

MIGRATION ROUTES OF SWEDISH CRANES (GRUS GRUS) PRESENT KNOWLEDGE

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The spectacular migration flight of the cranes gave, even 140 years ago, the Swedish professor *C. J. Sundevall* the idea to investigate the features of the crane migration by means of wide Swedish and international inquiries. He got good response, and some figures can still be of use to our own statistics.

Ringing reports

Slightly more than a hundred cranes have been ringed in Sweden during the last 38 years. From long-distance recoveries we know that the main part of the Swedish cranes migrate from Sweden across the Baltic to the Rügen area of Mecklenburg. From there they go to southwest, passing Nord- and Südeifel in Germany, and through France to Spain, where they spend the winter months (fig. 1). We have got 5 recoveries from western Spain, 4 of which from the province of Badajoz. The three birds found in Gironde and Vendée in France in October—November could have been on their way to Spain. The bird that ended its life late in March in Western Germany, 65 km northeast of Köln, was in its third year of life and had probably spent two winters in Spain.

These recoveries do not tell the whole truth however. The map in figure 1 shows that two cranes from northeastern Sweden have commenced on a straight southerly course via Poland and Czechoslovakia. This may indicate that some of the cranes breeding in northeastern Sweden, migrate along the same route as cranes from western Finland, maybe to Tunisia.

Colour-banding

Much research remains to be done. To catch 6—8 weeks old juveniles is a hard job. In addition, Swedish crane banders have to work alone. This year, our voluntary crane banders succeeded in banding only two juveniles. The birds were marked with red plastic bands. To make the work technically possible for a single-handed bird bander and to facilitate it, the banders were equipped with a special tool for opening the plastic bands.

The plastic bands are 6 centimetres high and they are applied above the ankle joint. With a 20x magnifying spotting scope it is possible to read the number of the ring at a distance well over 200 metres.

In April we have fairly good opportunities from an automobile parking lot for detailed studies of 2000—3000 cranes in the stage area at Lake Hornborga. Four years ago, in 1981, a juvenile crane could be photographed so close that the number of the

