

Estimate of the water-fowl population passing across Lake Balaton

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A survey of the migrating water-fowl on Lake Balaton was started by the Hungarian Institute for Ornithology in 1982. This article summarizes and evaluates the results obtained in 1982, 1983 and 1984.

The investigations were aimed at registering, for national surveys and for the International Water-fowl Research Bureau (IWRB), the required avifaunistic quantitative data. In addition, the same surveys can provide basic data for research on the material circulation of Lake Balaton. As a further aim, relating mainly to nature conservation, some major strips of the Lake (of particular importance for the migrating water-fowl) should be explored and delimited.

In the course of the three years, a total of 71 bird species were detected on and above the open water and on the lake shores.

The most populous species are the ones enumerated below. The maximum number of each species recorded on the total lake surface is also given:

Mallard (<i>Anas platyrhynchos</i>)	19 400
Tufted Duck (<i>Aythya fuligula</i>)	15 695
Coot (<i>Fulica atra</i>)	11 566
Goldeneye (<i>Bucephala clangula</i>)	10 629
Pochard (<i>Aythya ferina</i>)	4 869

From the scientific point view, systematic registering of the presence of rare species (*Clangula hyemalis*, *Somateria mollissima*, *Melanitta fusca* etc.) or new species for Hungary (*Gavia adamsii*) is also important.

The water-fowl population estimate serves the aim of exploring the most valuable strips of water, and consequently to recommend them for protection.

The strips of lake surface delimited, on the basis of investigations carried out so far, are the following: Paloznak-bay, Bozsai-bay, Keszthely-bay and the 3-4 km² of open water in front of Fonyód. Should investigations during 1985 and 1986 confirm the author's findings discussed above, he proposes to register these strips in the list of Ramsar-areas.

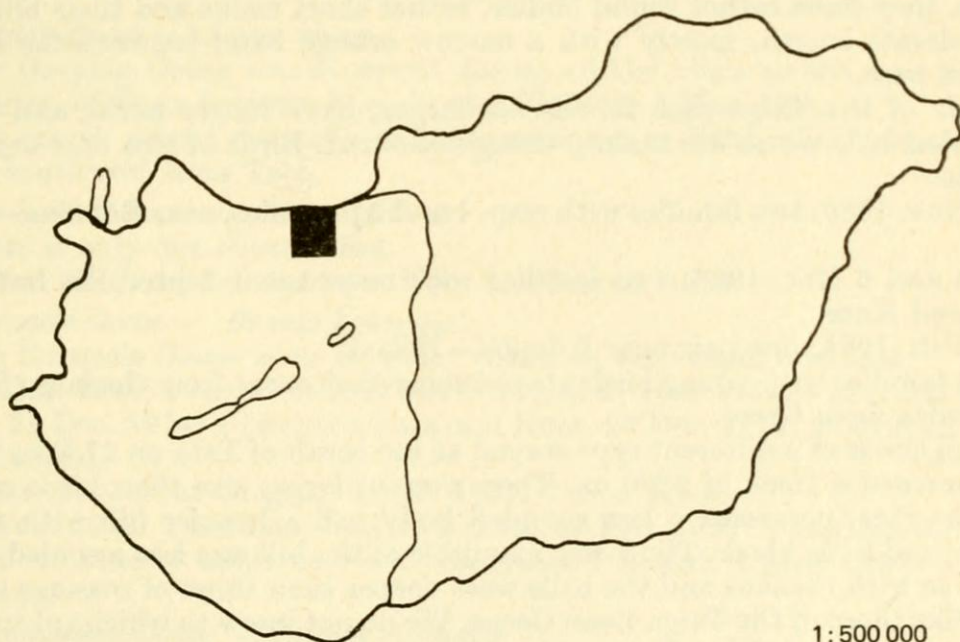
V. THE OCCURRENCE OF GEESE (MAINLY BEAN GEESE) AT TATA IN THE WEST OF HUNGARY

L. M. J. van den Bergh – J. Philippona

The Bean Goose *Anser fabalis* winters in large numbers in the central parts of Europe. This paper deals with Tata in the west of Hungary which is since years a well-known wintering site for geese (mainly Bean Geese). Travelling to the east of Hungary and to Rumania in the late sixties and the early seventies we found large numbers of geese, roosting during the night on the lake (Öreg-tó) on the edge of Tata. In later years (1974, 1980, 1981, 1982, 1983 and 1984) visits of longer duration were spent at Tata.

The area of Tata

Tata is situated 55 km WNW of Budapest and 9 km S of the Danube (47.35 N/18.20 E) (Fig. 1). The number of inhabitants is about 30 000. The town lies on the eastern edge of the small Hungarian plain (Kis-Alföld). The plain is mainly flat, near Tata however the landscape is hilly. Nowadays only



1. Position of the area of Tata. In "The area of Tata".

small parcels of wood occur here and there. Remains of hedges date from the time that the landscape was more closed than at present. The area slopes lightly from south to north and several small brooks run parallel to the Danube. Small marshes occur at low places; in wet periods and after the melting of snow floods can be seen occasionally. A small number of lakes is found in the basins of the brooks.

The soils of the Kis-Alföld consist of greybrown loams which are supposed to be very fertile. The area of Tata is used by large state and collective farms which grow as main crops winter wheat and maize.

East of Tata we find a landscape of low mountains mostly up to 500 m (highest point 634 m), for large parts covered with woods. This is a part of the well-known Bakony Forest (Bakony – Vértes). Further east the height decreases and the land is more used for agriculture than in the highest parts.

The human population of the area is mainly concentrated in small villages with a few hundreds up to 1000 or 1500 inhabitants. Because of this nucleated dwelling pattern large parts of the area are almost unoccupied and rather quiet as a matter of fact. Distances between villages vary from 3 to 10 km. At some places large farms have been built recently.

The lake at the south side of Tata is called Öreg-tó (old lake). It measures some 250 to 300 ha. It is partly bounded by buildings of the town and a park. Woods occur at the south and southwest edges of the lake.

