* (=Netherlands Society for the Protection of Birds), Amsterdam. This society manages also a number of important wildfowl breeding grounds and wintering areas in the Netherlands.

- c) *Koninklijke Nederlandse Jagersvereniging* (= Royal Netherlands Shooting Society). This organisation is cooperating closely with other organisations and the institutes mentioned previously.

C. *International organisations*

Two institutions in the Netherlands are active in the field of wildfowl conservation not only on a national basis, but also on an international level.

- a) *Nederlandse Commissie voor International Natuurbescherming* (= Netherl. Commission for International Protection of Nature), Amsterdam.
b) *Netherlands Section of the International Council for Bird Preservation*, Amsterdam.

Ringling research

The ringling of ducks and geese is in the Netherlands mainly organised by the I.T.B.O.N. (Arnhem). The ringling is accomplished through the co-operation of the following institutions and persons.

- A. Het Vogeltrekstation, Leiden: rings and administration.
B. Dept. for Wildlife management (Min. of Agr.), 's-Gravenhage: licenses for catching outside the shooting season.
C. Dept. for Nature Conservation State Forestry Service (Utrecht) State Nature Reserves. The decoymen are trained to assist in research work. Catching for ringling purposes is a part of their job.
D. Private persons, for instance decoymen, goose-netters and netters of Golden Plover, who catch ducks and geese for ringling. With the exception of the decoymen they are paid for that by the I.T.B.O.N.
E. Interested ornithologists ring ducks privately. This last category is mainly ringling pulli. In the decoys almost without exception only full-grown birds are caught, including individuals from the breeding population and passing migrants.

Occasionally flightless adults are caught. This is done on some occasions in the State Nature Reserve "Het Zwarte Meer" near Genemuiden, an important haunt for moulting ducks.

The geese without exception are caught by goose-netters. These netters were originally catching for the market but nowadays mainly for the research. They are paid per goose by the I.T.B.O.N. from funds of the "Shooting fund."

The numbers of each species ringed up to the end of 1960 were: Mallard 30,018, Teal 23,494, Garganey 2,658, Pintail 3,200, Wigeon 4,579, Gadwall 289, Shoveler 1,680, Tufted Duck 174, Pochard 445, White-eyed Pochard 2, Greylag Goose 1, Whitefront 2,150, Bean Goose 718, Pinkfoot 46, Barnacle 211, Shelduck 213.

In 1961 nearly 8,600 ducks, about 1,500 geese and 22 swans were ringed. Mallard 1,857, Teal 3,807, Garganey 278, Pintail 1,395, Wigeon 761, Gadwall 36, Shoveler 316, Tufted Duck 45, White-eyed Pochard 1, Greylag Goose 1, White-front 1,190, Bean Goose 176, Pinkfoot 34, Barnacle 86, Shelduck 9.

The great numbers of ducks ringed in the decoys have produced so many recoveries that the ringling scheme was scarcely able to deal with them. For this reason the number of Mallard ringed was reduced in 1960 and 1961 and from

1962 no more Mallard and Teal will be ringed until analysis of the recoveries has shown this to be necessary. The recoveries—over 6,500 Mallard and 4,000 Teal—have now been put on punched cards and analysis is in progress.

Inventories and censuses

Censuses of breeding population are made by R.I.V.O.N., focussing on rare species and their habitats. In 1961 R.I.V.O.N. worked especially on censuses of Red-crested Pochard, Shelduck *Tadorna tadorna*, Eider Duck *Somateria mollissima* and the Mute Swan. Attention was also given to other censuses already in progress of breeding populations of Tufted Duck, Pochard, White-eyed Pochard *Aythya nyroca*, Pintail, Wigeon and Gadwall.

Inventories of migrating and wintering populations are also made by both institutes, also in close co-operation. I.T.B.O.N. organises in the Netherlands fortnightly wildfowl counts from August-April, especially of ducks. The counts of I.T.B.O.N. started in 1948 with the international wildfowl counts organised by the International Wildfowl Research Bureau (I.W.R.B.), since 1958 co-ordinated with the Wildfowl Working Group of I.W.R.B. and the International Union of Game Biologists (I.U.G.B.). I.T.B.O.N. counts are made on 23 count waters. R.I.V.O.N. organises these counts in about 18 State Nature Reserves. All species of ducks are counted.

