

Migration studies at Dungeness Bird Observatory

S. McMINN

Dungeness Bird Observatory, Dungeness, Lydd, Kent

McMINN, S., 1989. **Migration studies at Dungeness Bird Observatory.** The part played in the study of bird migration by the Dungeness Bird Observatory is outlined. Information concerning blackbird (*Turdus merula*) and robin (*Erithacus rubecula*) migration is presented as well as notes on migration over the sea.

ADDITIONAL KEY WORDS:—Blackbird – ornithology – robin.

CONTENTS

Introduction	79
Studies using bird observatory data	81
Origins and movements of migrants at Dungeness	82
Visual migration	86
Migration over the sea.	87
The future and concluding remarks	89
References	89

INTRODUCTION

The Dungeness Bird Observatory (DBO) Trust was established in 1952. It is an independently run organization which is also a registered charity. Dungeness is one of 15 bird observatories currently in operation around the British Isles (Fig. 1). The most recent addition to this list was North Ronaldsay in Orkney which became accredited in 1987. All of the bird observatories are affiliated to the Bird Observatories Council which replaced the Bird Observatories Committee in 1970. The objects of this council are to provide a forum for establishing closer links and co-operation between individual autonomous observatories, and to help co-ordinate the work carried out by them. The network of observatories is linked very closely with the British Trust for Ornithology (BTO) which administers the national ringing scheme, and acts as a central repository for migration data from all bird observatories. Many of the bird observatories are charitable trusts and rely very much upon donations, membership, grants and the supply of accommodation, for the financing of their operations. In most cases a resident warden is employed to carry out the work of the observatory, but in many instances this is supplemented by a large amount of amateur help in the form of visitors.

As can be seen from Fig. 1, all of the localities for the observatories are either

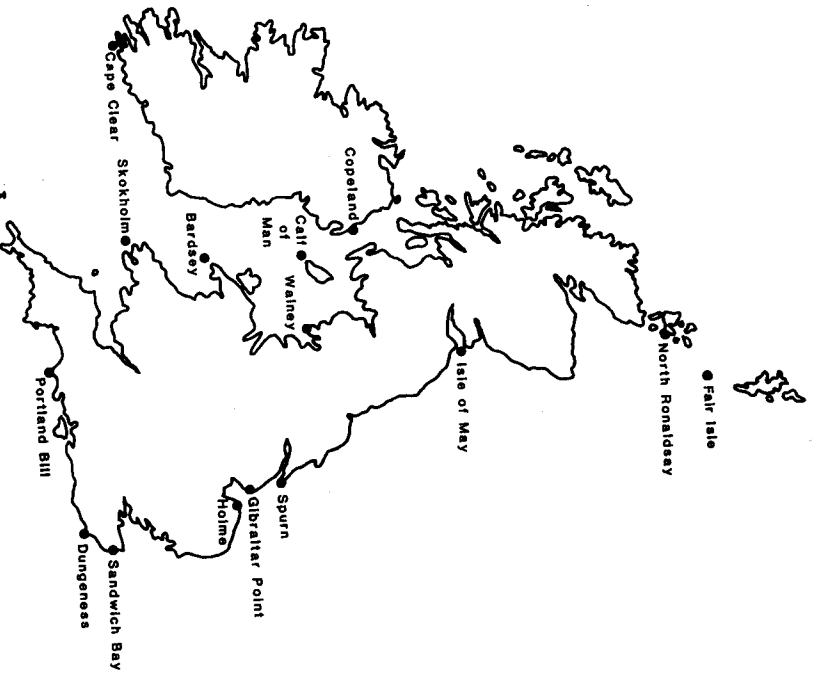


Figure 1. Bird observatories around the British Isles.

