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**Feral Greylag Geese in Britain
and Ireland, 1960-1986.**

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SUMMARY

Greylag Geese were introduced to south west Scotland and East Anglia in the 1930s to establish feral flocks, presumably as hunting quarry. In the 1960s and the 1970s the Wildfowlers Association of Great Britain and Ireland translocated and released more than 1300 birds caught or taken as eggs from Scotland, and those reared on their reserves, with the object of re-establishing the species as a breeding bird in England. By the mid-1980s flocks had been established at more than 30 sites.

The flocks outside south west Scotland have increased at the rate of just over 13% per year, and the total in Britain and Ireland rose from only 1,700 at the end of the 1960s to an estimated 13,000-14,000 in 1985-86. The areas of most rapid growth were in southern and central England and it is in this area, particularly in the gravel pit habitats, that there remains greatest potential for further expansion.

Continuation of present trends would result in 27,000 by 1990 and 97,000 by the year 2000, but pressure from farmers, increase in wildfowling, shortage of breeding habitat and competition with the Canada Goose are likely to depress future trends. Nevertheless, the Greylag is likely to expand further and a future total of more than 50,000 would not be surprising.

INTRODUCTION

The Greylag Goose Anser anser is our only native goose species; up to the 19th century it used to breed throughout Scotland and parts of England, Wales and Ireland including places as far south as the East Anglian fenland. Most of the Greylags in Britain in winter are of the migratory population which breeds in Iceland; this population (the counts exclude the native breeders) numbered 102,000 in autumn 1986¹. The native population is now restricted to a small group, probably under 3,000, in the north of Scotland, with its headquarters on the Western Isles, chiefly South Uist and Benbecula^{2,3}. There are a number of flocks on the mainland, in Sutherland, but it is unknown whether there is interchange with the Western Isles geese. There have been a number of translocations of geese within this range, but the subject of this paper is the feral groups that are now well established to the south, from east and central Scotland to the southern coast of England, and in Northern Ireland.

In the 1950s the Wildfowlers Association of Great Britain and Ireland (WAGBI, now the British Association for Shooting and Conservation), had established a policy of translocating the introduced Canada Goose Branta canadensis throughout England, both to alleviate local problems of crop damage (translocations did not achieve this) and to provide sport for shooters. In 1959, they transferred their attention to the Greylag and stated their aim as "... to try to re-establish the Grey Lag as a wild nesting bird in England"⁴. Already flocks were established in East Anglia and there was a large feral group in south west Scotland, introduced from the Hebrides in the 1930s⁵.

This paper examines the progress of the feral groups established by the release programmes and attempts to assess the size of the feral population at present. We rely largely on the information in the Wildfowl Trust's National Wildfowl Counts, which each year cover 1,500-2,000 waters throughout Britain from September to March⁶, to locate the various groups. The coverage is comprehensive especially in southern England on the habitats most commonly occupied by Greylags. We also consulted published sources, mainly county bird books and reports, and the published survey in Ireland⁶. We wrote to experienced observers in each area and obtained, sometimes very detailed, accounts of the summer as well as the winter distribution and numbers (see Acknowledgements). For information on the release programmes themselves we relied on the detailed published information in the WAGBI reports produced by various authors between 1960 and 1974 (also summarised by Ellwood and Ruxton⁷).

RESULTS AND DISCUSSION

History of the translocation programme

The first birds taken into captivity to form a breeding nucleus on several WAGBI sites were 26 Greylags, mainly goslings, caught on a large estate in the north of Scotland in the summer of 1959. The birds were part of a feral group⁷ established from eggs taken from the Hebridean population⁸. The main breeding centres were in South Cumbria and northern Lancashire in an area where Greylags had formerly bred, and on gravel pits in inland Kent. The reintroduction programme was coordinated by a sub-committee of WAGBI.