The counts of geese are organised separately from the counts of ducks. This is done because the important haunts for duck and geese are not the same. The counts are organised and made by R.I.V.O.N. as a part of its conservation programme, because the feeding-grounds of the big flocks of wild geese in the Netherlands are very restricted in number and in acreage and several of them are seriously threatened by reclamation and drainage. The counts are made once a month from September to April on about 30 localities by 20-25 counters.

Intensive studies

Intensive studies were made by I.T.B.O.N. concerning the Mallard and Teal (population dynamics, reproduction rate, migration, etc.). As in other years, an intensive study is being made of the catches of the duck decoys which are still catching for the market. The 1960-61 season showed rather low catches (an average of 1,700 ducks per decoy), whereas 1961-62 was a very good season (2,900 ducks per decoy). 90% of the bay consisted of Mallard.

R.I.V.O.N. made intensive studies concerning the migration, feeding behaviour, daily rhythm, etc. of Brent Geese *Branta bernicla*, Barnacle Geese *B. leucopsis*, White-fronted Geese *Anser albifrons* and Pinkfeet *A. brachyrhynchus*. Research was also done on crop damage in grasslands by Pinkfeet in winter and by Greylag Geese *A. anser* in autumn and spring.

In 1961 a special study was made by R.I.V.O.N. of the damage due to the rapidly increasing populations of half-wild Mute Swans. This study was made in the Prov. of Zuid-Holland, where the population of Mute Swans is estimated at 800-900 pairs. Wild Mute Swans are not breeding in this area.

In 1961 a special study of the numbers of migrating Common Scoters *Melanitta nigra* passing the Dutch coast started on the island of Terschelling. This study originated from the study of the consequences of oil pollution of the sea. As in former years the numbers of oiled birds along the North Sea coast were counted in 1961. This is a part of a programme which is planned to continue until 1968.

Important advances in wildfowl conservation

Some important advances made in 1961 were:

- a) Added to the list of ducks, geese and swans which may not be shot: Long-tailed Duck *Clangula hyemalis*. This list now includes: Common Scoter, Velvet Scoter *Melanitta fusca*, Goosander *Mergus merganser*, Red-breasted Merganser *M. serrator* and Smew *M. albellus*, Shelduck, Eider Duck, Brent Goose, Barnacle, Canada Goose and all three swans.
- b) Several important wildfowl habitats were declared new reserves:
 1. *State nature reserves*
In 1961 about 30 wildfowl reserves were added to the already existing 78. These new reserves cover a total area of about 1,767 ha. Among them are 8 duck decoys.
 2. The "*Vereniging tot Behoud van Natuurmonumenten in Nederland*" also enlarged its wildfowl reserves in 1961 by at least 6 localities with a total area of about 200 ha.

Difficulties hindering wildfowl conservation

Although there are many wildfowl reserves in the Netherlands and the number is increasing every year and much is done for wildfowl conservation in general, there are some difficulties worth mentioning. The major difficulties hindering wildfowl conservation in the Netherlands are at present: reclamation, drainage, industry and recreation.

Reclamation and drainage, particularly in reallocation schemes, are threatening seriously one of the most important haunts of more than $\pm 15,000$ Barnacle Geese near the Lauwerssea. This area is threatened when the dike will be built, which will cut off the Lauwerssea from the Waddensea. The marshy lands near Beetsterzwaag where about 10,000 Whitefronts and hundreds of Barnacle Geese winter regularly is threatened by drainage schemes. Other haunts, nearly as important, in Gaasterland and in Lemsterland, where Greylag, Pinkfoot, Whitefront and Barnacle often stay in great numbers are threatened in the same way. In the province of Zeeland also some important geese haunts are in danger because of reallocation schemes.

Other threats for wildfowl conservation are the planned reclamation of the southern part of the Dollard in the province Groningen and the reclamation of the "Verdronken-Land van Saaftinge" in Zeeland.