on islands or promontories. Dungeness, in the south-east corner of Britain, is only 40 km from the French headland of Cap Gris Nez and is obviously well placed for the monitoring and study of migration. Since 1952, the migration of birds through Dungeness has been monitored almost on a daily basis, and meticulous logs have been kept on the movements of both landbirds and the channel movements of many of our seabirds. The emphasis has been on the ringing and daily recording of migrants nesting at, and flying over or past, Dungeness. A considerable amount of information has been gained from this type of study, regarding the timing and quantity of passage for each species at Dungeness. By concentrating on the mass ringing of migrant passerines, in particular the summer visitors to Western Europe, information concerning their origins and destinations has been obtained. For the landbird monitoring, a recording area had to be defined to attain continuity in the census techniques employed, and so the DBO recording area was set up (Fig. 2). Within this area trapping and the ringing of both migrant and resident birds is carried out. It must be said that the

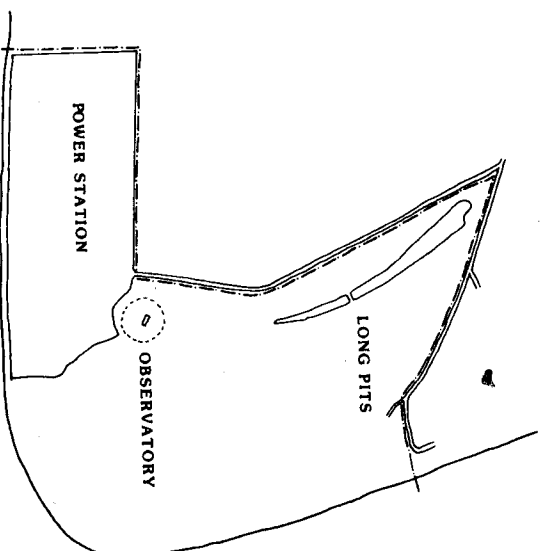


Figure 2. The Dungeness Bird Observatory recording area.

data collected, in particular that from the daily census, is based mainly on estimates of bird numbers. However, this, coupled with the ringing which is a form of sampling, can give a reliable estimation of the numbers of birds involved.

STUDIES USING BIRD OBSERVATORY DATA

Trends and patterns of bird migration have been monitored by the observatories throughout their period of existence, and during the last ten years the Bird Observatories Council has promoted a series of co-operative analyses, which draw upon the wealth of data gathered by the observatories. These have been mainly phenological studies incorporating the timing, duration, volume and direction of migration, and have been confined to single species. Studies of ring ouzel (*Turdus torquatus* (L.)), pied flycatcher (*Ficedula hypoleuca*), redstart (*Phoenicurus phoenicurus* (L.)), black redstart (*P. ochruros* (Gmelin)) and blackcap (*Sylvia atricapilla* (L.)) have already appeared as published papers, and following this a guide to the *Seasonal Movements of Summer Migrants* was published by the BTO, again using observatory data.

The DBO has played a major role in the study of migration. It has been in operation for many years and a large number of birds of a wide range of species have been ringed. The total number of birds ringed, to the end of 1987 was 189 054 and the number of species ringed was 202. The number of species recorded within the observatory recording area, including the adjacent sea, is currently 310.

The bird most commonly ringed at Dungeness used to be the common whitethroat (*Sylvia communis* (Latham)) with annual ringing totals peaking at

1370 in 1957, but since the 'crash' of this species in 1969 there are now less than 200 ringed each year. The willow warbler (*Phylloscopus trochilus* (L.)) has now overtaken all species in terms of annual ringing figures, with up to 1000 ringed annually. By the end of 1987, a total of 24 712 willow warblers have been ringed at the observatory. If we examine the annual ringing figures for the last 20 years, it can be seen that, in recent years, there has been a steady decline in the grand total of birds ringed (Fig. 3). This could be caused by several factors: weather conditions, population decline within a species and, to some extent in the case of Dungeness, habitat change. In the early days of operations there was far less vegetation cover than there is today, and much of the vegetation was bramble, gorse and broom. In the early 1950s, sallows started to proliferate and have since become the dominant vegetation type. This has influenced the ringing figures to some extent, because the trapping technique now employed is mist nets, far less effective in such a large area of cover. Also, the area around the Long Pits has become much more attractive in terms of cover, so today grounded migrants at Dungeness are often scattered over a wide area, and are rarely concentrated except when large numbers are involved. In recent years the annual ringing programme has been more consistently conducted. This has resulted in the possibility of assessing population changes, based on annual ringing totals. However, caution is needed in interpreting the results, as influences such as the weather have to be taken into account. It is possible that long term trends and fluctuations could be identified, when correlated with data collected by the BTO, such as the Common Bird Census and the Nest Record Scheme.