During the early 1960s catching teams visited the north- and south-west of Scotland to obtain birds and in 1964 eggs were collected in Galloway to be incubated in the south and provide goslings for release. The birds caught in the wild, those resulting from the eggs from Galloway and the progeny of pairs

breeding in captivity, were released in a large number of sites. As well as the national scheme, individual WAGBI clubs also began their own breeding and release programmes.

The organised scheme was terminated in the early 1970s, partly because the increase in its size began to cause organisational difficulties and partly because, with several flocks now well established, it had served its purpose. However, the movements of young and eggs between feral flocks and from breeding stocks continued on an informal basis between wildfowling clubs and individuals. During the period of the national scheme, about 1,300 Greylags were released.

Numbers and Distribution

The distribution of feral Greylags, south of the range of native stocks, is shown in Figure 1. The locations of WAGBI release sites, where these are known, are also shown. As can be seen, most of the established flocks were started by releases, but several of the releases did not result in a lasting group of geese for various reasons, mainly because of losses through predation and shooting. Several of the other groups were probably started by releases by individuals or clubs that were not recorded in the WAGBI reports.

Most of the released birds were ringed so that their progress could be monitored by means of recoveries. Despite the fact that some released birds found their way back to their natal area, and others moved considerable distances (recoveries included 1 from Eire and 1 from Iceland), the majority stayed in their release localities for the remainder of their lives. Within a season, the flocks are isolated and make only short flights to local feeding grounds. This, and the rather constant numbers recorded in counts from month to month, make it possible to estimate the size of each group. Information from local sources also confirms that in each area the geese breed close to their wintering grounds. The longest flights are made by flocks from the uplands of the Lake District and Yorkshire, which migrate to the lowlands or coast to winter. Table 1 shows the date of establishment of each flock, or the date the birds were first recorded in the wildfowl counts, and the highest numbers recorded in the various periods. In the following regional account, the numbers in parentheses refer to the area numbers shown in Table 1 and Figure 1.

The first eggs were taken to Strangford Lough, Co. Down (1) in 1967 and the birds established quickly; 50 were reared there in 1971. Greylags were then breeding on local inland lakes as well as in and around the Lough itself (about 10 pairs annually at Strangford in recent years).

A flock of Greylags has been kept on an estate near Enniskillen, Co. Fermanagh (2) at least since 1834. It was not until 1980, however, after additional birds had been brought in the 1960s, that the geese began to spread. Flocks became established at Drumgay Lough and the nearby Lower Lough Erne, and the numbers increased sufficiently to cause problems to farmers. There are now plans to round up some of the geese and transport them elsewhere. In the remainder of Ireland, the only feral birds are a group (of less than 10 in 1986) at Annamoe, Co. Wicklow in the Republic.

The northernmost group outside the range of native breeders is at Loch Tummel, just west of Pitlochry in northern Tayside (3). The origin of the flock, which was present in the mid 1960s, is unknown but is undoubtedly the result of releases, though not necessarily in the immediate area. The largest count was of 278, including 61 young, in June 1983, but a survey of part of the area

in August 1985 yielded only 75 birds. The geese breed in several scattered lochs in the vicinity and the estimate of 300 may be reasonably accurate. The Greylags at Loch Achray, Central (4), were first introduced by wildfowlers in 1969. Those at Duddingston Loch (5) were first recorded by the wildfowl counts in 1965, though we have no information as to how they were established there.

The population in Galloway, south-west Scotland (6), with its headquarters at Lochinch, has changed little in size during the period in question. The total was estimated at 1160 in 1971⁹. There have been attempts at limiting its numbers in the main areas by collecting eggs and shooting in the open season, but a count of 1,000 in August 1978 suggests that these measures have held the population steady rather than reduced numbers. This population intermingles with wild flocks in winter, but whether there is any interchange is unknown, though likely.