The geese of the Tata-area

Bean Goose – Anser fabalis

The Bean Geese that winter in Hungary almost all belong to the tundra race rossicus. Tundra Bean Geese are a little larger than the White-fronted Goose, they have rather round bodies, rather short necks and their bills are of moderate length, mostly with a narrow orange band between the black tip and base.

Birds of the Taiga race fabalis are larger, have longer necks and more elongated bills which are mainly orange coloured. Birds of this race are rare at Tata:

23 Nov. 1980: two families with resp. 1 and 2 juveniles, near Bábolna – Tárkány.

4, 5 and 6 Mar. 1983: two families with resp. 1 and 2 juveniles between Tata and Kocs.

27 Feb. 1984: one pair near Kömlőd – Bokod.

The families with young birds stayed somewhat apart from the large flocks of Tundra Bean Geese.

Bean Geese of a different type stayed 45 km south of Tata on 27 Feb. 1983. It concerned a flock of 3500 ex. They were of larger size than birds of the rossicus race, possessed a less rounded body and a heavier bill with much orange and little black. The lower mandible of the bill was less rounded compared as with rossicus and the calls were deeper than those of rossicus birds, more like those of the Taiga Bean Geese. We do not know to which subspecies these geese may belong. It is supposed that they had arrived from another winterquarter during a preceding period with hard frost and much snow.

Pink-footed Goose — Anser brachyrhynchus

The list of observed specimen of this rare goose is as follows:

1 Mar. 1981: 1 near Kocs.

1 Mar. 1982: 1 near Kocs. 2 Mar. 1982: 3 between Tata and Mocsá.

6 Mar. 1983: 1 between Tata and Kocs.

27 Feb. 1984: 1 adult between Tata and Kömlőd, and 1 adult and 1 juvenile between Környe and Bokod. 29 Feb. 1984: 2 adults between Zsámbék and Páty.

White-fronted Goose — Anser albifrons

Apart from the far more numerous Bean Goose, the Whitefront is the only goose species that also occurs in somewhat larger numbers. The counts of the last few years show a rising tendency.

Autumn 1980: 1000. Feb.—Mar. 1981: 500. Feb.—Mar. 1982: 1500. Feb.—Mar. 1983: 1500. Feb.—Mar. 1984: 5000.

White-fronteds also use the Öreg-tó as a roost and often feed at the same places as the Bean Geese.

Lesser White-fronted Goose — Anser erythropus

This species is an irregular visitor in small numbers which seem to increase in the last few years.

1 and 3 Mar. 1982: 1 adult near Kocs.

28 Feb. 1983: 5 at Öreg-tó during evening flight.

2 Mar. 1983: 4 between Tata and Kömlőd; 6 at Öreg-tó.

3 Mar. 1983: 1 juvenile between Kocs and Nagyigmánd and 1 adult between Dad and Kömlőd.

4 Mar. 1983: 4 adults and 2 juveniles between Tata and Kocs together with 4900 Bean Geese and 250 White-fronted Geese.

5 Mar. 1983: 16 among 10 000 Bean Geese and 350 White-fronted Geese. The total in 1983 may be stated at about 20 ex.

1 Mar. 1984: at total of at least 17 ex. in the area.

Greylag Goose — Anser anser

The Greylag Goose was observed during all the visits to the area with a maximum of 18 ex between Zámoly and Pátka on 1 Mar. 1984.

The species occurs normally in larger numbers at Velencei tó some 54 km south-southwest from Tata.

Bar-headed Goose — Anser indicus

There is only one observation:

5 Mar. 1982: 1 adult between Kocs and Nagyigmánd.

Barnacle Goose — Branta leucopsis

The Barnacle Goose is an irregular visitor in very small numbers:

21. Dec. 1974: 1 between Tata and Kömlőd. 27 Dec. 1974: 1 at about same place. 28 Dec. 1974: 1 between Tata and Kocs. 29 Dec. 1974: 2 between Tata and Kömlőd.

1 Mar. 1981: 1 at Öreg-tó. 6 Mar. 1981: 1 near Kocs.

23 Feb. 1982: 1 between Dad and Kocs. 27 Feb. 1982: 1 at Öreg-tó.

27 Feb. 1984: 1 adult between Környe and Bokod. 1 Mar. 1984: 1 near Zsámbék.

Red-breasted Goose — Branta ruficollis

This species is observed in single individuals:

1 Mar. 1981: 1 adult near Kocs.

28 Feb. 1982: 1 adult near Ács. 2 Mar. 1982: 1 adult between Kocs and Szák.

27 Feb. 1984: 1 adult at Öreg-tó; later between Környe and Bokod.
28 Feb. 1984: 1 adult at same place.

The numbers and the distribution of the geese

The data collected by us in the period 1971–1984 are insufficient to get a detailed picture of the movements and the distribution of the geese in the study area. It is however possible to give a general survey for the course of the winter.

The first small numbers of Bean Geese* seem normally to arrive before mid October. At the end of this month the numbers have risen till several thousands. As far as known many more geese arrive in November. In the few days from 20 to 24 November 1980 numbers firstly decreased from 27 000 to 14 000 and next increased again to 23 000. These facts point to migration of birds, possibly on their way to other wintering areas like Velencei-tó, Balaton and Kopacki Rit (the third area is situated in the North of Yugoslavia).

Large numbers are often present in December as some data may illustrate:

23 Dec. 1971: 30 000–40 000; 15 Dec. 1979: 22 000 (*Dr. I. Sterbetz* in litt.); and Dec. 1974: 12 000.

It is said that many geese leave the area during periods with strong frost and heavy snow, though a few thousand birds may remain also under unfavourable circumstances, as on 13 Jan. 1980: 1500.

