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RECENT TRENDS IN THE NUMBERS AND DISTRIBUTION OF CORMORANTS *PHALACROCORAX CARBO* IN BRITAIN

ABSTRACT: British cormorants breed mainly on the coast, but the number breeding inland is increasing sharply. Overall, the population is increasing by about 3% per annum, with marked regional variations. In the mid-1980s the breeding population was estimated to be 6400–7200 pairs. The wintering

population has been increasing more rapidly at 10–25% per annum. In 1987–1991, the winter population averaged on estimated 16 800 birds.

KEY WORDS: cormorant, breeding population, distribution, wintering population, number trends, Great Britain.

1. INTRODUCTION

Cormorants *Phalacrocorax carbo* have increasingly become the target for criticism from British anglers and fisheries interests over the past decade or so, because of the adverse effect they are believed to have on fish stocks. The complaints largely concern birds in the winter months and there is no doubt that the numbers inland at this time of year have

increased very substantially in recent decades. Paradoxically, breeding numbers appear not to have increased to anything like the same extent over this period. We review here recent trends in numbers of cormorants in Britain, with particular regard to differences between the breeding and non-breeding seasons, and the factors responsible for these differences.

2. RESULTS

2.1. STATUS AND DISTRIBUTION IN THE BREEDING SEASON

The majority of British cormorants are coastal breeders and occur more or less wherever there is suitable breeding habitat (cliffs, stacks and rocky islets). Colonies are comparatively small, gener-

ally numbering only 10–300 apparently occupied nests (aon). The nests are the bulky tangle of seaweed and twigs and are usually easy to see, but the relatively large number of colonies, and the fact that

many are situated in inaccessible places, poses problems for censusing. Much of what is known derives from two national seabird censuses: Operation Seafarer in 1969/70 and the Seabird Colony Register Survey in 1985–87 (Lloyd et al. 1991).

These found totals of 6400 aon and 7200 aon, respectively, for Britain (including the Channel Islands and the Isle of Man, but excluding Northern Ireland) (Debout et al. 1995). The net increase in numbers demonstrated by these figures belie quite marked regional differences in population trends. Substantial declines (more than 20% decrease between the

two surveys) were evident in Shetland, Caithness and the Western Isles, whilst increases (20% change) were apparent in south-east Scotland, north-east England and along the south coast of England, and with the population remaining more or less constant in other areas.

Subsequent population developments have been determined through annual counts at selected colonies throughout Britain as part of a seabird monitoring programme coordinated by the Joint Nature Conservation Committee (Walsh et al. 1992). Improved coverage has been achieved since 1990 following the setting