In the northern Lake District (7) the population became established after early problems with predation and vandalism. The group is centred in the area around Bassenthwaite Lake, well away from the regular haunt of wild Greylags in the Eden valley. North west England was the centre of the release programme in the early 1960s and there were three separate release points on the north side of Morecambe Bay. Wild Icelandic Greylags used to winter on Morecambe Bay (chiefly on the Kent Estuary) between the 1920s and 1950s⁹, but the flocks had all but disappeared by 1960 and had done so completely by 1968¹⁰. The release programme was partly prompted by the northward retreat of the wintering Icelandic Greylags, and one of the aims of the releases was to attract wild birds. It failed in this, however, and all the Greylags in Lancashire and south Cumbria are now feral. In the Morecambe Bay area (8), there is a flock of around a hundred on the Esk Estuary at Ravenglass, but the main concentrations are on the Duddon Estuary, the site of the earliest release programme in 1958 (now about 200 Greylags), and the Kent and Lune estuaries, where the present total is around 400 geese.

Most of the Greylags elsewhere in northern England were also the result of WAGBI releases, and most have shown substantial increases in the 1970s and early '80s. The group in Cleveland and Durham (9) moves between several sites, the most important of which are Wynyard Lake, Cleveland, and the Hurworth Burn Reservoir and nearby Crookfoot Reservoir in Durham.

In North Yorkshire the concentration on gravel pits on the Swale (10) roost on the gravel pits and feed up to 15km away. A number of other waters as far south as Ripon and Knaresborough also have flocks which may well interchange with this group. Castle Howard Lake, near Malton(11), is 50km to the south east; the flock there is discrete. One or two pairs were introduced to the lake as early as 1955, but the flock did not exceed 20 until 1970. There may be some interchange between these and the flocks in the Derwent valley or in Humberside.

On Humberside (12) the centre is undoubtedly Hornsea Mere, where the original releases were made in the early 1960s, but the group was not firmly established until the early 1970s. The birds use a number of nearby sites as roosts including East Park Lake, Hull, where releases were also made, and Tophill Low Reservoirs. Occurrences of small flocks in other waters, some south of the Humber, indicate continued expansion here. About 30km west of the most easterly haunt of this group, but on the other side of the Wolds, there is another flock in the Derwent Valley (13). These are often found in the Lower Derwent Ings in winter, and have expanded rapidly since their first occurrence in the mid 1970s.

Greylags appeared at the Wildfowl Trust's Martin Mere reserve (14) soon after its establishment in the mid 1970s and there is now a permanent flock there. The reserve attracted feral birds from neighbouring estates, and a few young escaped from the captive stock at Martin Mere. The geese now breed in a number of local waters and congregate on the reserve in winter.

The flocks in Anglesey (15) use a complex of natural lakes and reservoirs in the north west of the island. They first appeared in the counts in 1970 when there were 36 at Llyn Coron, and increased rapidly. The geese have recently given rise to a number of agricultural damage claims and are heavily shot by farmers. This has caused some fragmentation of the flocks, but the island population is thought to be relatively stable.

There were releases in central Lincolnshire (16) in the 1960s, but it was not until the late 1970s that regular flocks appeared in the counts, in a number of lakes and gravel pits east of Lincoln.

Greylags were first introduced to the Norfolk Broads (19) in 1935 and they were also released in north Norfolk (18) before 1960. A sizeable population was established on the Broads by 1960. There have since been increases there and on the north coast (Holkham and nearby marshes). The Broads flocks are rather mobile and the total for this area, which is based on more or less simultaneous counts from the main haunts, in Table 1 is undoubtedly a minimum. A separate group has been established at Breydon Water and the marshes immediately to the west (20); this arose from releases by the local wildfowlers in the early 1970s. They breed on the Langley Marshes and use Breydon Water as a winter roost.