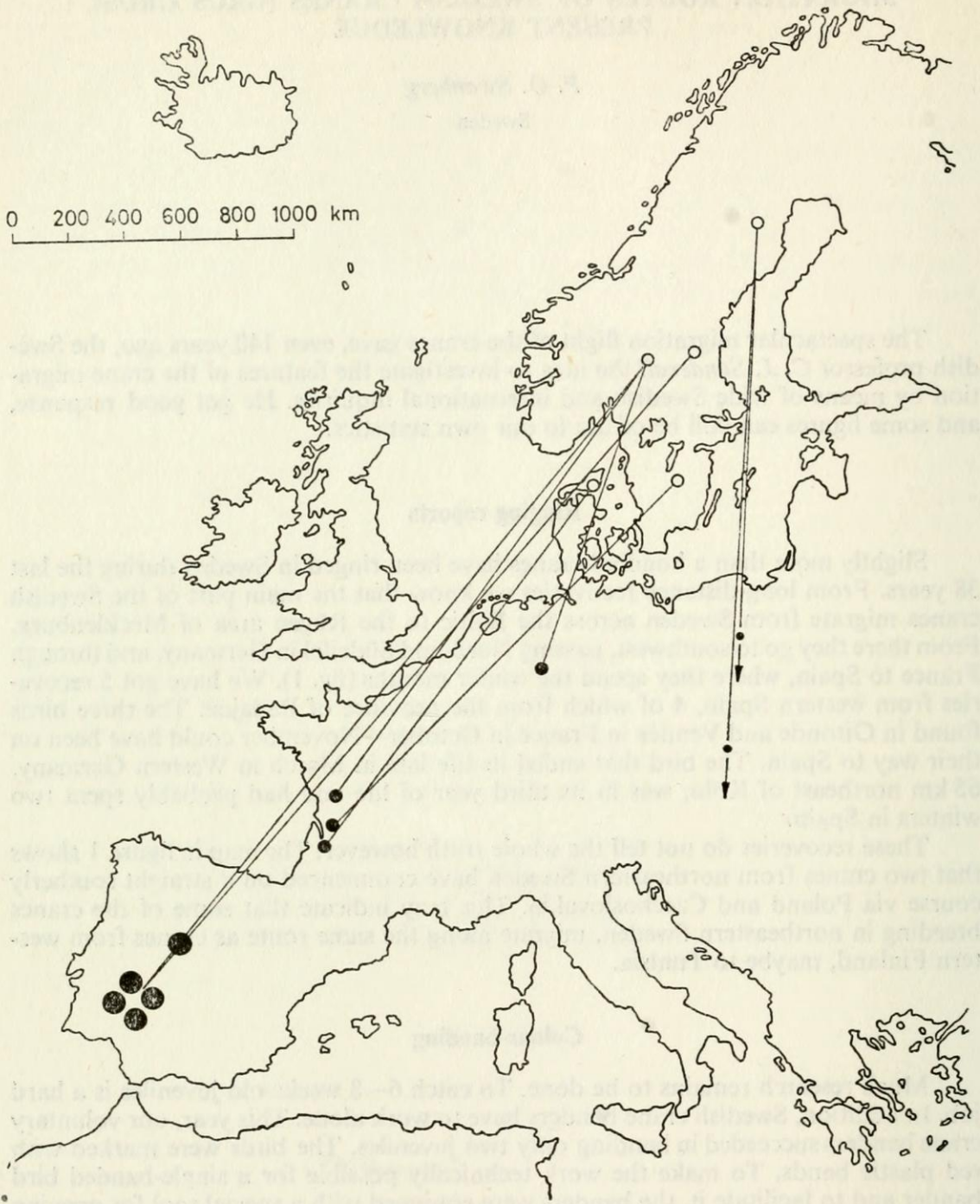
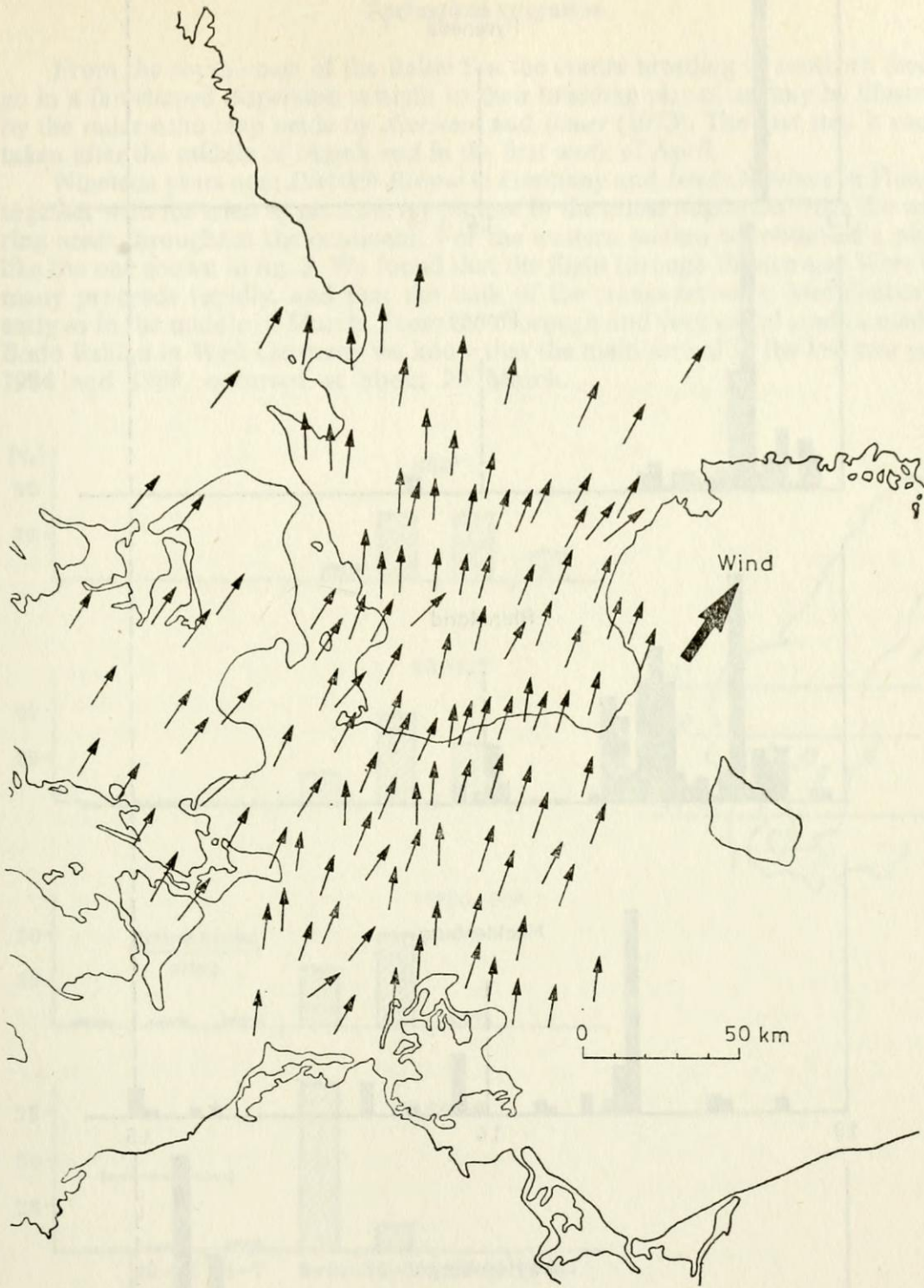