ORIGINS AND MOVEMENTS OF MIGRANTS AT DUNGENESS

Several techniques have been used to catch birds at Dungeness. In the earlier days the traps used were all of the Helgoland type, but with the advent of the mist net a much more portable type of trap became available. These nets are now mainly used in the more vegetated areas, where the bulk of the passerine species are caught. The clap-net was devised for use on the beach where large concentrations of gulls and terns assemble to roost at high tide, and has enabled kittiwake (*Rissa tridactyla* (L.)), black (*Chlidonias niger* (L.)), common (*Sterna hirundo* (L.)) and arctic (*S. paradisaea*) tern to be caught.

The ringing of birds has been the major means of establishing many facts about migrants, for example life expectancy, juvenile dispersal and its role in the colonization of new areas, the cause of death for each species; also to establish patterns of migration within a species and to establish the effects of weather upon them. The DBO has contributed greatly to the discovery of some of these facts, and has helped particularly to illuminate the origins and movements of some of the common migrants.

Migration begins at Dungeness by the first week of March with the arrival of the earlier summer migrants such as chiffchaff (*Phylloscopus collybita* (Vieillot)), black redstart and firecrest (*Regulus ignicapillus* (Temminck)). Spring passage continues until the first week of June, with the heaviest passage taking place between the last week of April and the middle of May, a period which includes the bulk of the common summer migrants. Return passage begins in the latter part of July, with early departing summer migrants, and continues until mid to late November with late departing summer migrants and arriving winter

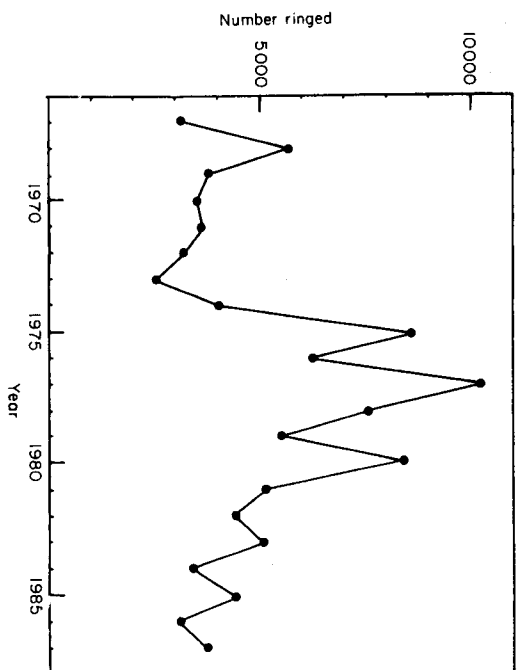


Figure 3. Numbers of birds ringed at the Dungeness Bird Observatory.

migrants. The autumn passage is always of greater volume because of the number of young birds involved. Another form of movement which is often observed at Dungeness is the cold weather movement. A partial migration as such, this usually involves species like the lapwing (*Vanellus vanellus* (L.)), skylark (*Alauda arvensis* (L.)), all of the thrushes and certain ducks, in particular wigeon (*Anas penelope* (L.)). These movements usually occur in periods of extreme, prolonged cold, and large numbers of many of the species can be involved.

Many of the species migrating through the Dungeness area are largely nocturnal migrants, particularly warblers and thrushes. A few such as swallow (*Hirundo rustica* (L.)), house (*Delichon urbica* (L.)) and sand martin (*Riparia riparia* (L.)) and all of the finch species are diurnal migrants, allowing easier observation of their movements.