The Deltaworks in the south-west of the country have already brought some unfavourable changes and will bring more in the near future, especially because the tidal movements in the Hollands Diep and the Haringvliet will be stopped and the water will become fresh. This is inevitable however.

Some important wildfowl habitats have been lost in recent years because of the establishment of industry in the area. This happened in the nature reserve "de Beer" near Hoek van Holland as a part of the "Europoort" - project of Rotterdam. The wildfowl area of the Zuid Sloe, east of Vlissingen in Zeeland, is threatened in the same way because Vlissingen is extending its industry into this area.

Another danger for wildfowl habitats is the establishment of recreation-centres. One of the most interesting wildfowl areas in the south of the Netherlands has lost a great deal of its wildfowl population in this way.

Although the oil pollution of the sea causes the death of many thousands of seabirds every year along the Dutch coast, the oil pollution of the Dutch coast is not worse than in other countries.

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Wildfowl Research and Conservation in Belgium

Count Lippens

THE Institut Royal des Sciences Naturelles de Belgique is responsible for organising wildfowl conservation, aided by the very active association "Les Reserves Naturelles et Ornithologiques de Belgique."

Ringling. Duck ringling is largely concentrated at one decoy at Meetkerke, near Bruges, which I have run since 1956. From 1956 to 1961 I have ringed at Meetkerke about 12,000 Mallard *Anas platyrhynchos*, 3,500 Teal *A. crecca*, 475 Garganey *A. querquedula*, 450 Wigeon *A. penelope* and 50 other ducks. A few Teal, Garganey and other ducks are also ringed in March and April in another decoy near Dixmude.

Censuses. No extensive and regular wildfowl counts are made. In 1961 a breeding census of Shelducks *Tadorna tadorna* found 120 pairs in the country.

Conservation. There were no changes in legislation during 1961. The open season lasts from 21st July to 28th February. Shelducks, swans, Barnacles and Brent are protected by law at all times. There are only two commercial decoys left in Belgium and no new ones may be created.

Several new reserves were created in different parts of the country by the association. Most of the 18 reserves secured by "Les Reserves Naturelles et Ornithologiques de Belgique" in its ten years of life are of importance to wildfowl. They have brought about an enormous increase in the numbers of ducks breeding in Belgium.

Wildfowl Research and Conservation in N. Ireland in 1961

J. V. Bateman

THERE does not exist in Northern Ireland at the moment any central organisation actively engaged on wildfowl research and conservation. The situation, it is hoped, will be remedied if a Nature Conservancy is established as a result of a Government committee set up to examine the whole question of nature conservation in Northern Ireland.

The country is an attractive wintering area for many species of duck, with its large sealochs and inland lakes. A number of relatively successful wintering censuses have been carried out in recent years and efforts are being made to broaden the scope and increase the frequency of these censuses. Due to a variety of circumstances the data for 1961 are very incomplete.

Three species of geese normally winter in the area—Brent, Greylag and Greenland Whitefront, and while the numbers of Brent have risen steadily the reverse is the case with the Greylag and Whitefront. An extensive drainage scheme carried out on the River Quoile is having an appreciable effect on the Downpatrick Marshes and the numbers of geese wintering there.

Large flocks of Whooper Swans spend the winter on the sealochs and inland waters all over the country but only small numbers of Bewick's Swans are seen.

No wildfowl refuges as such exist and there are no established facilities for trapping and ringling wildfowl. The need for both is realised and it is hoped that in the near future both deficiencies will be remedied.

Wildfowl Research and Conservation in France in 1961

Francis Roux

(C.R.M.M.O. — Paris)

THE interest taken in France in various aspects of the biology of the Anatidae and in problems posed by their conservation has greatly developed in the last ten years, thanks, in the first place, to the activity of the Station Biologique de la Tour du Valat in the Camargue. This private institution, directed by its founder M. Luc Hoffmann, carries on methodical investigations on the migrations, ecology and population dynamics of the ducks which nest, pass through or winter in the Camargue and the French Mediterranean region.