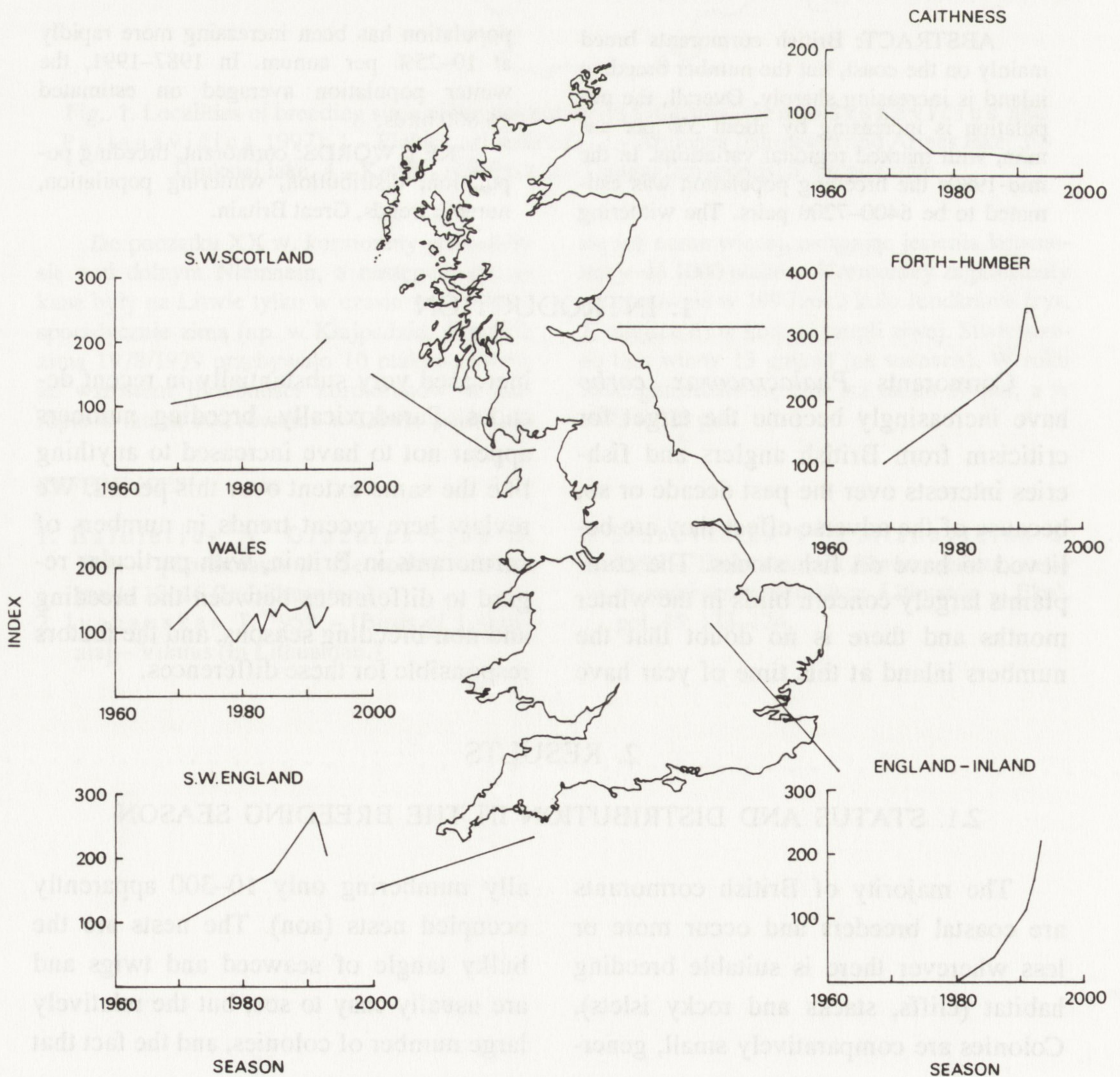


Fig. 1. Breeding population trends in six regions of Britain

up of a specific monitoring project, the Cormorant Breeding Colony Survey. Currently about 30% of British colonies are included. The data collected can be used to generate regional population indices. A convenient way of doing this is to compare counts for a particular group of colonies in a particular year with those for the same colonies in a base-line or reference year (for instance the Operation Seafarer counts in 1969/70). A key assumption is that the colonies counted are representative of all those in the area to which the index refers. Population trends based on indices determined in this way are shown in Fig. 1. They emphasise the continuing strong growth in the Forth-Humber region and south-west England. Coverage of the west coast of Scotland has been poor, partly a reflection of the comparatively small numbers of bird-watchers available to make the counts, but also the difficulties of access to the colonies there, and no attempt has been

made to determine a population index for this area.

One of the most interesting developments affecting British cormorants in recent years has been the occurrence of tree nesting at inland sites (Fig. 1). This began at Abberton Reservoir, Essex in 1981 when 9 pairs nested. This colony has since expanded rapidly and in 1993 held 526 aon (G.R. Ekins, pers. comm.), one of the highest counts ever obtained at a British cormorant colony. Some sixteen other inland breeding attempts are on record, most in the eastern part of Britain. Many of these have failed and in at least two instances the birds are reported as having been "discouraged". In addition to the Abberton Reservoir colony, there were five other colonies in 1992, the most northerly in Nottinghamshire, the most southerly in Greater London. Between them these six colonies held 617 aon in 1992.

2.2. STATUS AND DISTRIBUTION IN THE NON-BREEDING SEASON

Cormorants begin to move away from their breeding colonies comparatively soon after the completion of breeding or fledging. The movements of British cormorants are usually described as dispersive rather than truly migratory (cf Coulson and Brazendale 1968) and are mostly directed to the south. The distances moved are typically no more than a few hundred kilometres. The bulk of the British breeding population thus remains in Britain for the winter, but there is a substantial redistribution and much mixing of birds from different areas.

Prior to about 1960 cormorants were unusual inland in Britain and the birds seem to be remained almost exclusively in coastal or estuarine habitats. Over the past 30 years the numbers inland have in-

creased very substantially, especially in southern England, and currently few lakes or rivers are without their complement of cormorants. Following complaints from anglers that the growing numbers of cormorants were having an effect on fish stocks, the British Trust for Ornithology and the Scottish Ornithologists' Club undertook the joint survey of wintering cormorants in Britain and Northern Ireland in the winter of 1985/86. A total of 13 500 individuals was recorded in Britain (i.e. excluding Northern Ireland) of which 33% were inland (47% in England) (Porter 1987, Feare 1988). These inland birds were concentrated in south-east England, the only counties having more than 300 birds being Norfolk, Essex, Surrey and Kent.

Subsequent monitoring of wintering cormorants in Britain has been undertaken primarily through counts collected as part of the National Waterfowl Counts scheme (NWC) which is organised by The Wildfowl & Wetlands Trust. This has shown birds to be widely distributed throughout Britain with the greatest concentrations in south-east and north-west England and south-west Scotland (Kirby et al. 1995). Six inland areas regularly hold more than 300 birds: Surrey, Greater London, Essex, Cambridgeshire, Norfolk and Tayside. Coastal areas with over 300 birds include Dorset, Kent, Essex, Cumbria, Strathclyde and Highland. The average winter population over the four seasons from 1987/88 to 1990/91 was estimated at 16 800 birds.