Large numbers of Bean Geese concentrate at Tata in February, but the time of their arrivals will depend of the weather circumstances. In the weeks before the geese leave Central Europe, numbers sometimes rise to the highest levels ever to be found at Tata. Some data may demonstrate that:

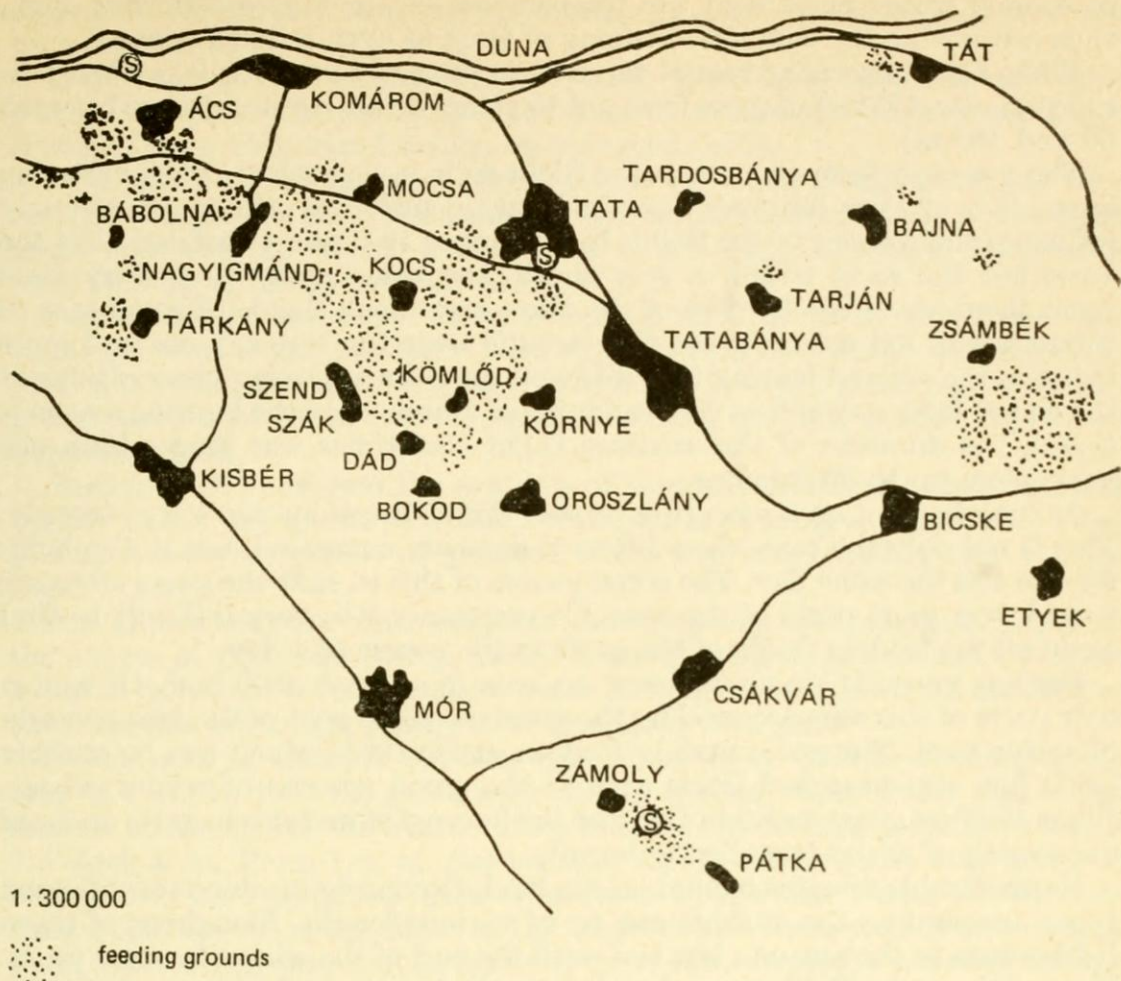
2 Mar. 1981: 50 000; 26 Feb. 1982: 70 000; Mar. 1983: 20 000; Mar. 1984: 45 000.

Many Bean Geese obviously migrate through the area of Tata and only shortly stay there. These will probably be mainly birds from other sites in Pannonia but it has appeared that also birds from West-Europe can emerge at Tata at the end of the winter.

The observations in 1982 coincided with the mass departure of the Bean Geese. Still 50 000 or 60 000 were present on 3 March, but only 15 000 or 16 000 were left the next day. In the night of 3–4 March many flocks of Bean Geese were heard flying over Tata into northern directions. The number on 5 March was only 9000.

The counts of the geese proved to be most successful at the roost (Öreg-tó) during morning flight. Flocks at the feeding grounds were often controlled, but usually the geese occur very dispersed making it impossible to realize a full count at the feeding grounds in the course of one day. Counts during the evening flight at Öreg-tó, mostly give a very incomplete picture as many flocks often arrive in complete darkness.

*When we write about "geese" this species is meant unless otherwise stated.



2. Position of the roost (S) and the feeding grounds In „Ecology of the Bean Geese at Tata.

Ecology of the Bean Geese at Tata

The presence of a favourable roost is very essential in the ecology of geese in their wintering areas. As was stated before the geese of Tata normally roost at Öreg-tó. Nearby some other roosts are found, as banks in the Danube near Komárom, the Zámoly – Víztaroló, 40 km south of Tata and Veleneci-tó.

Observations at Öreg-tó demonstrate that the geese prefer the central and southern parts of the lake and that they rarely or never visit the most northerly part which is rather narrow and which is bordered by buildings. The lake is shallow, a bank often is exposed when the waterlevel is low. Geese often come quite near the borders especially in the Southwest.

A canalized brook – the Által-ér – enters the lake in the South and leaves it again in the North. This small river was fed from wells with relative warm water in former days. Seepage from the surrounding hills prevents the early freezing of the lake also presently. The water of Által-ér must be very polluted, as it has passed underway the industrial town Tatabánya. The discharge

of cooling water must held the temperature of the water relatively high, thus preventing the complete freezing of Öreg-tó even in hard winters.

When the observer arrives at the lake in the early morning it is often possible to inspect flocks of geese from not too large distances (sometimes between 50 and 100 m).