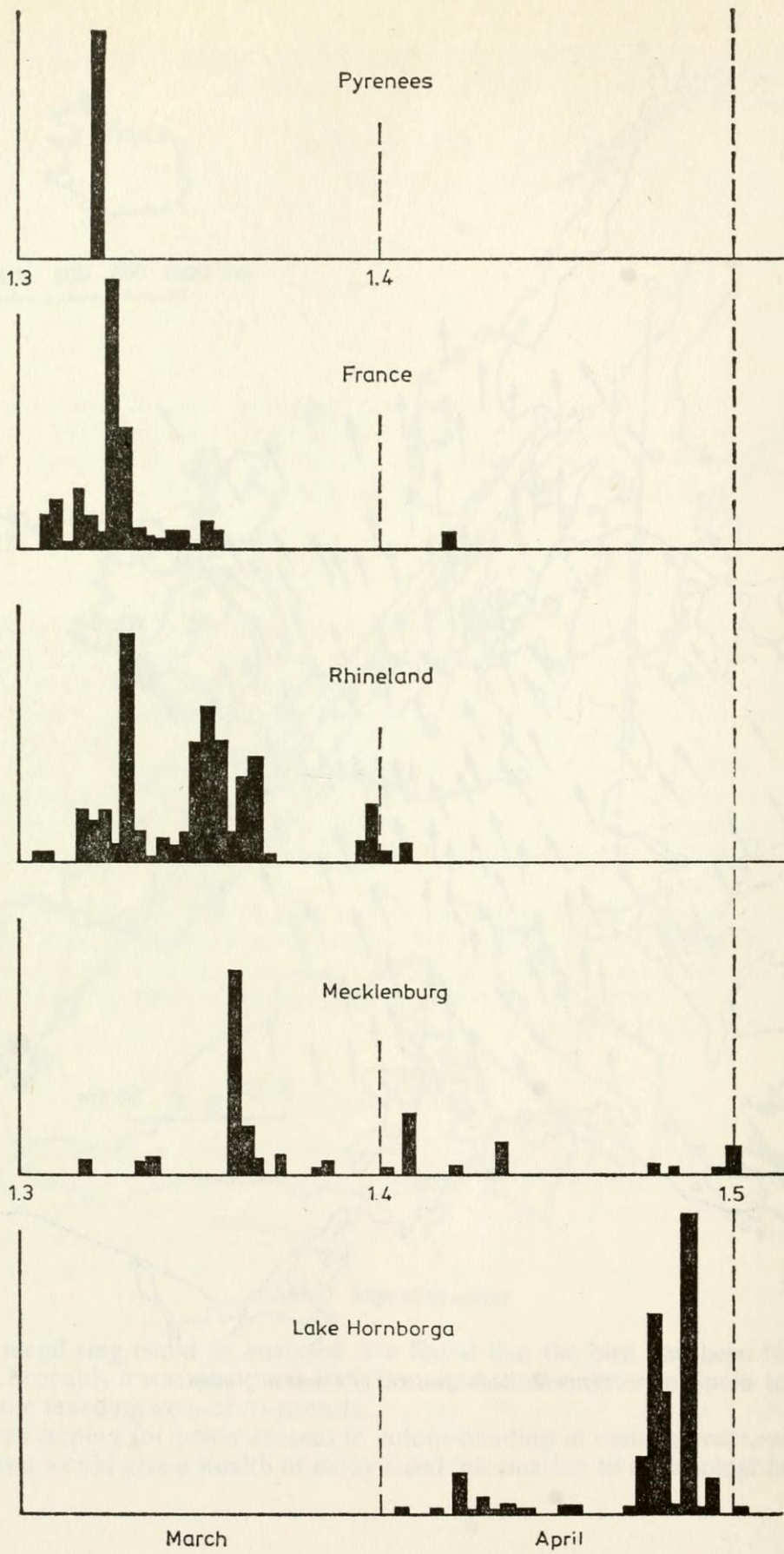
Figure 1. Migration routes

ordinary metal ring could be analysed. We found that the bird had been ringed in July 1980. Probably it was on its way back from its winter quarter in Spain to somewhere in the breeding area of its parents.

We are hoping for better success in colour-banding in coming years, which in the long run would give a wealth of many-sided information to ornithologists.



