

THE MIGRATION OF BARNACLE GEESE (*BRANTA LEUCOPSIS*) AT OTTENBY

Christian Hjort

Report from Ottenby Bird Observatory No. 67 (Sweden)

The following report is a first and short attempt to evaluate the information on migration of the Barnacle Geese (*Branta leucopsis*) collected at the Ottenby Bird Observatory during the last nearly thirty years.

When work at Ottenby started in the mid-forties, one of the main tasks was to count the visible migration passing the southernmost point of Öland Island. During ten years, from 1947—1956, all passing birds (or rather, as many as were seen by the observer) were registered, and the results have recently been presented by Carl Edelstam (Edelstam, 1972). Due to lack of some information, which we now have, the Barnacle Goose was only superficially treated in that work.

During those ten years all barnacle geese seen on passage were counted, but not those resting in the area. Observations started well before the onset of goose migration, and continued to the end of October. Only in 1947 the observatory was manned in November, in the other nine years not. This was because quantitatively migration is normally rather slight then, but it also means, as can be seen from comparisons with later years, that some significant numbers of barnacle geese may have been missed now and then.

For 1957, an "in-between year" in the history of the observatory, there is no information on barnacle geese.

From 1958 onwards the information in the observatory journals can be used. These journals, although not based on continuous observations, do give an overall picture of each day, including migration, ringing, weather and so on, and can be relied upon to contain more or less all quantitative information gathered on these large and conspicuous birds, from the time when the observatory has been manned. From 1958 onwards there is also information on the number of resting birds, and what is more, the observatory was manned also in spring, if not always for the whole period of Barnacle Goose migration.

Numbers of migrant geese

When calculating "totals" for the various years, the observations for each year from 1947—1956 have been used as they are, representing passing birds only. Those from 1958 and later years, however, have been treated so that with reasonable certainty no resting bird has been counted more than once. In short, the absolute minimum number of migrant geese has been used.

This admixture of continuous observations on passing birds only in 1947—1956, and of more casual observations on passing and resting geese from 1958 onwards, may seem somewhat adventurous. To some extent it certainly is, but probably not so much that the general trend, which seems very clear, is obscured. It must also be said that it is known there were usually very few, if any, barnacle geese resting on southernmost Öland during the 1940ies and 1950ies, and that their increasing tendency to make a short stop-over there during autumn migration is of rather recent date. Consequently, the exclusion of resting birds during the early years may not mean very much to the total picture. To some extent the more casual way of observations since 1958 may also reduce the numbers of registered birds, and so adjust this part of the material towards the earlier one.

Fig. 1 shows the total numbers of barnacle geese registered at Ottenby during spring and autumn. Spring numbers (A) go back to 1958, autumn ones (B) to 1947. In order to somewhat smooth the picture, three-year mean curves have been added. The increase in the numbers of geese during the last 10—15 years is striking (cf. Kumari, 1971). However, the numbers in Fig. 1 are not compensated for errors whatsoever. One main source of error is the length of the observation period, the time during the actual period of migration when the observatory was manned. As stated earlier, it closed already at the end of October for many years (1948—1960), and during some springs work did not start before mid-April, when a sizeable part of the geese must already have passed. Fig. 2 gives the numbers of barnacle geese for any year (spring A; autumn B) reduced to the mean number of geese per 5-day period of actual observations — within the limits of the 12 five-day periods in spring and 12 in autumn which cover the main migration. Only very few birds occur before and after these dates. Fig. 2 also presents a three-year mean curve.

The very marked increase in the occurrence of barnacle geese at Ottenby during the last 10—15 years could at least partly be interpreted as resulting from a general growth of population, reinforced in autumn by the increasing tendency to make short stop-overs on southernmost Öland.

