

**STUDIES IN VISIBLE MIGRATION AT FALSTERBO  
BIRD STATION**

**BY**

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## Studies in Visible Migration at Falsterbo Bird Station\*

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The present review has been prepared in order to draw the attention of British workers in the field of diurnal migration to the work carried out at Falsterbo Bird Station in the south-western corner of the province of Scania (Skåne), Sweden, and the opportunities for studies available at this locality.

Although the huge passage of migrating birds in autumn over the Falsterbo peninsula has been known for a long time, the first ornithologist to pay proper attention to it was Dr. Gustaf Rudebeck, who spent the best part of the autumns of 1942, 1943 and 1944 at Falsterbo and published his main results in 1950 (Rudebeck 1950). His work deals particularly with birds of prey, and the emphasis is on the causal connections between weather conditions and migration. During his field-studies he also gathered valuable information on the hunting behaviour and choice of prey in several species of birds of prey, and even if some of his material in that study (Rudebeck 1950-51) was obtained at other places than Falsterbo it seems relevant to mention it in this context. These two important papers were published in English and are doubtless well-known to workers in the field.

When the Swedish Ornithological Society was constituted in 1945, one of its primary goals was to start bird stations and migration research at some selected localities. Ottenby, on the island of Öland in the Baltic, and Falsterbo were the two places judged to be most important. But not until the Scanian Ornithological Society, a branch of the national society, was founded did the plans for Falsterbo materialise. The station building was not finished until 1955, but research activities were being gradually built up from 1947 onwards. Observation of the diurnal migration, using the same methods as Rudebeck (1950), was started in 1949 and has since been carried out annually, with a gap in 1951. The early history of the Scanian Ornithological Society and Falsterbo Bird Station has been outlined by Malmberg (1).† The ringing activities have been reported on by Enemar (3, 8); the trapping methods are conventional and the recovery lists are published with internationally recognised symbols, so there appears to be no necessity to discuss the ringing further.

Visible migration over Falsterbo is studied by means of daily counts of the migrating birds from Nabben, the south-westernmost point of the Falsterbo peninsula. The observer starts his work at dawn and continues until the migration activity for the day has dropped to insignificant proportions. Of course it would have been desirable to cover the entire light period of every day, but this has

\* Report from Falsterbo Bird Station No. 16.

† Figures in brackets after authors refer to reports listed in Appendix A. Years in brackets refer to works in Appendix B.

usually been impracticable due to lack of funds. The main autumn migration periods have been covered every year, but the dates for starting and concluding the observations have varied. In some years it was also possible to man the station in spring.

It is rather obvious that the chief cause for the concentration of migrating birds at Falsterbo is the leading-line (guiding-line) effect of the Swedish coasts. But as pointed out by Malmberg (2) this is only part of the truth: '... already in the middle of Skåne where the cultivated plains begin, a concentration of birds of prey and many other species over all tree-covered areas will follow'. These woodland areas of the interior protrude in a corner pointing in the direction of Falsterbo. This is doubtless an important feature for the concentration of migrants at the Falsterbo peninsula.

As emphasised by Rudebeck (1950) there is an intricate relationship between leading-line efficiency and wind conditions. This point was further discussed by the present writer (6, 11). The south coast of Scania is a much more efficient leading-line for birds of prey than the west coast. The most important reasons for this seem to be its lack of promontories and the vast expanse of water in front of the birds when they approach the south coast. When the buzzards (and other species) are driven by wind towards the south coast, they will follow it right down to Falsterbo; but if pressed towards the west, they will tend to cross over the narrow sound (Öresund) to Denmark and hence are not observed at Falsterbo. Consequently the wind conditions exert an important influence on the number of birds seen at Falsterbo.

