

I. THE EXTINCT ANCESTOR OF *ANSER ANSER* IN EUROPE

D. Jánossy

Our knowledge of any fossil birds is very imperfect and documentation upon the origin of the waterfowl of the Pleistocene, the period covering the last million years, is especially meagre. The reasons for this are chiefly the special circumstances of fossilization in this period: most localities are connected with karstic phenomena (caves and fissures), in which mammal faunas dominate, bird bones are very subordinate and the few found chiefly originate from non-aquatic birds.

During a revision of the Pliocene and Pleistocene bird remains from Hungary as well as different localities in Europe, I found to my great pleasure in the material of some localities, not very close together geographically though geologically very near to one another, a good documentation of aquatic bird remains. One is a lime-mud connected with a travertine (Hill of the former Royal Castle in Budapest), the other ones are lacustrine clays (such as the oldest archeological site in temperate Europe, Prezletice, near Prague; Voigtstedt in Thuringia, Germany; and finally Ambrona, near Madrid, central Spain) (Jánossy, 1982).

These localities yielded bones of grebes and cormorants, six or seven different duck species, some birds of prey such as *Falco tinnunculus* and a fossil form of *Haliaetus albicilla*, rails, coots, cranes and shore birds, and also bones of a large goose. The aquatic bird fauna of these inland lakes was (as appears from this enumeration of the chief forms) very near to that of to-day, although it may be supposed, as will be seen later, that most of these species were extinct ancestors of the closely related forms living today.

Let us now look at the bones of the goose. A comparison of the remains with skeletons of geese living today in Europe shows a close resemblance with those of *Anser anser*, although they seem to be much larger.

Looking for analogies in the geological past, we can establish the following: although we know remains of aquatic birds such as flamingos, loon-like forms, cormorants and shorebirds, beginning with the Cretaceous period (more than a hundred million years ago) waterfowl remains are known only from the Eocene, about 60 million years before the present. The origin of this group of birds is still problematic, although some recent investigations suggest they are descended from ancient shorebirds. After all we know only altogether seven extinct species of geese from the Upper Miocene (10 million years ago), Middle Pliocene (2–3 million years) and Lower Pleistocene. However, all hitherto described forms are considerably smaller than the recent European forms, or their proportions are different from those of living ones (Lambrecht, 1933, Wetmore, 1951).

Thus, the only real comparison possible was with the living forms of our territory. Considering that the osteology of the recent geese of temperate Europe is very well known, due to the dissertation of *Bacher* (1967) at the Veterinary University of Munich, we can compare our remains with a wide variation of recent species. The investigation of a statistical material showed that the bones of *Anser albifrons*, *A. fabalis* and *A. anser*, can hardly be separated from one another in their range of variation. Measurements of the bones of about 150 specimens of the above mentioned species show a wide overlap. However, if we compare the whole range of variation of some bones of these geese with the measurements of fossil bones, we find that the size of the extinct form was much larger than any recent European species of the genus *Anser*.

Thus, we have before us the remains of a bird the size of the sturdiest domestic goose of today, which seemingly was widespread in the waters of the whole of Europe half a million years ago. It is worthy of mention that this *Anser* species, for which I propose to give the name of a new species for science *Anser subanser* (*Jánossy*, 1982) is the single species hitherto known from the genus in the period mentioned in our continent. This may of course be due to our insufficient knowledge of the extinct waterfowl as a whole.

We know very few species of water birds at all, because the differences in details of bones between living and extinct forms of birds are in general very delicate and hidden. The case of the goose made known in this short lecture, is a very nice example in which an extinct form can be statistically distinguished from recent ones. It is to be hoped that in future, by finding much more material from this fascinating group of birds, we can describe more exactly the bird life of our immediate past.

Author's address:
Dr. D. Jánossy
National Museum
Budapest

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II. THE STATUS OF THE GREYLAG GOOSE *ANSER ANSER* IN BRITAIN

M. A. Ogilvie

The Greylag Geese of Britain fall into three categories.

1. Indigenous population

This is confined to the north-west of Scotland and the Outer Hebrides and is the remnants of the formerly more widespread stock which bred in many areas of Scotland and northern England some hundreds of years ago. It probably numbers between 1500 and 2000 individuals and has been thought to be declining for many years. However a recent spread and increase of breeding pairs in the Outer Hebrides may signal a change.

2. Introduced flocks

Greylags have been introduced, by landowners and shooters, into many localities in Britain. The largest population, of perhaps 1000 birds, is in south-west Scotland and dates back about 50 years. Other, smaller flocks, can be found very widely in southern and eastern England, the north-west, Wales and some other Scottish localities. They may together total another 2000 birds.

3. Icelandic population

Virtually the entire breeding population from Iceland winters in Britain. A few hundred probably stay back in Iceland, and between 750 and 1000 winter in Ireland. The remainder are concentrated in Scotland, particularly the north-east and east central areas. They arrive towards the end of October and are censused annually on the first or second week-end of November, at the same time as the Pink-footed Goose *Anser brachyrhynchus* with which they often consort. Amateur bird-watchers carry out most of the counting, concentrating on the roosts. I make counts in areas with few bird-watchers, and also make age-ratio counts to assess breeding performance.

Figure 1 sets out the totals counted in Britain since 1955, together with the percentage of young found. There has been a three-fold increase in the period, very steady between about 1960 and 1973, followed by a sharp decline related to years of poor breeding, with a concluding upsurge to the present 90 000.