Ringling. To 31st December, 1961 the Station had ringed 40,608 ducks of twelve species, as shown in the following table:

	pull.	full-grown	Total
<i>Anas platyrhynchos</i>	254	4854	5108
<i>A. crecca</i>		31971	31971
<i>A. querquedula</i>		1822	1822
<i>A. strepera</i>	42	181	223
<i>A. penelope</i>		17	17
<i>A. acuta</i>		64	64
<i>A. clypeata</i>		319	319
<i>Netta rufina</i>	22	159	181
<i>Aythya marila</i>		4	4
<i>A. fuligula</i>		754	754
<i>A. ferina</i>		142	142
<i>A. nyroca</i>		3	3
Total	318	40290	40608

These figures represent almost the entire ringling of wild ducks carried out in France. In the rest of the country the only ducks ringed are Mallard hand-reared for re-stocking wildfowl reserves or some private shoots.

Conservation. The Union des Federations Départementales Côtières des Chasseurs (U.F.D.C.C.) is the only national organisation actively concerned with questions directly affecting the protection of wildfowl. Comprising the officers of sporting organisations in 28 départements, under the presidency of M. de Coniac, the Union tries to promote in these départements measures to safeguard waterfowl, particularly by the creation of suitable reserves and by stricter regulation of shooting. It was responsible for the formation of the French section of the International Wildfowl Research Bureau and the national wildfowl census organisation. The Union sponsors for this purpose a network of observers, largely recruited from shooters and gamekeepers, working chiefly in coastal regions. The information received is assembled in Paris at the headquarters of the C.R.M.M.O.

However, since this network is not complete enough to cover all the suitable wildfowl haunts even within the coastal départements, various ornithological groups* are undertaking duck counts in their respective areas of activity. The Station Biologique de la Tour du Valat is doing the same for the birds wintering in the Camargue. These observations, precise and at regular

*Groupes des Jeunes Ornithologistes, Paris; Centre d'Etudes Ornithologiques de Bourgogne, Dijon; Centrale Ornithologique Lyonnaise, Lyon; Société Morbihannaise d'Ornithologie et de Protection de la Nature, Vannes.

intervals, are going to complete those of the national census, but it must be admitted that wildfowl counting on a national plan is only just beginning. (For example, up to the present, there are no quantitative data on the breeding population of the Mallard in France—regrettable ignorance in a country where this population, largely sedentary, experiences the maximum shooting pressure).

Among studies being made on the effects, direct and indirect, of shooting on waterfowl should be mentioned those carried out in the Camargue in the last four years on lead-poisoning of ducks. By systematic fluoroscopy of birds caught alive, M. Hoffmann has established that the rate of lead poisoning of ducks is three times higher in the Camargue than in the U.S.A. The same examinations also enable him to follow the evolution of shooting pressure on wildfowl in the Camargue.

There have been no major recent changes in French legislation affecting waterfowl. Swans are the only Anatidae given absolute protection. But: 1) the creation of a reserve on the islets of the Golfe de St. Malo, decided in 1961, assures the continuation of one of the few breeding stations of the Shelducks on the Atlantic coast; 2) the 3000 or so Brent Geese living under protection in the Réserve du Golfe du Morbihan comprise about one half of the population wintering on the French coast. Elsewhere, the refuges of la Pointe d'Arçay (Vendée) and the Bassin d'Arcachon (Gironde) are regularly used by Brent.

The protection of Anatidae is not, however, as great as it ought to be in France, where at the present time the number of "wildfowlers" represents nearly 50% of the total in Europe. As it is impossible for them to oppose the constant increase in the number of fowlers, the efforts of sporting authorities are aimed at: a) limiting the length of the open season; b) prohibiting some methods which are too deadly, such as shooting from motor-boats or punts and the use of large-calibre weapons; c) increasing the number of reserves and refuges. The U.F.D.C.C. plays the predominant part in these activities.*

In addition to the direct menace of overshooting, the accelerated rate of disappearance of their biotopes threatens the conservation of water-birds. Large drainage and water-control projects are planned in several parts of France which, in view of their nature and position, are of European importance in the "wildfowl migration system." Among those threatened with radical transformation by the drainage programme anticipated in the next few years are:

1. La Baie de l'Aiguillon (Vendée): 3000 hectares (7400 acres) of mud-flats, some thousands of hectares of polders, one of the principal wintering haunts of wildfowl on the Atlantic coast, undoubtedly one of the major stopping-places in the "European wildfowl migration system."
2. La Brière (Loire-Atlantique), a vast group of *Phragmites*-beds and peat bogs unique in France and an important breeding centre for water-birds.
3. Les Marais de Redon (Morbihan), one of the last wintering places of the White-fronted Goose in our country.