Figure|2. Radar patterns of Crane migration



Figure/3. Cranes, 1966

Springtime migration

From the south coast of the Baltic Sea the cranes breeding in southern Sweden go in a fan-shaped dispersion straight to their breeding places, as may be illustrated by the radar-echo map made by *Alerstam* and *Bauer* (1973). The first step is usually taken after the middle of March and in the first week of April.

Nineteen years ago, *Dietrich Ristow* in Germany and *István Sterbetz* in Hungary together with me tried to get a survey picture of the crane migration from the wintering areas throughout the continent. For the western section we obtained a picture like the one shown in fig. 3. We found that the flight through France and West Germany proceeds rapidly, and that the bulk of the cranes arrive to Mecklenburg as early as in the middle of March. From the thorough and very useful studies made by *Bodo Behlau* in West Germany we know that the main arrival in the last two years, 1984 and 1985, occurred at about 20 March.

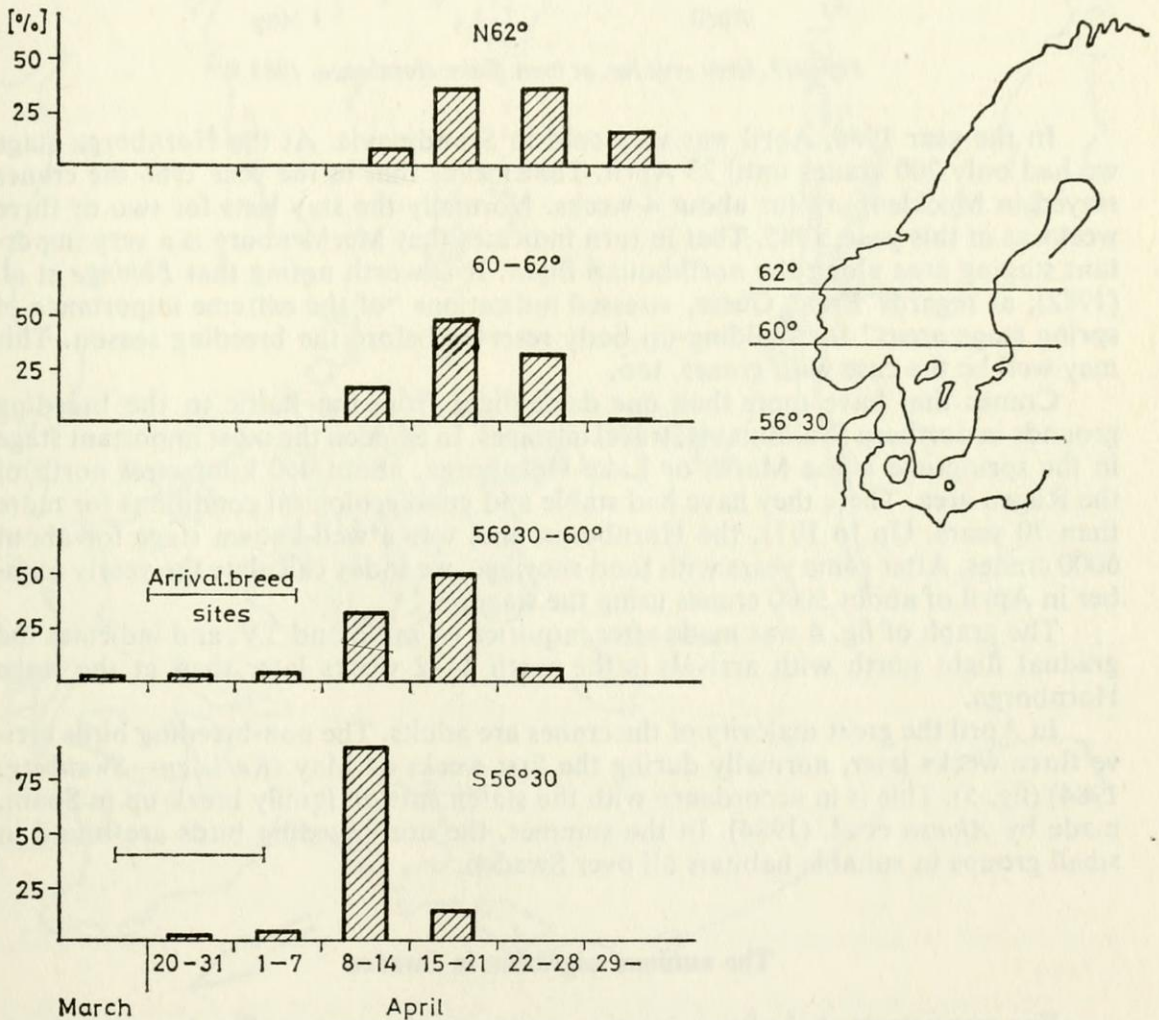


Figure 4. Migration flights through Sweden, reported after inquiries 1967, 1968, 1973. Weekly numbers showed in per cent of the number in the respective zone. Cranes $n=91\ 646$, reports=1447