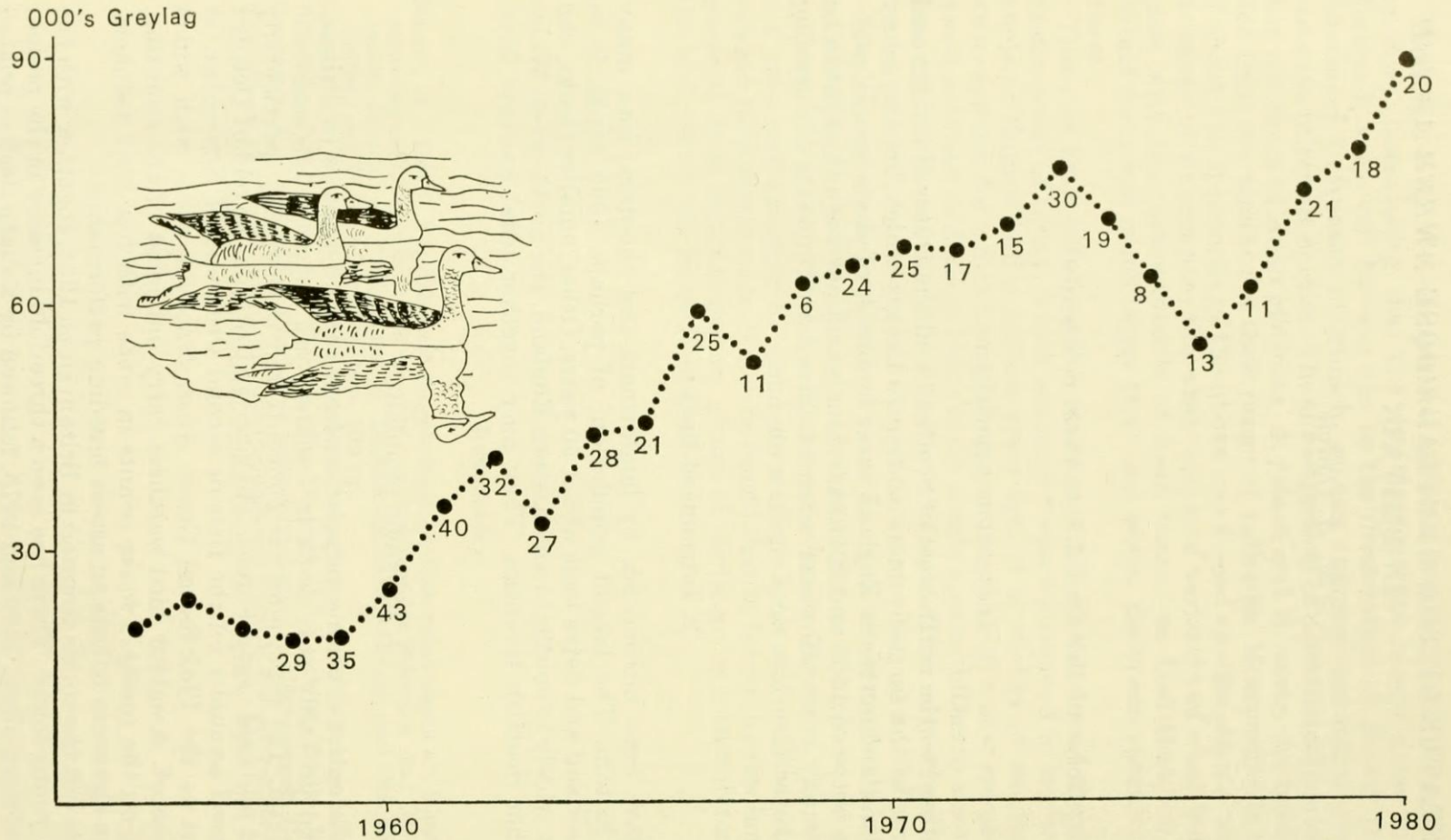


Figure II/1: Numbers in Britain, 1955–1980. Figures on graph—percentage young (not available before 1958)

Boyd and Ogilvie (1972) and *Ogilvie and Boyd (1976)* have dealt with this increase and the associated variations in recruitment and mortality in some detail. In summary, there has been a general contraction of the wintering range at the same time as the growth in numbers, both linked strongly with increase in the amount of barley, potatoes and improved grassland being grown in Scotland. This is much the same picture as for the Pinkfoot (see paper in this symposium). Again, similar to the Pinkfoot, the average breeding success of the Greylags has fallen steadily as the population increased. However there is not thought to be the same pressure on breeding places in Iceland as there is for the Pinkfoot, so the reason remains obscure.

Ogilvie and Boyd (1976) suggested that numbers in the period 1975 to 1980 would grow more slowly than they actually did, and their statement that the population would probably not grow much above the then current levels should be revised. There seem to be fewer constraints on further growth of the Greylag than on the Pinkfoot. However there are pressures coming from agricultural interests in Scotland to allow licensed shooting to prevent damage to grass and crops in the spring, between the end of the shooting season and the birds' departure in late April. Unlike the Pinkfoot, the Greylag is exposed to some shooting in Iceland, though this is currently light. It could increase, however, as a way of reducing agricultural damage there.

In autumn 1979 the Greylag became Britain's most numerous goose species, overtaking the Pinkfoot which had for long held that distinction. Although the Pinkfoot was again more numerous in autumn 1980, given the generally slightly higher average breeding success of the Greylag and its very slightly lower mortality rate, it can be forecast that the Greylag will soon overtake the Pinkfoot once more and then very probably stay in front.

Author's address:
J. A. Ogilvie
Slimbridge
GL2 7BX
England

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