Greylags were introduced to south Lincolnshire in the 1960s but it was not until the late 1970s that regular flocks became established at Grimsthorpe Lake, where 20 pairs now breed annually. The winter flock is not increasing, and the geese have spread to a large number of sites on the borders of Leicestershire, Northamptonshire and Cambridgeshire, chiefly on gravel pits. Local shooting clubs may also have added to the feral group by releases in the 1970s. A breeding flock, first established in 1980, is increasing on Rutland Water, but the main centre is in the neighbourhood of Peterborough (21). There is a regular wintering flock, sometimes numbering over 150 birds, at the Ouse Washes, Cambridgeshire/Norfolk, but these do not breed there and could originate from any of the neighbouring groups.

There are a number of groups in the south Midlands. Greylags were first introduced to Packington Park, Warwickshire (22) in the mid 1960s, and 70 young were raised there in 1973¹¹. A number of other sites are also regularly used. After an increase in the 1970s, the flock is now apparently on the decline, presumably because of control measures taken by farmers.

As in other parts of lowland England³, gravel pit complexes have expanded enormously in the Nene valley between Northampton and Wellingborough (23) and there is a regular group of Greylags there. The main breeding area is at Billing Gravel Pits on the outskirts of Northampton, where the birds were probably released initially. This group is close to the flocks north west of Bedford, but is discrete.

Further east and south there are a number of flocks based on gravel pits on the Ouse in Cambridgeshire, Bedfordshire and Buckinghamshire (24). At least two groups are involved, but there may be more and there may be interchange between them. There is a flock in north Buckinghamshire, based at the Great Linford gravel complex north of Milton Keynes (now managed by the Game

Conservancy). The first release was of 16 birds in 1972, and these first nested in 1974. The flock increased to 50 in 1975 and although persecuted by farmers, who took a toll in some years, the number has continued to increase. The geese move along the Ouse between Stony Stratford and Bedford and sometimes intermingle with those breeding in other pit complexes. In October 1985 there were 217 at Linford and 404 at the Harrold/Odell pits; the estimate of 700 for the area is probably a minimum. The birds in the Northampton area are less than 20km away, but are distinct, being in the Nene catchment. Large flocks are sometimes seen on the Harrold/Odell gravel pits north west of Bedford, and we assume that these are from the Linford group.

To the east, there is a substantial group in east Bedfordshire and west Cambridgeshire (25), based on gravel pits along the Ouse around Bedford and between Bedford and Huntingdon. The centre of the west Cambridgeshire birds is in the complex of pits around St. Neots. There were releases at Blunham, near Sandy, in the 1960s and, although there have been few in that area in recent years, at least part of this group probably originated from those releases. The main increases are relatively recent, as the birds have moved to take advantage of the expansion of the suitable gravel pit habitat in the area.

There is a regular flock on the RSPB reserve at Minsmere, Suffolk (26), where a pair first nested in 1976; the birds are assumed to have come from the neighbouring feral groups in Norfolk or Essex¹². There are also 300 Canada Geese and both species nest in the reedbeds and ditch systems on the reserve. In Essex (27) 1-200 Greylags were released by local WAGBI clubs in the 1970s, at Abberton Reservoir and neighbouring estuaries. They now occupy three relatively distant sites, and are present on each throughout the autumn and winter. About 40 are on Hamford Water, 70 on Abberton Reservoir and 50 on the Crouch Estuary; these are almost certainly separate groups.

A small flock was established on the Severn Estuary in Gloucestershire (28) from releases by the wildfowling club in the early 1970s, and have since rapidly increased. The bulk of the geese breed on Frampton Gravel Pits and often roost at the Wildfowl Trust's reserve at Slimbridge nearby. A small breeding population has become established in the Cotswold Water Park, Gloucestershire/Wiltshire, from a flock that arrived in 1975-76¹³. The number of geese is only 20 or so at present, but there is considerable potential for expansion at this very large gravel pit complex.

The number of Greylags in St. James's Park (29) is now increasing rapidly. There are no early counts but the birds were breeding there at least as early as 1978, when there were two broods. This had increased to seven breeding pairs in 1985. The birds generally graze on the lawns in the park and are also fed by the public.