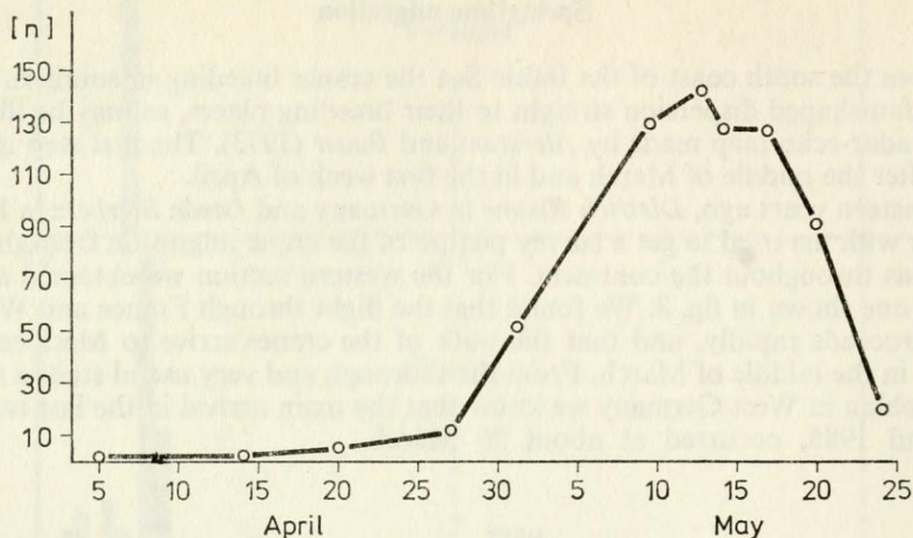


Figure 5. *Grus grus* juv. et imm. Lake Hornborga, 1983

In the year 1966, April was very cold in Scandinavia. At the Hornborga stage we had only 200 cranes until 23 April. That means that in the year 1966 the cranes stayed in Mecklenburg for about 4 weeks. Normally the stay lasts for two or three weeks as in this year, 1985. That in turn indicates that Mecklenburg is a very important staging area along the northbound flight. It is worth noting that *Ebbinge et al.* (1982), as regards Brent Geese, stressed indications "of the extreme importance of spring stage areas" for building-up body reserves before the breeding season. This may well be the case with cranes, too.