The volume of migration for each species is very difficult to quantify because observations of migrations are very dependent upon weather conditions. For example, diurnal migrants such as the hirundines can pass through largely undetected because light winds coupled with clear skies will cause the birds to fly high. When weather conditions become more adverse the reverse happens. In the case of nocturnal migrants, precipitation in the early morning may well 'bring down' British migrants leaving the country, but wind from the easterly sector is likely to cause continental migrants to drift across the southern North Sea and English Channel. The last six years have seen relatively poor passages during the spring, mainly because the weather conditions have comprised long periods of high pressure coupled with light north to north-east winds, which have enabled migrants entering the country to continue their passage uninterrupted, thus overflying Dungeness.

Dungeness is, locally, a poor environment for birds, hence the limited number

TABLE 1. Ringing totals for selected summer migrants—1952 to 1987

Species	Total
Nightingale	279
Redstart	2975
Whinchat	1261
Sedge warbler	4880
Reed warbler	3384
Lesser whitethroat	2903
Whitethroat	13441
Garden warbler	2635
Blackcap	3015
Chiffchaff	9652
Willow warbler	24712
Spotted flycatcher	968

of breeding birds. The recording area is mainly a place where tired, exhausted, and disorientated migrants can find cover to rest and feed before continuing their journey. In autumn the bulk of the migrants involved are often blackbird (*Turdus merula* (L.)), song thrush (*T. philomelos* (Brehm)) and redwing (*T. iliacus*), which exploit the abundance of blackberries in the area. They, together with blackcap and garden warbler (*Sylvia borin*), use this invaluable source of food for pre-migration fat deposition.

The large numbers of birds which have been ringed at the DBO (Table 1), have yielded useful ringing recoveries which have at least allowed for speculation on the origins and movements of migrants passing through the Dungeness area. Some species have produced more information than others, mainly because of their susceptibility to recovery, that is, species such as thrushes are shot *en masse* in many countries throughout Europe, and other small passerines may quickly succumb to long periods of cold weather; others by their very nature are never found at all. Only by mass ringing of a species can enough results be obtained to analyse properly the often complicated movements of single species.

The blackbird has passed through Dungeness in such numbers that sufficient have been ringed to allow for an analysis of their movements. A total of 11 459 were ringed from 1952 to the end of 1987, producing a total of 166 recoveries. A

TABLE 2. Recoveries of blackbirds ringed at Dungeness—1952 to 1987

Country of recovery	Month of year												Total
	1	2	3	4	5	6	7	8	9	10	11	12	
Spain	4	2	—	—	—	—	—	—	—	—	—	—	7
Ireland	2	2	2	—	—	—	—	—	—	2	4	10	6
France	7	6	1	1	—	—	—	—	—	1	3	1	31
Britain	7	4	4	1	—	—	—	—	—	—	—	—	22
Belgium	1	1	1	3	1	4	3	—	—	2	—	—	15
Netherlands	1	1	3	3	2	1	—	—	—	1	—	—	15
Germany	1	3	4	6	3	—	—	—	—	1	1	—	35
Denmark	2	—	2	2	—	—	—	—	—	1	—	—	11
Sweden	—	—	1	2	2	—	—	—	—	2	—	—	12
Norway	—	—	—	—	—	—	—	—	—	—	—	—	10
Finland	—	—	1	4	2	—	—	—	—	2	—	—	2
Grand total	—	—	—	—	—	—	—	—	—	—	—	—	166