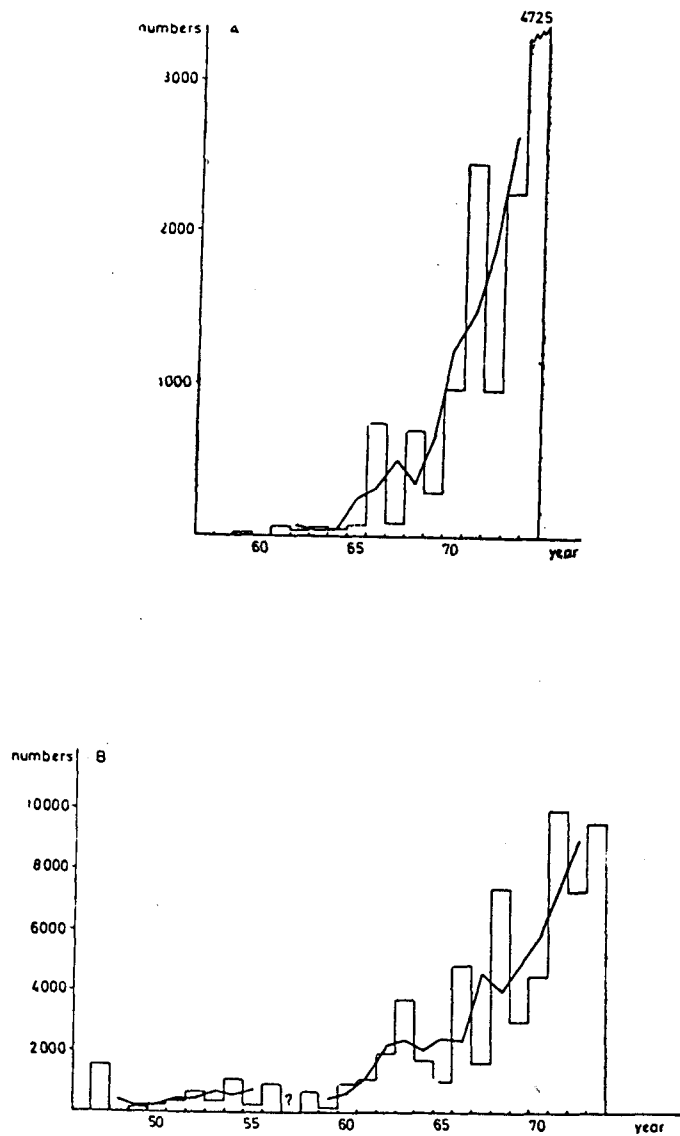


Fig. 1. Barnacle geese at Ottenby; total numbers of birds counted each season. Diagram A shows springs and B autumns. Three-year mean curves have been added.

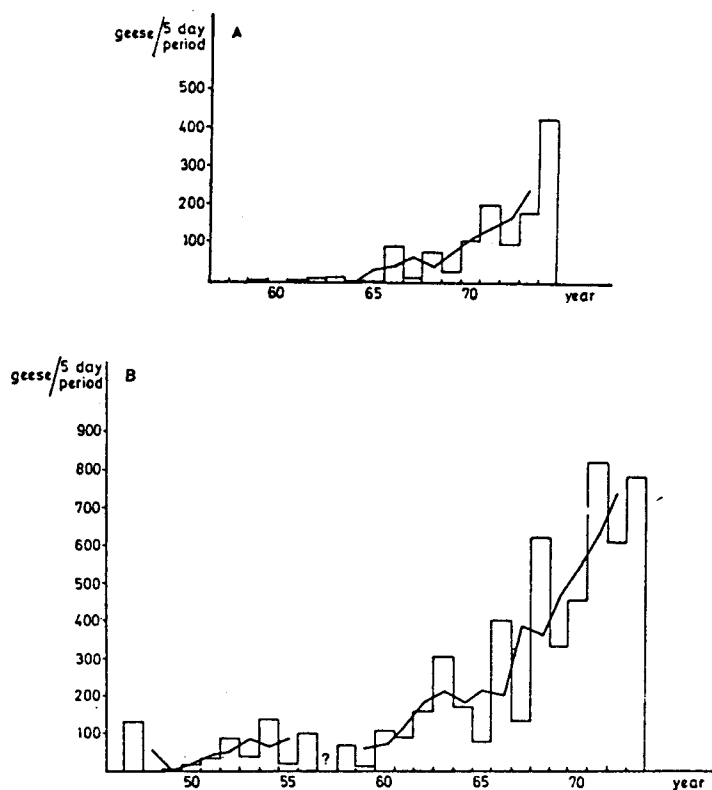


Fig. 2. Barnacle geese at Ottenby; mean number of birds per five-day period during the time the observatory was manned each year. Diagram A shows springs and B autumns. Three-year mean curves have been added.

In spring they never, or very rarely and then in small numbers only, rest at Ottenby. Besides, only a small change in the path of migration could do a lot.

The seasonal rhythm of migration

As mentioned, the main migration period in spring and autumn has been divided into 12 five-day periods. The numbers of barnacle geese have been added for each period of each year. Fig. 3 shows spring

migration in 1971—1974, and Figs. 4 and 5 show autumn migration in 1966—1973. A usually very concentrated passage is the common feature. While spring migration seems to peak within about two weeks, the first two ones in April, autumn migration, although mainly an October affair, is somewhat more flexible in time.