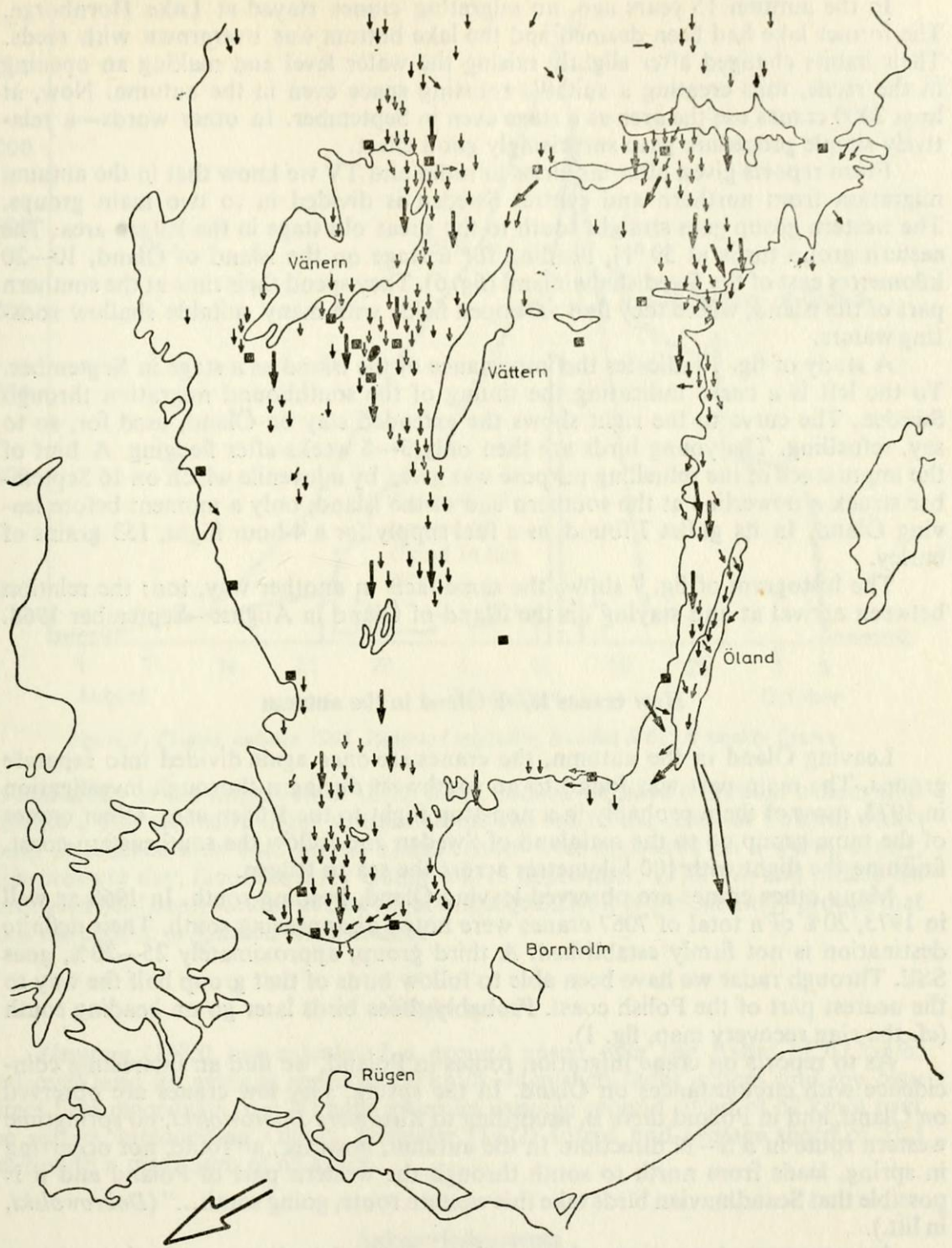
Cranes that have more than one day's flight from the Baltic to the breeding grounds in northern Scandinavia, travel in stages. In Sweden the most important stage in the springtime is the Marsh or Lake Hornborga, about 450 kilometres north of the Rügen area. There they have had stable and good ecological conditions for more than 70 years. Up to 1971, the Hornborga area was a well-known stage for about 6000 cranes. After some years with food shortage, we today calculate the yearly number in April of about 5000 cranes using the stage.

The graph of fig. 4 was made after inquiries by radio and TV, and indicates the gradual flight north with arrivals in the north 1–2 weeks later than at the stage Hornborga.

In April the great majority of the cranes are adults. The non-breeding birds arrive three weeks later, normally during the first weeks of May (*Karlsson—Swanberg*, 1984) (fig. 5). This is in accordance with the statements on family break-up in Spain, made by *Alonso et al.* (1984). In the summer, the non-breeding birds are found in small groups in suitable habitats all over Sweden.

The autumn migration in Sweden

For many years, only few migrating cranes passing western Sweden were observed in the autumn. Evidently, this was caused by lack of attractive resting places and by rapid passage at great altitudes. We know that 200 years ago cranes were staging in thousands in western Sweden in September.



Figure|6. Routes of cranes migrating S-Sweden S 60° N in Sept. 1967 and 1968 and reported after radio|TV inquiries. Thick arrow indicates group of 100 or more

In the autumn 15 years ago, no migrating cranes stayed at Lake Hornborga. The former lake had been drained and the lake bottom was overgrown with reeds. Their habits changed after slightly raising the water level and making an opening in the reeds, thus creating a suitable roosting space even in the autumn. Now, at least 3000 cranes use the area as a stage even in September. In other words—a relatively simple procedure gave surprisingly good effect.

From reports given after inquiries in radio and TV we know that in the autumn migration from northern and central Sweden is divided into two main groups. The western group goes straight south to the great old stage in the Rügen area. The eastern group turns at 59°N, heading for a stage on the island of Öland, 10–20 kilometres east of the Swedish mainland (fig. 6). They spend their time at the southern part of the island, where they find vast open fields with many suitable shallow roosting waters.

A study of fig. 7 indicates the importance of the island as a stage in September. To the left is a curve indicating the timing of the southbound migration through Sweden. The curve to the right shows the extended stay on Öland, used for, so to say, refuelling. The young birds are then only 3–5 weeks after fledging. A hint of the importance of the refuelling purpose was given by a juvenile which on 16 September struck a powerline at the southern end of the island, only a moment before leaving Öland. In its gullet I found, as a fuel supply for a 4-hour flight, 153 grains of barley.

The histogram of fig. 7 shows the same facts in another way, too: the relation between arrival at and staying on the island of Öland in August–September 1968.