Only in a few cases has it been possible to determine the recruiting areas and the degree of concentration of the birds passing over Falsterbo. The Kite (*Milvus milvus*) breeds nowhere to the north of Falsterbo except in south and central Sweden, and its population size is fairly accurately known. From data available, Rudebeck (1950) concluded that approximately 30 per cent of all the Swedish Kites were annually recorded at Falsterbo. Recently, thanks to a survey of the breeding population of the Marsh-Harrier (*Circus aeruginosus*) in Sweden carried out by Enemar and published in *Vår Fågelvärld* 18:42-49, we have obtained an idea of the concentration for this species. Enemar estimated the total breeding population to be at least 175 pairs, making 350 adult birds. Adding two juveniles for each pair, i.e. another 350 birds, the total autumn population would amount to approximately 700 Marsh-Harriers. The average number of Marsh-Harriers at Falsterbo is 22 birds (calculated from eight seasons), and the proportion of the population passing at Falsterbo would thus be as low as a little above 3 per cent. The Marsh-Harrier is thus much less influenced by leading-lines than the Kite. Both species freely frequent lakes and take most or a good deal of their food from the water. Thus their different degree of concentration can hardly be due to one being much more 'experienced' with regard to open water surfaces than the other. A more important difference is probably the fact that the Kite is predominantly a soaring bird using thermal air currents extensively, whilst the Harrier is more of an active flier migrating

without the aid of thermal currents. Areas with strong thermal activity presumably act as 'attraction zones' for the Kite which sticks to such areas, and this being so it is only natural that the Kite is strongly reluctant to abandon land for sea where thermal air currents are absent.

It should be added that some Kites migrate at low heights in the early morning without making use of vertical air currents at all, and that a few Harriers migrate among the buzzards soaring in the rising air; but the number of birds using these less typical methods is small.

A problem which has attracted a good deal of interest among Swedish ornithologists is the annual fluctuation in numbers at a given migration locality. Some have expressed the hope that these variations might be used as indicators of the trend of population changes of the species in question. In recent years, however, it has become increasingly clear that this is not possible. It was shown by Rudebeck (1950) that wind conditions, through their directing influence on the flight-lines, could greatly affect the annual totals of a species. The importance of wind is so great that any other impact on the annual figures is completely occluded (*cf.* Ulfstrand, 11.).

If the effect of wind on the course of migration is now widely recognised, its influence on the release of migration flight is still largely an unsolved problem. At Falsterbo by far the largest daily figures for passerines, pigeons, birds of prey and several other groups are attained at moderate winds between north-west and south-west (i.e. the birds are flying into the wind). Large quantities of birds are regularly seen on the move also in quite strong head-winds, as shown by the present author for the Honey-Buzzard (11). The opinion that calm weather or easterly winds are strong releasing factors consequently finds little support among most Swedish students of visible migration. There is, though, at least one important source of uncertainty: are the low figures in north-easterly winds due to the supervisible altitude of the migrating birds? Do the birds with tail-winds fly so high that they are overlooked by observers? Even though there are very few indications of large numbers of birds migrating in the day-time at supervisible heights over southern Sweden, definite judgement has to be suspended until radar observations have been carried out locally. The great importance of the geographical site of the observation locality for the results obtained was stressed by the present writer (6).

The influence of wind on the course of the migrating birds has also to be kept in mind when attempting to analyse annual differences in the migration periods. As Lennerstedt (12) has stressed, one will get the impression of a delay in the migration, if the wind in the initial phase of the migration period comes from such a direction that the birds are 'blown away' from the observation locality. When the wind changes direction, the birds appear. The explanation of the 'delay' is simply that the birds have used a different route during the preceding period.