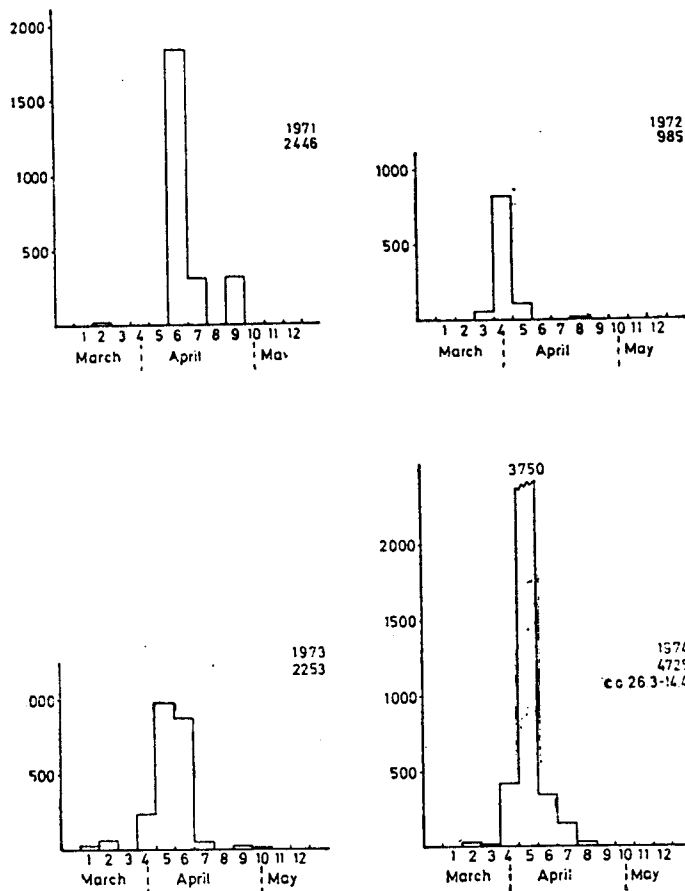


Fig. 3. Spring passage of barnacle geese at Ottenby 1971—1974. Time-scale in five-day periods. Total number of geese during the season is given for each year. As to 1974, continuous all-day observations were carried out 26.3—14.4.

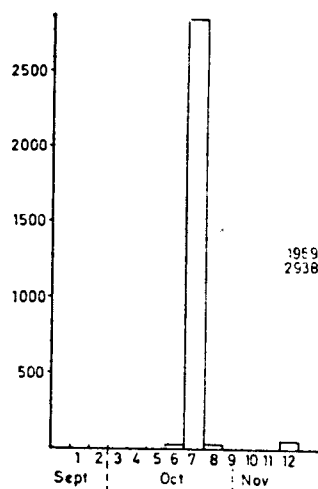
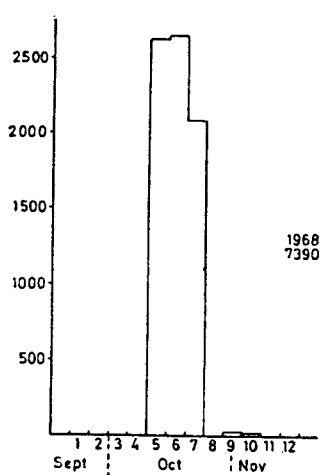
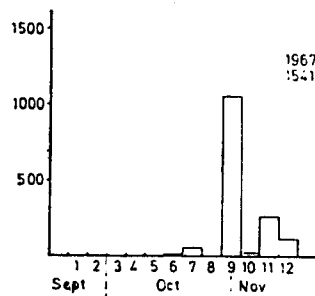
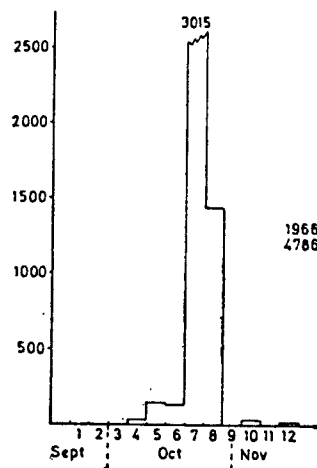


Fig. 4. Autumn passage of barnacle geese at Ottenby 1966—1969. Time-scale in five-day periods. Total number of geese during the season is given each year.