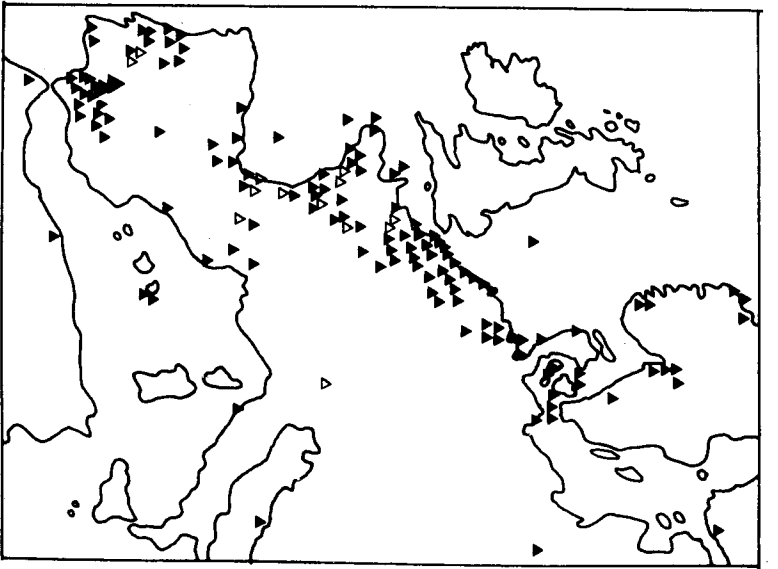
small breeding population of blackbirds does exist at Dungeness, but the majority of birds were ringed during the spring or autumn passage periods. Analysis of the ringing records for the blackbird on a local scale has indicated that different European populations, although migrating in the same general direction and therefore undertaking parallel movements, take different migratory routes and have different wintering destinations. All recoveries over 50 km from Dungeness between 1952 and 1987 have been tabulated to show their distribution by months for each country (Table 2). The most westerly and southerly countries have been listed first and thence the remainder in an easterly and northerly progression. The data shows that Dungeness blackbirds are present in the south-east of their range in winter, but the absence of recoveries during the summer months from Spain, Ireland, France and Britain suggests that these four countries are only visited on passage and as wintering grounds by the population which migrates through Dungeness. The winter records suggest that more birds continue to France, as compared with Britain, and that only small numbers move onto Spain and Ireland. However, the French recoveries could be exaggerated because of shooting activities. A closer look at the data available shows that the majority of winter recoveries in Britain are from south-west England, indicating a fairly narrow belt of migration southwards, as many of the French recoveries are along the northern coast of France. Recoveries from Norway and Finland total 12, none of which are in the period November to February. Belgian and Dutch recoveries indicate that some birds are present in winter but most occur in the period April to July.

It is likely, then, that the bulk of the blackbirds passing through Dungeness breed in a concentrated belt from Belgium north-east across the Netherlands, Germany and southern Sweden. With others breeding further north, they then vacate the northern and central parts of their range in large numbers, moving south-west through northern France and southern Britain to spend the winter there, while a small proportion penetrate as far as Ireland and Spain.

It is also possible that, within the passage of blackbirds through the Dungeness area some of the populations are age or sex-related but this idea has still to be further investigated.

A similar pattern of movements for the robin (*Erithacus rubecula* (L.)) has also been recorded. Again, like the blackbird, large numbers of robins pass through Dungeness in the autumn, particularly at the end of September and into mid-October. Up to the end of 1987, 6210 had been ringed, and the recoveries to date suggest that breeding populations from Scandinavia pass through the east and south coasts of Britain, to winter in France, and the Iberian Peninsula (Fig. 4). This overall picture of robin recoveries is based on other information in addition to that from Dungeness. The birds recovered in France and Iberia are birds ringed on passage in Britain, passing through from Fennoscandia. Some recoveries are of birds ringed in Britain in the breeding season.

Over the years there have been many fluctuations in the numbers of birds passing through the Dungeness area. Species like the whitethroat, which declined dramatically in the late sixties, have not yet recovered to their previous numbers. Dungeness was important twenty years ago for the whitethroat, but has now become important for such species as the black redstart and firecrest. These two species are ringed and recorded in greater numbers at Dungeness than anywhere else in Britain, and this has allowed for more detailed study of



△ = British birds, ▲ = passage migrants.
Figure 4. Ringing recoveries of robins ringed in Britain.

them in relation to the ageing and sexing of the species. Sites like Dungeness have become important for establishing, through trapping and ringing, the direction of movement of some of the summer visitors. A good example of this is the lesser whitethroat (*Sylvia curruca* (L.)) which moves exclusively through the south-east of Britain.