The geese perform their morning flight as it is normal at other wintering areas. It is obvious however that the hunting activities of men can strongly influence the pattern of the flight. In December 1971 and December 1974 the geese left the roost within a very short time when many shots very fired upon them along the borders of the lake. Enormous clouds of some tens of thousands of lod calling geese flew around over the water, more and more rising in the air and leaving into different directions. During observations at the end of February and at the beginning of March when the hunting season is closed, the duration of the morning flight sometimes was longer than one hour, even up to 90 minutes.

As may be seen on a map (Fig. 2) the flight directions can vary strongly. This is not only the case when different days are compared, but it also holds for one and the same day. The consequence of this is, that the geese often are spread over large parts of the area. Consequently it is very difficult to find again all the feeding flocks of the geese in the course of a day.

Feeding grounds are spread over an area of at least 3500 km². Of course only parts of this area are used by the geese as only a part of the area consists of arable land. The geese mainly feed on maize fields which can be stubble fields but also ploughed fields and on the green sprouts of winter wheat. When the first geese arrive in October the harvest of maize is near its end and the sowing of wheat has already begun.

Maize stubble remains behind on the land. Obviously machines of different types are used as the stubble can be of various length. Ploughing of these fields starts in the autumn but last until the end of the winter in some years. Most of the maize fields were already ploughed at the end of December 1974, whereas at the end of February 1981 many fields were still covered with stubble. In the three following years however, few stubble fields were left in the same period.

As concerns the wheat that is sown in October and November, the growing of the sprouts depends of the weather. The growth is retarded by dry weather.

Only few grasslands occur in the area described, so it is of minor importance as a feeding ground for geese.

A short summary will be given of the feeding ecology in some different winters:

1974, end of December: The geese were mainly feeding on ploughed maize fields; ten flocks (total 10 000 ex) were seen on this habitat. Four flocks (1800 ex) stayed on fields with winter wheat. Only 100 birds were seen on maize stubble.

1981, end of February – beginning of March: Several thousands of geese in many flocks stayed on the fields with maize stubble. Exact numbers were difficult to estimate as many birds were completely hidden in the high stubble. Large flocks have been seen on fields with winter wheat, but they stayed there mainly to rest; they did little feeding on the sprouts. One resting flock was found on a field with clover. No geese were seen on ploughed maize fields.

1982, same period as in 1981: Only few flocks could be observed at small

distances. Flocks were seen as well on maize stubble, as on ploughed land and on winter wheat.

1983, same period as both former years: Geese only occurred on winter wheat. Few plots with maize stubble occurred at the end of this winter. Large flocks of geese were found resting on ploughed fields.

1984, same period as former three years: Only two flocks (6500 ex) were seen on ploughed maize fields, though this habitat covered large areas. More geese were seen on winter wheat (total 43 000 ex). Thousands other birds were feeding on maize stubble fields.

Summarizing these data it may be stated that the practice of large-scale farming on state and collective farms has become favourable for wintering birds like geese, as waste after harvest of maize is left in great quantities and green sprouts of sown cereals (mainly wheat) provide another source of important food.

Sterbetz (1971) analysed the contents of stomachs of Bean Geese and found besides maize and grains of wheat several seeds of grasses, sedges and other plants. Green rests mainly of sprouted wheat were also found, grasses to a far lesser extent.

It is known that the time needed to gather enough food, depends largely of the nature of that food (*Owen*, 1980). Geese grazing on grass need 7-8 hours a day to collect their requirement. Geese feeding on cereals need a far shorter time. Cereals are a high energy food compared with grass.

It was tried to measure the time that Bean Geese need for feeding in the area of Tata. In 1981 the geese were mainly feeding on the fields with maize stubble at the end of the winter. They reached the feeding grounds at about 7 o'clock a. m. From 9 a. m. increasing numbers of the geese were going to rest on near bare ploughed fields or on fields with winter wheat and at some sites which were flooded. Most of the birds stayed there until 3 or 4 o'clock p. m., after which they moved again to the stubble fields for a second feeding period, where they remained until 5.30 or 6 o'clock p. m. It became clear that a goose spend some 4 or 5 hours to feed. Of course not all the geese followed the same pattern exactly. There was some overlapping. During some periods intensive flying was noticed to and from the feeding and the resting sites.

Distances between the roost (Öreg-tó) and feeding grounds were measured on several occasions. In 1974 the distances were found to be as follows:

7700 ex at 5–6 km from the roost,

3550 ex at 8–12 km from the roost,

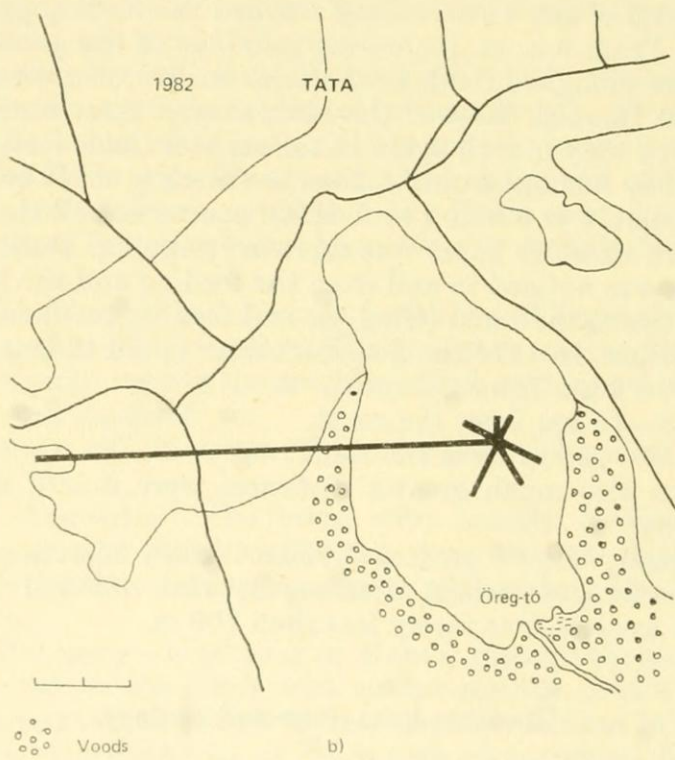
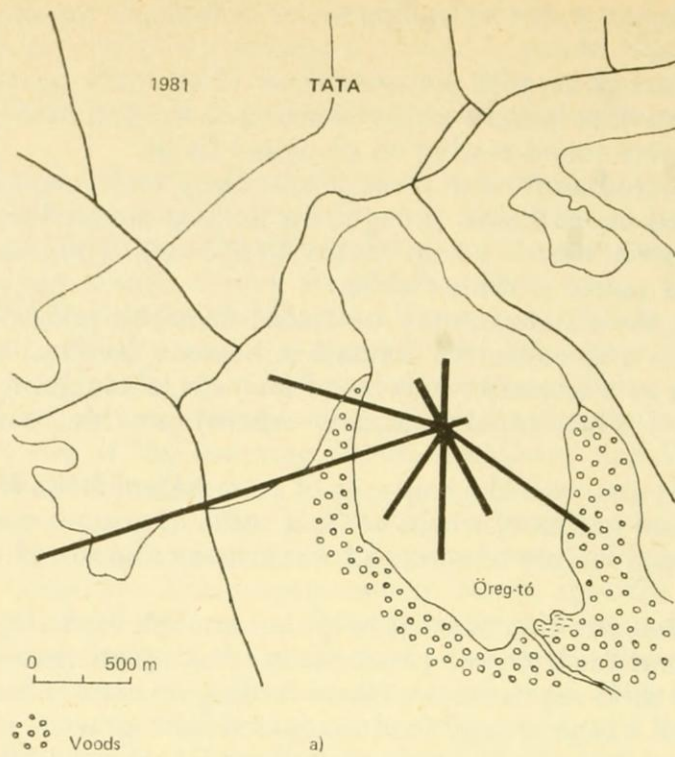
4550 ex at 15–16 km from the roost.

In later years also much greater distances were found, up to 42 km in 1983 and in 1984.

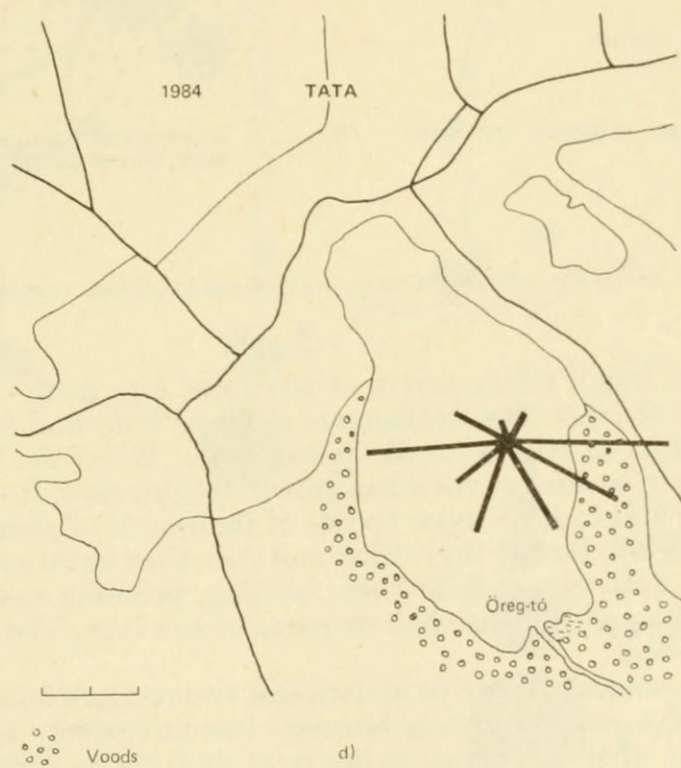
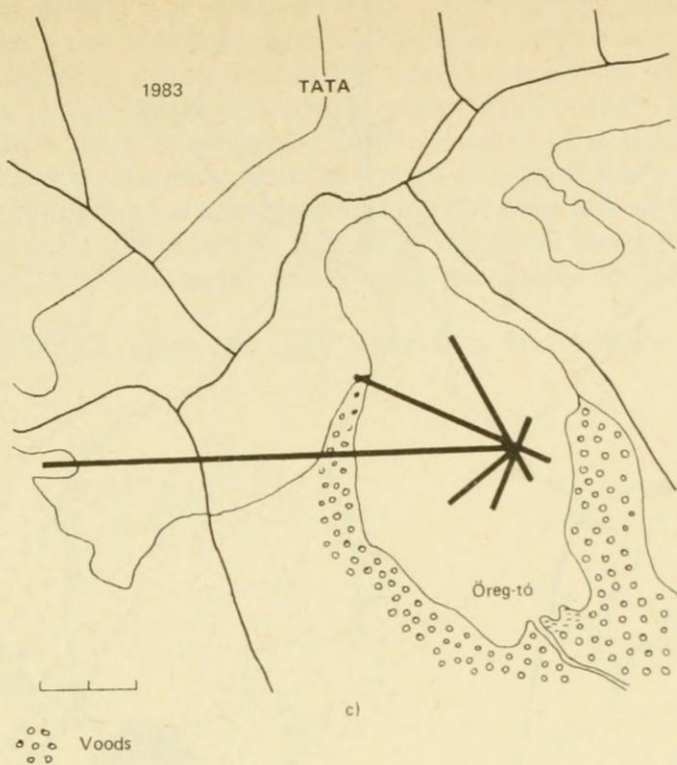
Geese in Hungary show a greater shyness than in western parts of Europe. Flight distances for pedestrians often are between 400 and 600 m. For cars these distances are less, but rarely less than 100 m.