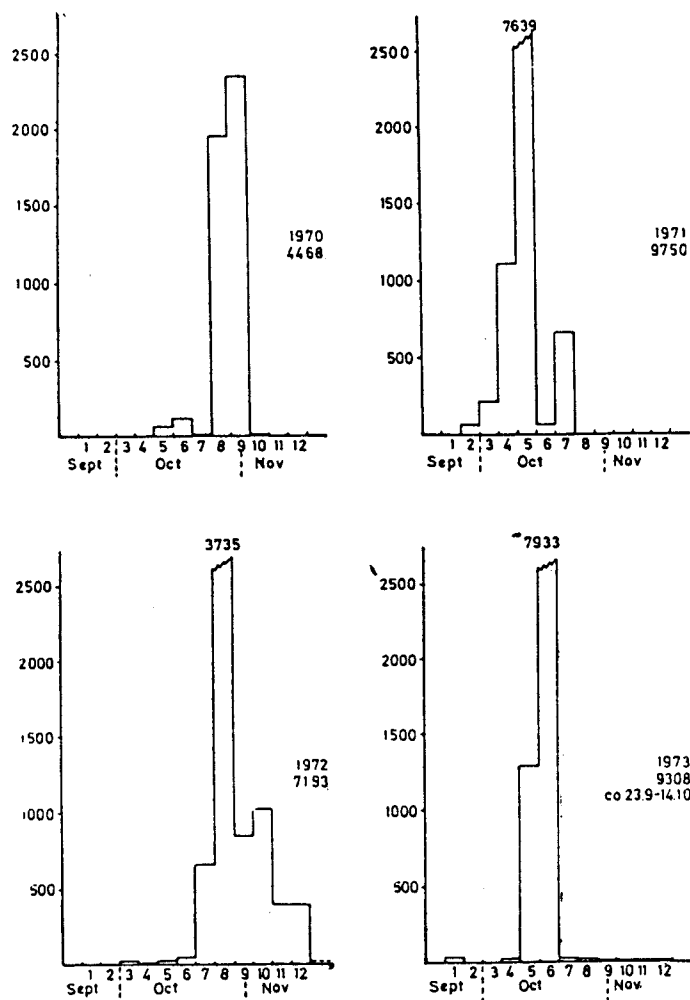


Fig. 5. Autumn passage of barnacle geese at Ottenby 1970—1973. Time-scale in five-day periods. Total number of geese during the season is given for each year. As to 1973, continuous all-day observations were carried out 23.9—14.10.

The daily rhythm of migration

Only part of the total material has been of use when studying the daily rhythm of migration. During the ten-year period 1947—1956 the time of passage was noted for all birds, but for later years such information is rather scarce. However, time was noted during the spring seasons of 1973 and 1974, and these data have been used here.

In order to minimize the effect of the lengthening and shortening of the day during spring and autumn, only rather short periods of time have been used: 21.10—30.10. 1947—1956 and 1.4—14.4. 1973—1974. All

barnacle geese seen on passage during these periods have been added for each hour of the day and the result expressed as ‰ of the total number of geese. It is graphically expressed in Fig. 6 (spring A; autumn B). In both spring and autumn two distinct maxima, one in the morning and pre-noon hours, the other in the afternoon, can be seen. They are clearly separated by a minimum around noon. Although perhaps the material is somewhat biased in that a sizeable part of the total number of birds passed during rather few days (this perhaps especially concerns the autumn diagram, based on only 3764 birds — whereas the spring one is based on 6603), it does in all probability give a more or less true picture of the migration rhythm. The morning and afternoon maxima are well known to people working at Ottenby.

Fig. 7 shows the Baltic Basin, with Ottenby in the centre. Distances to, and approximate flight times (using the rather low flight speed 60 km/hour) from the resting areas on Gotland and in western Estonia, and the wintering