VISUAL MIGRATION

Visual migration forms a large part of the DBO daily routine recording. All birds are counted on a daily basis in the defined recording area. Some will be resident species but the large majority are migrants. Much of the counting is carried out by the warden and his assistant, but visitors to the observatory are sometimes relied upon heavily. During the spring, visual passage is largely confined to species moving by day and these are almost always finches and hirundines, birds entering the country in small numbers. At the other end of the scale during the autumn, the visual passage can be huge. Often, large scale

movements of departing summer migrants give way to similar incoming movements of winter migrants. October can be a month of extensive passage of a variety of species. Very large movements of finches and thrushes can be seen, the numbers totalling thousands of individuals on occasions. Very little is caught on days when large overhead movements occur, the birds involved normally flying high and penetrating far inland. Only a few tired individuals may land. The power station with its lights and its massive profile along the coastline acts as a focal point for migrants looking for land across the English Channel.

MIGRATION OVER THE SEA

In more recent years, sea-watching has become much more important in the DBO routine, a development which can be attributed to several factors. In the early days at Dungeness less emphasis was placed on sea-watching and, in any case, viewing towards the south into the sun presented difficulties. The mid-1960s saw a change in the attitude to sea-watching. With the operation of the nuclear power station, an area of disturbed water appeared 100 metres off-shore, caused by the outflow of cooling water from the power station. This area of disturbed water attracts large concentrations of gulls and terns to feed. Sea-watching soon became more regular and prolonged sea-watches are now carried out from the point. This upsurge in sea-watching has increased our knowledge of the number and variety of species which pass up and down the Channel. Seabird movements occur in almost every month of the year. For several species the passage period is short and only by continuous observation is the passage revealed. For example, the pomarine skua (*Stercorarius pomarinus* Temminck) passage, prior to 1967, had been recorded in only five years and then only in singles and twos with the exception of a flock of 22 on the 11th of May 1959. Since 1967 it has been shown that the pomarine skua is a regular spring passage migrant, sometimes in large numbers and often travelling in small flocks. The pomarine skua has almost become an institution amongst birdwatchers at Dungeness.

Other species may have a more prolonged spring passage but the peak can often be large and of short duration. The bulk of the spring sea passage comprises brent goose (*Branla bernicla* (L.)), common scoter (*Melanitta nigra* (L.)), bar-tailed godwit (*Limosa lapponica* (L.)), and sandwich (*Sterna sandvicensis* Latham) and common tern, each with a clearly defined peak passage period. Other species are seen to move off-shore, often in small numbers, and many of the freshwater duck species move over the sea together with assorted waders and gulls.

The spring passage continues until early June after which there is a break in off-shore movements. The autumn passage begins towards the end of July with a largely westward passage of juvenile gulls and terns. August and September often see large movements of black terns passing through, with a large proportion of them stopping over the warm water outflow from the power station to feed and rest before moving on. Small movements of returning waders occur in the late summer, and the first dispersive movements of the diver species and the first westward movements of brent geese are often noted. By mid to late-October the last of the terns have left the beach area, and movements off-shore