Roosting behaviour and ecology

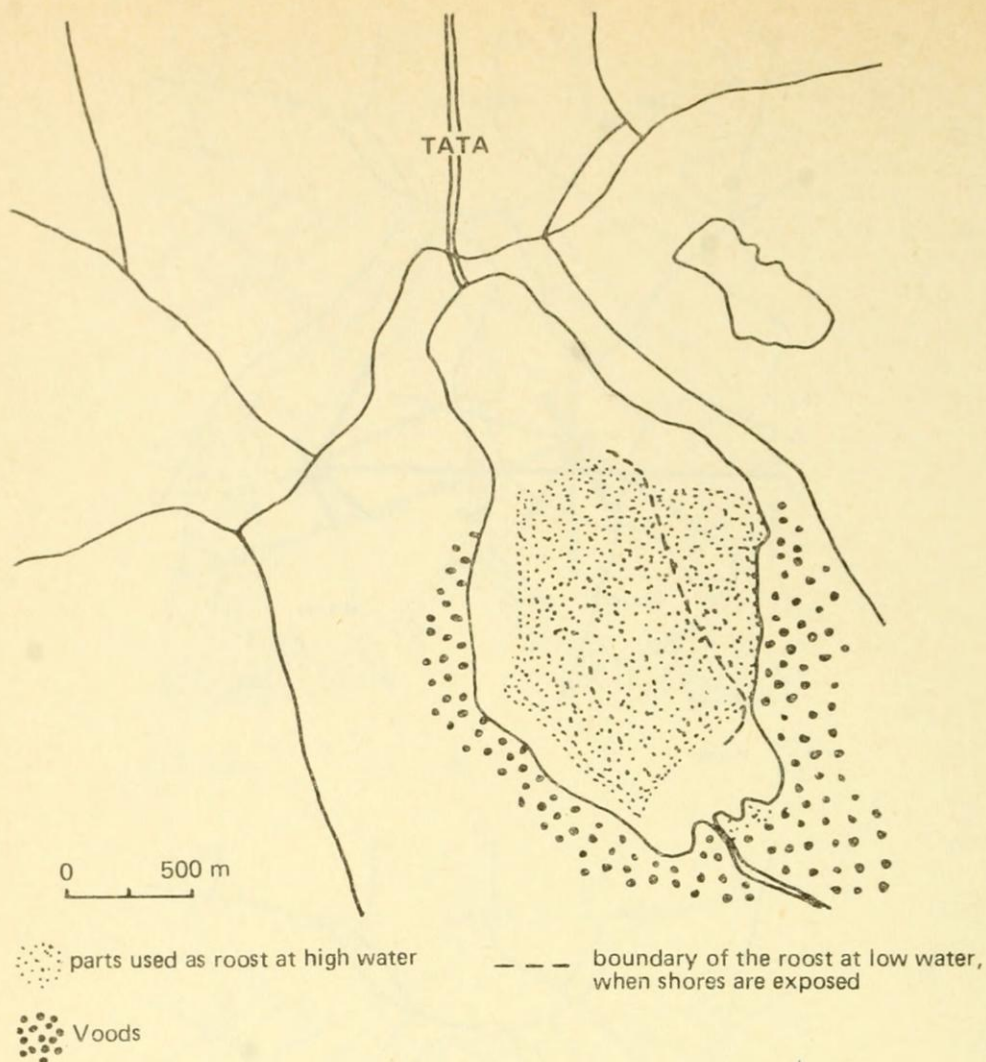
Many observations at Öreg-tó have been done during morning and evening flights but also at several occasions in the late evening, during the night and in the daytime (Fig. 3–4).



3. Flight lines of geese during morning flights in 1981–1984. Length of bars



indicates importance of different directions. In "Roosting behaviour and ecology".



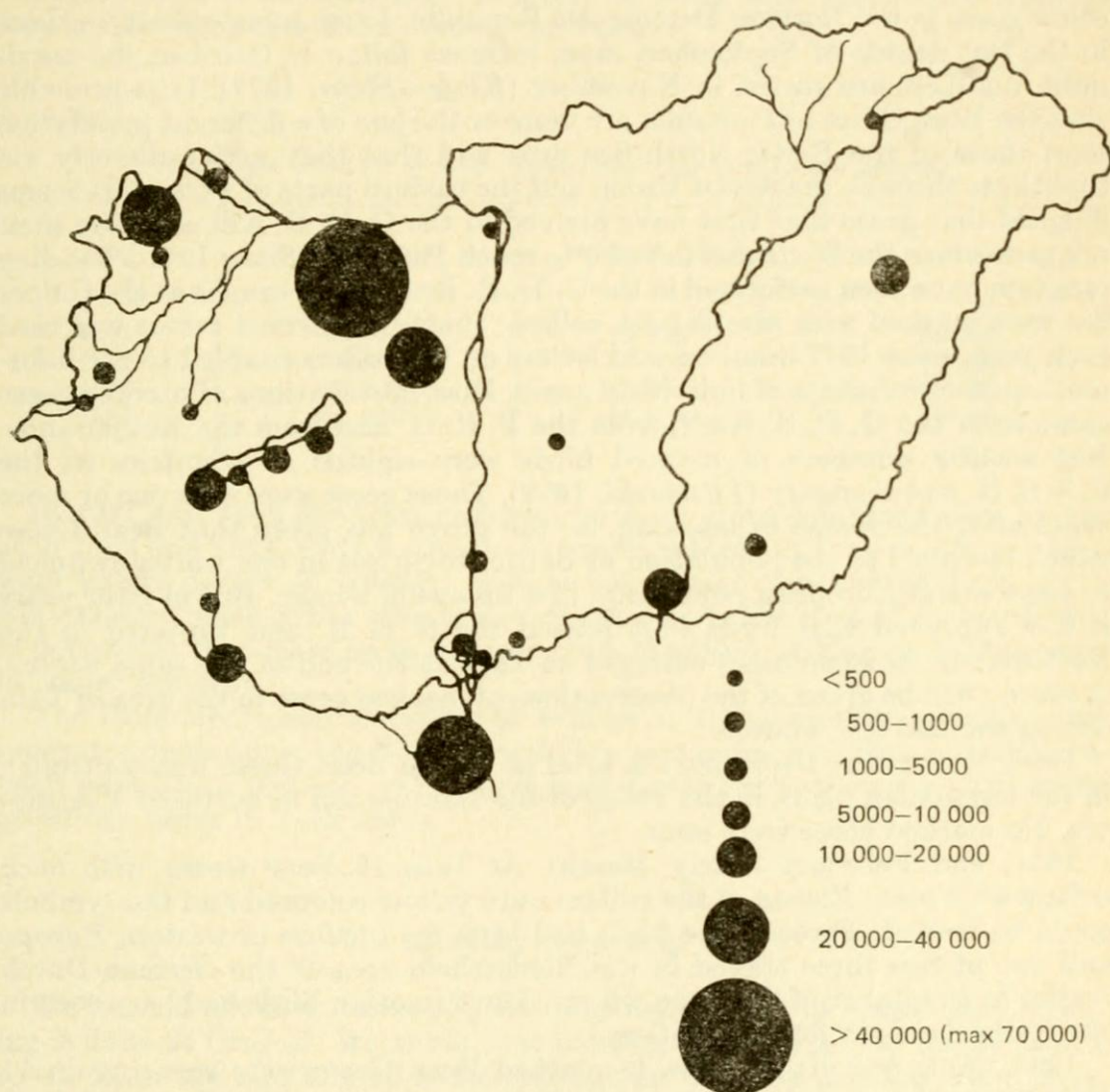
4. The use of Öreg-tó by the geese. In *Rosting behaviour and ecology*'.