How cranes leave Öland in the autumn

Leaving Öland in the autumn, the cranes are once again divided into separate groups. The main part was found to go southwest during a thorough investigation in 1973, most of them probably in a non-stop flight to the Rügen area. Other cranes of the same group go to the mainland of Sweden and follow the southeastern coast, finishing the flight with 100 kilometres across the sea to Rügen.

Many other cranes are observed leaving Öland, heading south. In 1968 as well in 1973, 20% of a total of 7067 cranes were noted disappearing south. Their definite destination is not firmly established. A third group, approximately 25–30%, goes SSE. Through radar we have been able to follow birds of that group half the way to the nearest part of the Polish coast. Probably those birds later go on heading south (cf. the ring recovery map, fig. 1).

As to reports on crane migration routes in Poland, we find an interesting coincidence with circumstances on Öland. In the spring, very few cranes are observed on Öland, and in Poland there is, according to *Kazimierz Dobrowolski*, no springtime western route in a S–N direction. In the autumn, however, a “route, not occurring in spring, leads from north to south through the western part of Poland and it is possible that Scandinavian birds take this western route, going south...” (*Dobrowolski*, in litt.).

An unanswered question arises: is there, in the breeding area in the north, a geographical divide between the cranes going straight south and those turning southwest after a south-directed flight in Sweden?

The crane population on the large island of Gotland in the Baltic Sea, east of the mainland, amounts to at least 30 pairs, probably more (*Högström*, 1980). We have

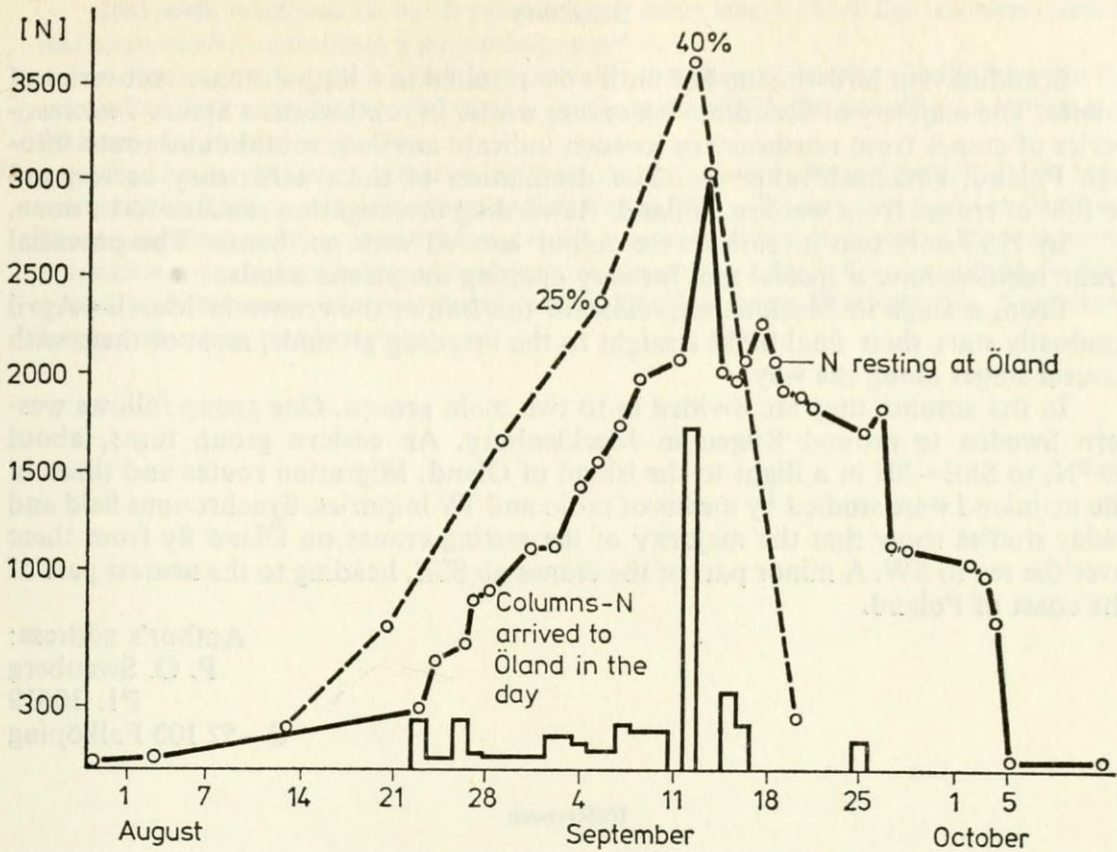


Figure 7. Cranes, autumn 1968. Reported migrating Sweden S 61° N weekly figures

no real study of the migration of those birds. Indeed we have two radar echoes that indicate a 250 kilometre flight straight across the sea to the coast of Poland, which could be reached after four hours. Those echoes were registered on a warm, sunny, high-pressure day, favourable for cranes, on 13 September, 1973. We had indeed no correlated field observations at that time. Consequently, it is not definitely proved that both the echoes originated from cranes.