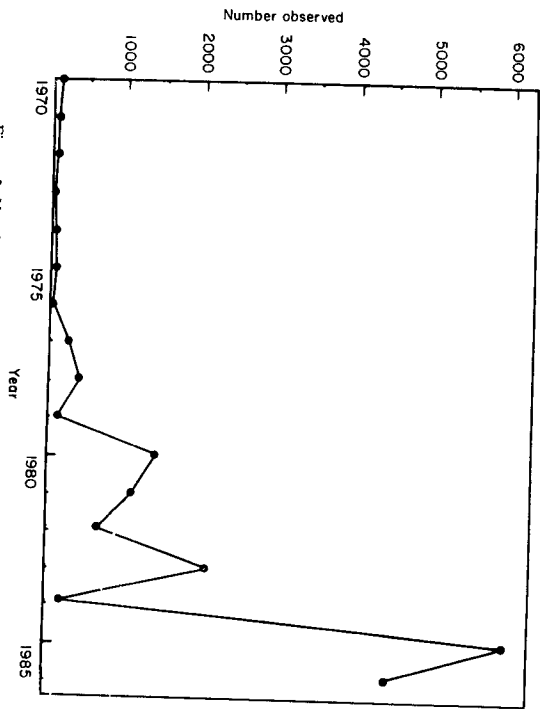


Figure 5. Numbers of augs recorded off the Dungeness coast.

relate largely to species wintering in the Channel, or to movements induced by cold weather.

In extreme conditions some species can be seen in exceptional numbers. The freak conditions during October 1987 saw unprecedented numbers of shearwaters in the Channel off Dungeness. The species concerned in this considerable movement of manx shearwater (*Puffinus griseus*), but there was also a nature are often impossible to explain with any certainty. Again recently, record numbers of gannets were recorded off-shore in conditions not necessarily conducive to large movements of this species.

The continued observation of the Channel movement of birds has highlighted certain facts. One example is the regular passage of the pomarine skua, but recently there has been a very noticeable change in the status of auk species off Dungeness in winter (Fig. 5).

Over the last ten years there has been marked increases in augs recorded off the Kent coast and in particular off Dungeness. Twenty years ago 100 augs seen off-shore was virtually unknown, but today figures reaching thousands can often be seen. The first major increase was noted in November 1980 when over 1000 were seen moving off Dungeness. Since then, the numbers have increased annually. The apparent reason for this marked increase is the re-distribution in winter of the sprat, the main auk food source. The exceptional decrease in North Sea catches of sprats balanced against the obvious rise in catches around the Kent coastline would appear to be the most likely explanation for the dramatic increase in augs. The ringing recoveries, although few in number, show that the majority of birds recovered originate from breeding colonies in the north of the

British Isles. It is likely that these birds regularly winter in the southern North Sea and English Channel where the food source has become abundant.

THE FUTURE AND CONCLUDING REMARKS

The DBO has been in operation for thirty-six years, and like other observatories has amassed volumes of data in hand-written files. Now, with the increased availability of computer facilities, this data could be readily stored and analysed by computer. A recent directive from the Bird Observatories Council of 1988. A further proposal was that the observatory computers should be linked by modem to each other and to other observatories throughout Europe. This approach from the Bird Observatory Council and its Scientific Committee opens up many possible new horizons in the study of migrant birds. It must be said that all of the proposals need adequate funding, and this is a problem we have yet to overcome. When this is achieved Dungeness and its sister observatories can continue to play a significant part in research on bird migration and population dynamics.

REFERENCES

- DURMAN, R. (Ed.), 1976. *Bird Observatories in Britain and Ireland*. Berkhamsstead: T. & A. D. Poyser.
- DUNGENESS BIRD OBSERVATORY. *Reports, 1952-68*.
- HICKLING, R. (Ed.), 1983. *Enjoying Ornithology*. Berkhamsstead: T. & A. D. Poyser.
- HOPE JONES, P., 1975. The migration of Redstarts through and from Britain. *Kinging and Migration*, 1: 12-27.
- KENT ORNITHOLOGICAL SOCIETY. *Bird Reports, 1960-86*.
- LANGSLOW, D. R., 1979. Movements of Blackcaps ringed in Britain and Ireland. *Bird Study*, 26: 239-252.
- McMINN, S. D., The recent change in the winter status of augs (Alcidae) at Dungeness, Kent. *Kent Bird Report*, in press.
- RIDDIFORD, N. & FINDLEY, P., 1981. *Seasonal Movements of Summer Migrants*. Tring: British Trust for Ornithology.