What has so far been published in the series 'Meddelanden från Falsterbo Fågelstation' (*Reports from Falsterbo Bird Station*)

consists chiefly of annual reports with brief discussions of topics of special relevance for the season in question, and of a few minor analyses. For general information the reader is referred to the detailed work by Rudebeck (1950) which includes figures of the daily passage of passerines, pigeons, and birds of prey for the autumns of 1942 to 1944; annual totals of all species are also to be found in reports nos. 7, 9, 10, 12, and 14. At present work is in progress on several problems. The data assembled so far are available in tabular form with daily figures of the passage of all species. The field note-books also contain a large amount of information on habits, etc., and there is no limit to the number of interesting problems offering themselves for study at Falsterbo. Though under certain circumstances rather a nuisance, the great quantities of birds offer an exceptionally good opportunity for gathering a great deal of evidence on any particular problem within a reasonable time, and British ornithologists devoting themselves to the study of visible bird migration are cordially invited to come to Falsterbo to work on their special problems.

#### APPENDIX A

For information a full list of publications in the series 'Meddelanden från Falsterbo Fågelstation' (*Reports from Falsterbo Bird Station*) is given below. When published in Swedish with an English summary the title of the summary only is given. VF = *Vår Fågelvärld*.

1. Malmberg, T. 1955. Skånes Ornitologiska Förening and Falsterbo Bird Station—an introduction. VF 14:78-85.
2. Malmberg, T. 1955. Topographical concentration of flight-lines. *Acta XI Congr. Intern. Ornith. Basel* 1954:161-164.
3. Enemar, A. 1955. The ringing activity at Falsterbo fågelstation, 1947-53. VF 14:155-165.
4. Strömberg, G. 1957. Anteckningar om svarthuvad trut. *Fauna och Flora* 52:81-88. (First Swedish record of *Larus ichthyaetus*.)
5. Andersson, R. 1957. Rödfalken (*Falco naumanni* Fleisch.), en för Sverige ny fågelart. *Fauna och Flora* 52:89-92. (First Swedish record of *Falco naumanni*.)
6. Ulfstrand, S. 1959. Some aspects of the directing and releasing influence of wind conditions on visible bird migration. *Proc. XII Int. Ornith. Congr. Helsingfors* 1958:(in press).
7. Ulfstrand, S. 1956. The autumn migration at Falsterbo in 1949 and 1950. VF 15:187-199.
8. Enemar, A. 1957. The ringing activity at Falsterbo fågelstation, 1954-1956. VF 16:20-36.
9. Mathiasson, S. 1957. The autumn migration at Falsterbo in 1952. VF 16:90-104.
10. Ulfstrand, S. 1957. The autumn migration at Falsterbo in 1953. VF 16:189-204.
11. Ulfstrand, S. 1958. The annual fluctuations in the migration of the Honey-Buzzard (*Pernis apivorus*) over Falsterbo. VF 17:118-144.
12. Lennerstedt, I. 1958. The autumn migration at Falsterbo in 1954. VF 17:303-331.
13. Parsons, A. G. 1959. First Swedish record of the Tawny Eagle (*Aquila rapax*). VF 18:37-41.
14. Ulfstrand, S. 1959. The autumn migration at Falsterbo in 1955. VF 18:131-162.  
...
15. Mathiasson, S. 1960. The bird migration at Falsterbo in 1956. VF 19:97-127.
16. The present contribution.



The Falsterbo Bird Station. See pages 183-6.

## APPENDIX B

Some other papers concerned with Falsterbo but published before the start of Falsterbo Bird Station.

Rudebeck, G. 1943. Preliminär redogörelse för fågeliakttagelser i Skanör och Falsterbo hösten 1942. *VF* 2:1-30, 33-58, 65-88. (Preliminary account of bird observations in Skanör and Falsterbo in the autumn of 1942. There is a short summary in German.)

Rudebeck, G. 1950. Studies on bird migration, based on field studies in southern Sweden. *VF*, Suppl. 1:1-148.

Rudebeck, G. 1951. The migration of birds of prey in southern Sweden, particularly at Falsterbo. *Proc. X Int. Ornith. Congr. Uppsala* 1950:317-319.

Rudebeck, G. 1950-51. The choice of prey and modes of hunting of predatory birds with special reference to their selective effect. *Oikos* 2:65-88, 3:200-231.