Individuals or small flocks arrive at the roost late in the afternoon long before the mass arrivals. The forerunners are very wary and often fly around many times before to land or to disappear again. When the large masses of the geese arrive in several waves it has grown dusk already. It is an impressive spectacle to see and to hear those herds of thousands of geese falling to the water without delay. Firstly they drink and then they swim around to restore the family ties. Activities to follow are: bathing, preening and taking grit on the exposed banks and in the shallow parts of the lake. The geese are very noisy in this period.

Several flocks sometimes arrive in darkness two or more hours after sunset. The calling of the geese gradually becomes less intensively in the course of the evening, but when the numbers are large, it is rarely quite silent during the night. In some moonlit nights in november 1980 many geese arrived shortly before midnight and afterwards they were seen bathing, preening and taking grit.

The geese are mostly very active in the early morning before leaving the roost. Many leave the shallow parts of the lake, swimming to the centre of the lake. Morning flight shows variation in the size of the leaving flocks and duration. When the geese are disturbed by hunting or other factors they leave the roost within a very short time: some minutes or a quarter of an hour. It was seen at some occasions that immense clouds of birds circled over the lake, gradually rising higher and then leaving the area into different directions. But when there is no disturbance, morning flight can last very long: up to 60 or 90 minutes. Then the geese leave very gradually in flocks of small or moderate size.

The morning flight offers the only possibility to do reliable counts in the area of Tata.



5. Known localities of wintering Bean Geese in Hungary and in frontier areas of Austria and Yugoslavia.

Relations with other sites

Tata is not the only important geese area in Pannonia (Fig. 5). Some other ones can hold large numbers of geese. Some are mentioned below with the distances to Tata: Velencei-tó (60 km); Lake Balaton (80–160 km); Seewinkel–Hanság, mainly in Austria (100 km); Kopacki Rit, Yugoslavia (225 km).

Geese move between wintering sites in the course of the season. This cause changing totals in the different areas. Pannonia is a too large area to organise simultaneous counts at all important localities. Numbers of geese at Tata at the end of the winter sometimes are as high as the combined totals for Tata, Velencei-tó and Lake Balaton in autumn. Bean Geese use Tata as their main concentration area before to migrate into the directions of the breeding grounds.

Bean Geese begin to arrive in Pannonia in autumn not much later than do other geese in the German Democratic Republic. Large numbers arrive there in the last decade of September, more influxes follow in October, the maximum numbers are stated in November (*Klafs–Stübs*, 1977). It is probable that the Bean Geese of Pannonia are more or the less of a different population than those of the Baltic North Sea area and that they arrive directly via flightlines through the Soviet Union and the eastern parts of Poland. It seems illogical that geese that first have arrived in the G. D. R. will continue their migration into the Southeast in order to reach Pannonia. Since 1971 a banding program have been performed in the G. D. R. Bean Geese caught at the Gülper See were marked with plastic neck collars; firstly a different colour was used each year, since 1977 numbers and letters on the collars enabled to get information on movements of individual geese. Most observations of marked geese came from the G. D. R. itself, from the F. R. G. and from the Netherlands. But smaller numbers of marked birds were sighted in countries as the C. S. S. R. and Hungary (*Litzbarski*, 1979). Those geese were seen one or more years after the season of marking. So the prove was given that Bean Geese which belonged to the population of Baltic North Sea in one winter switched to the Central European population in a following winter. But in later years it has approved that birds that passed the G. D. R. and wintered in the Netherlands, in some cases emerged at Tata at the end of the same winter. A survey will be given of the observations of marked geese in the area of Tata during the last few winters.

1980, November, December: A total of 40 000 Bean Geese was controlled in the Pannonian plain, in the valley of the Danube and in northern Yugoslavia. No marked geese were seen.

1981, end February–early March: At Tata 12 Bean Geese with neck collars were seen. Eleven of the collars were yellow-coloured and the symbols could be readed. Three of the birds had been read before in western Europe and one of this three stayed in the Niederrhein area at the German-Dutch border in December of the same winter. The two other birds had been seen in the Netherlands in former winters.

1982. Same period: At Tata 18 marked Bean Geese were seen. Again 11 collars could be readed and again 3 were known from western Europe, 2 from other winters, while a third bird stayed in the Niederrhein area on 17 Feb 1982 and in the Tata area on 28 Feb of the same year. The short interval between

these observations of the same bird, makes it probable that it came directly from the West of Europe to Hungary.

Ten other geese of the total for 1981 and 1982 were marked with number- or letter-combinations that were preceded or followed by combinations that were noticed in the West of Europe.