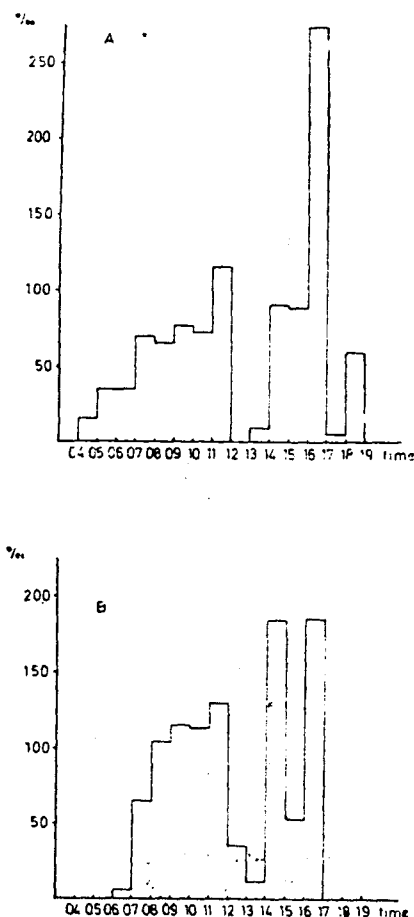


Fig. 6. Daily rhythm of barnacle geese migration at Ottenby during 1.4—14.4. 1973—1974 (A) and 21.10—30.10. 1947—1956 (B). Expressed in ‰ per hour of total number of geese.

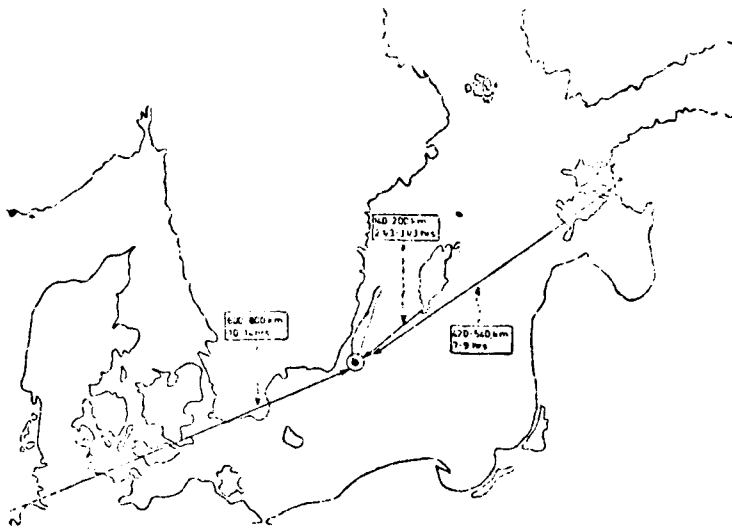


Fig. 7. Map showing the Baltic Basin, with Ottenby in the centre and approximate flight distances and flight times from wintering and resting areas indicated.

areas along the North Sea are indicated. Without discussing this problem further here it is concluded that barnacle geese passing Ottenby in October—November ought to come from either Estonia or Gotland, and such ones passing in March—April from the North Sea coast. No alternative starting points seem to be known.

As to the spring passage, the morning maxima are tentatively interpreted as representing birds starting from the North Sea coast in the evening, and the afternoon maxima as representing those starting in the morning. This assumption agrees reasonably well with flight distance and speed, allowing for slight differences in flight path and for delay due to the slow head wind which often prevails during the mostly typical anticyclonic spring migration.

The two maxima in autumn are tentatively interpreted as representing birds leaving Gotland (morning maxima) and Estonia (afternoon maxima) in the morning. Birds leaving these places in the evening pass Öland before dawn, and will not be registered — if they do not stop and rest.

Migration and weather

The study of Barnacle Goose migration at Ottenby in relation to weather has only just begun, and the picture is by no means clear. However, it seems that the strong passages in spring are almost always taking place in decidedly anticyclonic weather. In autumn, a very marked passage of barnacle geese can often be related to the improvement of weather after the passage of one more cyclonic centre, but otherwise the relationship with weather during this season is much more complicated than in spring.

Acknowledgements

Much of the material used in this report had before I got my hand on it already been prepared in one way or another by Carl Edelstam, with whom I have also had some interesting discussions. Mr. Krister Wahlström was, during his period as warden at Ottenby, kind enough to extract all available data on the Barnacle Goose buried in the observatory journals. Finally, Mrs. Christina Liljegren of the Geological Department, University of Lund, spent her evenings over the diagrams. To them all I express my sincerest thanks.

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МИГРАЦИЯ БЕЛОЩЕКОЙ КАЗАРКИ В ОТТЕНБЮ, ШВЕЦИЯ

Кр. Юрт (Хёр, Швеция)

Резюме

Был обработан материал, полученный и собранный с 1946 г. в Оттенбю, в самой южной точке острова Эланд, частично из журналов постоянного круглосуточного наблюдения и частично из заметок в дневниках наблюдений. Дается обзор о количествах птиц, пролетающих Оттенбю, времени полета, дневном ритме миграций и возможных местностях старта, делаются сравнения с другими районами Балтийского бассейна.