Flight speed

Alerstam (1975) has calculated a ground speed over the Baltic of 67 km/h, and over land an average speed of 50 km/h. Identified radar echoes and my own direct field recordings (n=21) have given an average ground speed of 52 km/h over the waters surrounding Öland. Schindler (1972) found an average speed of 51,5 km/h with a maximum of 65 km/h.

Acknowledgements

This report has been made possible through the invaluable help given by Dr. Nils Dahlbeck of the Swedish Radio-TV, by Dr. Thomas Alerstam, by a great number of dedicated members of the Skövde Bird Club and by a thousand and more other contributors from all over Sweden. My warm thanks to them all.

Summary

Scandinavian bird-ringing has until now resulted in 8 long-distance recoveries of cranes. The majority of Scandinavian cranes winter in southwestern Spain. Two recoveries of cranes from northeastern Sweden indicate another, southbound route through Poland, Czechoslovakia etc. The destination of those birds may correspond to that of cranes from western Finland. Rewarding investigation remains to be done.

In 1985 only two juveniles were colour banded with red bands. The potential crane banders have a special tool for easy opening the plastic bands.

From a stage in Mecklenburg close to the Baltic, the cranes in March—April gradually start their final flight straight to the breeding grounds, most of them with several stages along the way.

In the autumn they are divided in to two main groups. One group follows western Sweden to around Rügen in Mecklenburg. An eastern group turns, about 59°N, to SSE—SE in a flight to the island of Öland. Migration routes and times in the mainland were studied by means of radio and TV inquiries. Synchronous field and radar studies show that the majority of the resting cranes on Öland fly from there over the sea to SW. A minor part of the cranes go SSE, heading to the nearest part of the coast of Poland.

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References

- Alerstam, T.—A. Bauer (1973):* A radar study of the spring migration of the Crane (*Grus grus*) over the southern Baltic area. *Vogelwarte*. 27:1—16.
- Alerstam, T. (1975):* Crane (*Grus grus*) migration over Sea and Land. *Ibis*. 117:489—495.
- Alonso, J. C.—J. P. Veiga—J. A. Alonso (1984):* Familienauflösung und Abzug aus dem Winterquartier beim Kranich (*Grus grus*). *J. Orn.* 125:69—74.
- Ebbinge, B.—A. St. Joseph—P. Prokosch—B. Spaans (1982):* The importance of spring staging areas for arctic-breeding geese. *Aquila*. 89:249—258.
- Högström, S. (1980):* Tranorna räknade på Gotland, 1980. *Bläcku*, 6:96—99. (Swedish)
- Karlsson, A.—P. O. Swanberg (1984):* Cranes at Lake Hornborga 1983 in the light of yearly studies 1966—1983. *Planeringsenheten medd.* 5/84. Länsstyrelsen, Mariestad. (Swedish, graphs with Engl. text).

Jelenlegi ismereteink a svédországi darvak (*Grus grus*) vonulási útvonalairól

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Svédország

Skandináviában végzett gyűrűzés eddig 8 nagy távolságban észlelt visszajelzést eredményezett. A skandináv darvak túlnyomó része Délnyugat-Spanyolországban telel. Két északkelet-svédországi visszajelzés egy másik útvonalat mutat, Lengyelországon és Csehszlovákián keresztül déli irányban. Ezek végcélja a nyugat-finnországi darvakéval lehet megegyező. A további vizsgálatok értékes eredményekkel kecsegtetnek.

1985 során mindössze két fiatal gyűrűztek meg színes lábgyűrűkkel. Egy különleges szerszámmal könnyűszerrel széthajtható a piros műanyag gyűrű.

A Balti-tenger partjaihoz közeli mecklenburgi pihenőhelyről március—április folyamán fokozatosan indulnak az utolsó vonulási szakasz megtételére a költőterület irányában; a legtöbb madár útközben még többször megpihen.

Ősszel a darvak két fő csoportra oszlanak. Az egyik csoport Nyugat-Svédországban halad a mecklenburgi Rügenig. A keleti csoport az 59 °N körül DDK—DK irányban fordul az Öland sziget felé. A szárazföld feletti vonulási útvonalat rádió- és televízió-felhívás segítségével követték nyomon. A szinkron terepmegfigyelések és radarvizsgálatok kimutatták, hogy az Ölandon pihenő darvak túlnyomó része délnyugati irányban távozik onnan. Kisebbségük DDK-irányban, Lengyelország legközelebbi eső partja felé távozik.