1983. Same period: Among 20 000 Bean Geese at Tata no marked birds were discovered. The same applied to 3500 Bean Geese between Tata and Velencei-tó and 2000 ex at the Hortobágy. Numbers in the Seewinkel – Hanság area rose from 5000 to 40 000 in the period 25 Feb. – 6 Mar. Two marked birds were seen; symbols could not be read. The presence of 3 Barnacle Geese made it probable that numbers of geese migrated from western to Central Europe at the end of this winter.

1984. Same period: Some 45 000 – 50 000 Bean Geese stayed at Tata and 15 000 at the Seewinkel – Hanság area.

Table 1. shows the maximum numbers of Bean Geese in the two areas in four succeeding years at the end of the winter.

1. táblázat

Maximum numbers of Bean Geese (end February – early March)

Year	Tata	Seewinkel – Hanság	Total
1981	50 000	19 000	69 000
1982	70 000	11 000	81 000
1983	20 000	40 000	60 000
1984	45 000	15 000	60 000

In 1981 and 1982 the total numbers for both areas combined were higher as in 1983 and 1984. Only in the first two years birds with neck collars which were known before in western Europe have been observed at Tata. Both winters were much colder than the other two ones in the west of the continent. Is it possible that more geese migrate from the West of Europe to Pannonia in colder winters?

The facts mentioned above let us wonder if it is correct to speak of two separate populations: the Baltic North Sea population and the Central European population (*Ogilvie, 1978*). It is very likely that at least a part of the geese can occur in both areas.

The shooting of geese at Tata

We learned about methods of goose hunting during our visits. Most shooting is done at Öreg-tó. We think that hunting pressure is very heavy at this roost. Geese are also hunted at feeding but the pressure is much lower there.

Shooting is mostly done at the SW, S and SE borders of the lake, sometimes also at the E side. Hunters mostly take position under the trees quite near the lake. They fire at the birds that leave the roost during morning flight and

arrive during evening flight. Morning shoots are more frequent than evening shoots.

We counted the number of shots at some dates:

23 Dec. 1971. 160 shots within 16 minutes,

22 Nov. 1980: 305 shots within 20 minutes,

23 Nov. 1980: 449 shots within 25 minutes.

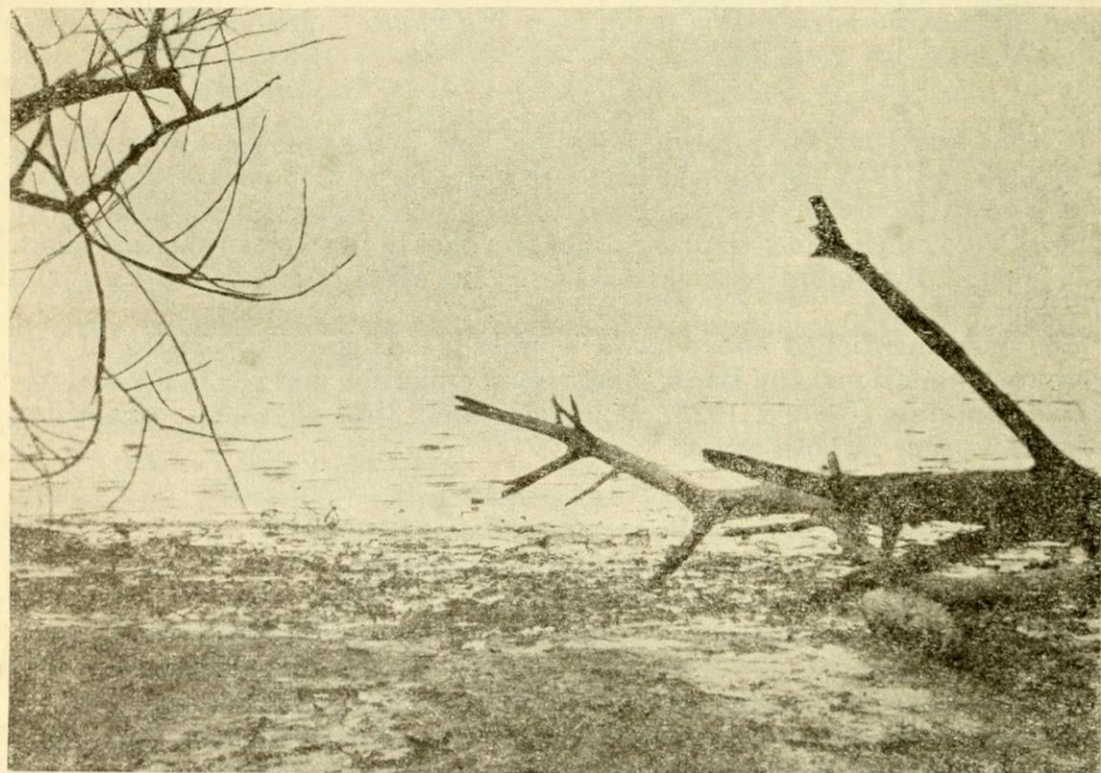
The number of birds killed is not known to us, but we think that it will amount to several hundreds. A much larger number of birds of course will be wounded. We noticed that 15 to 25% of the geese in several flocks showed damaged wings.

Hunting of geese and other birds at roosts causes much disturbance and threat the birds at that place where they should be quite safe.

It was proposed at a symposium on "Population Ecology of Geese" in Debrecen, Hungary, in October 1981 to shorten the shooting season at Öreg-tó. Hungarian officials of the Ministry of Agriculture announced that it should be tried to stop shooting at Tata from 1st December (1982). It has appeared that hunting continued after 1st December in 1982–1983 and 1983–1984. Sometimes even in the closed season (after 31 January) some hunting was stated. So we may conclude that the situation has not changed to the favour of the geese (Fig. 6–8.).

Hunters partly are of local origin, but partly they come from other countries (probably mainly from Italy).

Considering the very high value of Tata as a wintering area for large num-



6. Öreg-tó (Photo: Bergh, L. M. J.)



7. Maize stubble with Bean Geese near Kocs, March, 1981, (Photo: Philippona, J.)



8. Bean Geese on maize stubble near Kocs, March, 1981, (Photo: Philippona, J.)