The NWC counts also show a sustained increase in the winter population over the four seasons for which data are

available. The increases were particularly marked on reservoirs and old mineral workings. A shift from coastal to inland habitats was also apparent. Thus in September about 75% of birds were recorded on coastal sites, but by February this had fallen to almost 50%.

Many cormorant roosts in Britain are counted regularly by amateur bird-watchers, but in the past no attempt has been made to coordinate and collate these records nationally. To make use of this largely untapped data a special monitoring project, The Christmas Week Cormorant Survey, has been established. A pilot survey was undertaken during Christmas 1992 and the first full survey will take place at the end of 1993. Only limited data are available at present, but by comparison with earlier counts, it is clear that the wintering population continues to rise.

3. DISCUSSION

Although the numbers of cormorants breeding in Britain have shown a net increase over the past quarter century, there remain a number of areas where the population is declining. The reason for these declines are not clear. A special study has been made of the position in Caithness where the number of breeding pairs decreased from 825 aon in 1969 (Lloyd et al. 1991) to 230 aon in 1992 (R. M. Sellers, unpubl. data). Breeding performance is currently similar to that in other parts of Britain and is unlikely to be the cause of the decline. Similarly first-year mortality rates, estimated from ringing recoveries, are roughly the same as those experienced elsewhere in Britain. Adult mortality is greater than might have been expected on this basis, but the number of recoveries is limited and the uncertainty on the mortality estimate

correspondingly large. Moreover simple modelling shows that this factor alone cannot account for the declines noted.

The inland wintering population has increased steadily over the past several decades and these increases continue apparently unchecked. A combination of factors appears to be responsible for this growth including the following (cf Kirby et al. 1993):

- the growth in the British breeding population (however the rate of growth of the wintering population is too large to be accounted for this factor alone);
- growth of the continental population of the cormorant, some of which winter in Britain;
- an apparent shift in the winter quarters of some British cormorants;
- a shift from coastal to inland habitats.

The relative importance of these factors is unknown and forms the basis of ongoing investigations.

Programmes are now in place to monitor the development of both the breeding and non-breeding populations of the cormorants in Britain (albeit with some areas where coverage is poor) and

these will provide data relevant to the development of conservation and management policies for the species. However, a clear understanding of the factors which influence or govern cormorant populations is lacking at present and these remain important tasks for the future.

4. SUMMARY

Cormorants breed on coasts around much of Britain in colonies of typically 10–300 pairs. Overall the population is increasing by about 3% per annum, but there are marked regional variations and declines have been noted in some areas (Fig. 1). Recent regional trends are described based mainly on a newly established national cormorant monitoring project. Since 1981 a number of inland breeding attempts have been made. Many have been unsuccessful but a few colonies are now firmly established and in 1992 there was a total of 617 pairs of these tree-nesting birds. Totally the breeding populations was estimated at 6400–7200 breeding pairs at the beginning of the 1990s.

The wintering population in Britain in 1987–1991 was averaged on estimated 16 800 birds. It has been increasing much more rapidly (10–25% per annum) than that of the breeding population for at least the past twenty years. Recent data on these increases and their regional variation based on counts obtained from the National Waterfowl Counts scheme are reviewed. A number of factors seems to be responsible for these changes including the increase in the British breeding population, a shift in winter quarters, a switch from coastal to inland habitats and an increasing number of birds from the rapidly expanding populations of mainland Europe.

5. POLISH SUMMARY

Kormorany gnieźdzą się na wybrzeżach prawie całej Wielkiej Brytanii, w koloniach liczących przeważnie 10–300 par (urwiska skalne, skaliste wysepki). Liczebność populacji lęgowej wzrasta średnio o 3% rocznie, ale w różnych rejonach kraju zmiany te są zróżnicowane, a na niektórych terenach zauważono spadek liczebności (rys. 1). Począwszy od 1981 kormorany gnieźdzą się również w głębi lądu na drzewach. Na początku lat 90. liczebność populacji lęgowej wynosiła 6400–7200 par.

Liczebność populacji zimującej wzrasta znacznie szybciej niż populacji lęgowej – 10–25% rocznie. Średnia liczebność kormoranów zimujących na Wyspach Brytyjskich dla lat 1987–1991 oceniona została na 16 800 ptaków. Wśród przyczyn, które składają się na znaczny wzrost liczebności zimujących kormoranów, wymienione są następujące: wzrost populacji lęgowej, zmiana terenów zimowiskowych, zmiana siedlisk lęgowych z wybrzeżowych na położone w głębi lądu, gwałtowny wzrost liczebności lęgowej populacji w kontynentalnej Europie.

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