Comparable works, though less extensive, have already been completed at the expense of the Marais Vernier in the estuary of the Seine and of the Marais des Echets in the Lyons region. Everywhere there are other small

*In 1961 the U.F.D.C.C. published a small book which is not only an account of existing reserves for water-birds but which also includes a valuable exposition of the aims to be pursued.

losses of lakes and marshes, coastal and interior, of local interest. Repeated from one place to another, the disappearance of small habitats risks consequences quite as disastrous for the welfare of water-birds as those resulting from the drainage of a vast marshy region of national or international fame.

We know that in some European countries oil pollution of the sea constitutes a grave danger to some Anatidae. It is not so important in France, because the Atlantic coastal waters are relatively less polluted than those of the Baltic or North Sea, while the French coasts are little frequented by ducks that winter at sea (with the exception of Common Scoters and Red-breasted Mergansers). Even so, though only in a minor way, the danger exists and causes concern to the Conseil Supérieur de la Chasse, which has appointed the President of the U.F.D.C.C. to represent it on the Commission Nationale de la Pollution.

Wildfowl Research and Conservation in Portugal

Geoffrey M. Tait

THERE are no organisations concerned with the conservation of wildfowl in Portugal, where people are very little interested in birds. The places where ducks and geese are to be found, such as the wide stretches of the Tagus above Lisbon, the Aviero marsh 40 miles south of Oporto and Setubal Bay, are so extensive and lacking in cover that few people bother to try shooting ducks. Though shorebirds and waders are much less plentiful than thirty years ago, this is not due to over-shooting in Portugal—the birds no longer arrive in such quantities. The shooting season is from 15th August to 15th March. The Tagus above Lisbon is the only regular haunt of geese and there are not many.

Mallard and Teal are common breeding ducks. Dr. Santos Junior rings about twenty Mallard a year at Golega, a swamp in the Tagus valley. They are caught when young or when flightless. The principal contribution to ringing studies in Portugal is the author's unofficial organisation for the reporting of recoveries of birds ringed in other countries, enlisting the help of provincial correspondents of every newspaper in the country. This produces 150-200 recoveries a year, including a small proportion of ducks.

Wildfowl Research and Conservation in Switzerland

A. Schifferli

Schweizerische Vogelwarte Sempach

IN Switzerland there is no state-controlled organisation concerned with wildfowl research and conservation. The Schweizerische Vogelwarte Sempach, a private institute, has recently been investigating the migratory behaviour of the Mallard *Anas platyrhynchos*, the most abundant breeding duck in the country. The Vogelwarte has carried out a successful re-stocking experiment with Mallard in Tessin, where they had become scarce as a breeding species because of heavy shooting pressure.

Together with other nature- and bird-preservation organisations, especially the Schweizerischen Landeskomitee für Vogelschutz, the Vogelwarte has

helped to draft proposals for revision of the federal laws governing hunting and bird-protection. Some years ago the Schweizerische Bund für Naturschutz bought up the shooting rights on and around the shores of the Klingnauer-Stausee. This has almost completely stopped shooting on this lake, which in winter holds up to 8000 dabbling- and diving-ducks.

The revision of the federal laws for shooting and bird-protection will, when put into effect, shorten the open season for ducks, the end of the season being brought forward from 28th February to 31st January. At the same time, "Entenkanonen" of an internal diameter greater than 23.4 mm. (about 11/12ths of an inch) will be forbidden. These amendments of the shooting laws have already been approved by the Ständerat (cantonal councils). The Nationalrat will decide on them in March, 1962. It is likely that both new changes in the law will be confirmed.

Duck-ringing in Switzerland has been almost entirely of Mallard. For the most part these have been ducklings reared by the Vogelwarte, the remainder being caught in cage-traps on the Sempachersee. Trapping is not continuous, mostly from late summer until spring. The numbers ringed in 1959 were 295 (83 ducklings and 212 trapped when full-grown) and in 1960 361 (215 ducklings, 146 trapped).

The Vogelwarte organises field-ornithologists taking part in the international monthly wildfowl count scheme. At present the scheme is operated by our collaborator Herr H. Leuzinger, who has replaced Dr. D. Burckhardt. Detailed results are published in *Der Ornithologische Beobachter*.

Ducks are now losing their breeding biotopes because of soil improvement works. On the other hand new artificial impoundments are providing new living quarters for them. Attempts are being made to control shooting on these new reservoirs.

Wildfowl Research and Conservation in Hungary

A. Keve

Madártani Intézet, Budapest

THE organisations concerned with research and conservation directly affecting ducks, geese and swans are the Hungarian Council of Protection of Nature, the Section of Hunting of the Chief-Directory of Forestry and the Hungarian Institute of Ornithology.

Ringling. No trapping of full-grown ducks is carried out at present. In 1961 ringling was confined to about 30 pulli of *Anas strepera*. In previous years *A. platyrhynchos*, *A. querquedula*, *A. clypeata*, *Aythya nyroca* and *A. ferina* had been ringed.

Censuses. Hungary does not take part in the international wildfowl count scheme because, especially in the eastern part of the country, such immense numbers of ducks and geese occur as migrants — swans appear only occasionally — that a census would need many good observers. We do not have them and so cannot produce a realistic census. As part of our ecological studies of migration each year four synchronised observations by 30-40 watchers are made on water- and shore-birds, including ducks and geese. These observations are made in April and September-October and exact numbers are recorded in the detailed notes.

Special studies. In addition to the ecological studies of migrants, the food of ducks is being investigated by B. Kovacs, Assistant Professor of Zoology in the Agricultural High School at Debrecen.

Conservation. There were no important alterations in legislation in 1961. The open season for ducks is from 1st August to 31st December; the Ruddy Duck *Oxyura leucocephala* is fully protected. For geese, the season extends from 1st September to 15th April; the Greylag *Anser anser* is wholly protected. Swans are also protected, but visit Hungary so seldom that this is of little importance.

We have no new major difficulties in conservation. Rice-fields and fish-culture lakes are continually increasing and make good habitats for ducks and geese on migration and in summer, though the large marshes which form the best breeding areas are being reduced.

In Conclusion

IF THE foregoing reports are looked at as a whole some valuable points emerge. In the field of conservation, it seems clear that legislation restricting shooting and other forms of destruction is now fairly severe. Continued reduction of "shooting pressure," where this may be found necessary, is likely to call for improvements in the enforcement of existing legislation and for self-education and restraint by wildfowlers, rather than for further extensive restrictions. The threat of oil pollution is still widespread and wildfowl enthusiasts must join with the many other interested people in supporting the international campaign for the elimination of this menace by the prohibition of discharge of waste oil at sea.

The pressure on wildfowl exerted by the continued loss of wetlands, offset to some extent by the construction of new reservoirs, cannot be relieved in any simple way. It calls for constant vigilance, for the early detection of major threats, and for dogged but not unreasonable resistance to changes which are unnecessarily harmful. Though this is certainly an international problem, shortly to be discussed at a full-scale European conference, it is also one about which it is possible for those people whose concern is primarily local to protest most effectively.

The picture of research activity is a patchy one. There is still a paucity of sustained studies of breeding groups which are essential to the understanding of population problems. The only large-scale duck ringing has been carried out in areas visited in winter or on passage and is in consequence relatively unrewarding, since recoveries in summer are not numerous enough to determine the breeding origins of winter visitors with useful precision. A recent decision to suspend the ringing of Mallard and Teal in the Netherlands until the results of earlier ringing have been worked out is evidence of an awareness that mere quantity is not enough. Re-direction of the ringing effort is a matter of concern in several countries.

There is no shortage of important and fascinating problems for investigation but where are the people to carry them out? There are fewer than forty biologists in the whole of Europe able to give a substantial part of their time to research on wildfowl. This is not enough. Yet, in relation to the work that has to be done, the need for more workers is even more urgent in the practical application of research, in education and the other tasks of conservation.