There are two large groups in Kent. On the north coast (30) a total of around 600 birds use sites as far apart as the Medway Estuary and the Fordwich and Westbere Gravel Pits on the Stour, but their headquarters in winter are on Elmley Marshes on the Swale. The whole population may at times may be found there, and about 20 pairs breed on the RSPB reserve. The geese were introduced to north Kent by the local wildfowling clubs in the late 1960s and early '70s. The inland group (31) is centred on the Sevenoaks Wildfowl Reserve established jointly by WAGBI and the Wildfowl Trust in the early 1960s on a complex of gravel pits near the town of Sevenoaks. The first four birds were brought from Scotland in 1961 and after a slow start numbers reached 100 in 1973 and thereafter grew rapidly to the highest count of 676 in September 1985. The flocks move locally to feed, and use other gravel pits and reservoirs as roosts. The history of this flock is described by Heaton¹⁴. This group is

very close to that wintering in north Kent, but the intermixing between them, judging by simultaneous counts, appears to be, if any, small. A small number is usually to be found around the gravel pits at Dungeness on the south coast (32). This is well separated from any other flocks in Kent and Sussex and probably represents a local breeding flock.

Just south of Reading there is a discrete group centred on Stratfield Saye Park, Hampshire (33), apparently established from a pair of captive geese which first bred in 1964¹⁰. There are now efforts to control numbers but the birds have begun to spread to the numerous gravel pits nearby; a pair bred at Wellington Country Park in 1987. A separate group is in the Test Valley just south east of Andover (34), which was apparently not established until the 1970s, from unknown origins, but has since grown rapidly. Few of the geese nest in the valley itself, but since large numbers are present in April and September, the nesting sites are not far away. The group is undoubtedly discrete; the nearest other feral Greylags are more than 50km away at Stratfield Saye.

Small flocks are found each winter in East Sussex (35). The regular haunts are Amberley Wildbrooks and Weir Wood Reservoir, but small flocks are found in several other places. Greylags have certainly bred at Arundel, Petworth and Parkham Parks.

Because the flocks are largely discrete, a realistic estimate of the total in Britain and Ireland can be obtained by adding the figures in Table 1. At the end of the 1960s there were very few birds outside the long-established populations in south west Scotland and Norfolk. By the late 1970s viable flocks were in at least 25 areas and the total numbered more than 6,000. The position was consolidated in the early 1980s, when the total stock more than doubled again. There are a number of smaller flocks in several localities, which are not listed in the table. In 1985-86, assuming they were all separate, counts from these amounted to just over 300 birds. There is, however, some possible overlap, especially in Kent, and the total for Britain and Ireland in 1985-86 is likely to have been in the region of 13,500-14,000 feral Greylags. This estimate is considerably larger than that most recently published³, of 'well over 3,000'. This is because most of the data available for that survey was from the late 1970s and very early 1980s, when the population was only half the size, and because the present one is a specific and more concentrated survey, making full use of local sources.

Despite the failure of release schemes in Northumberland, Cheshire, Wales and Devon, the Greylag release programme has amply achieved its objective of reintroducing the species as a breeding bird in England. However, feral Greylags seem to be doing better in eastern and southern England than they are in the north west, where the original programme was concentrated. Several groups in the south have trebled in numbers since the late 1970s.

Taking the flocks outside south west Scotland, where there have been determined efforts to control numbers, we can look at the rate of increase in numbers by assuming the estimates for the late 60s, early 70s, etc. to be those for the last year in the period. The totals in Table 1 are, therefore, attributed to the years 1969, 1974, 1979 and 1985. Since the numbers have, with one or two exceptions, been steadily increasing in each area, this is a reasonable (though perhaps conservative) assumption. Figure 2 shows the growth of the populations and a projection to the year 2000. As expected from newly established populations, the increase is exponential, and at the rate of 13.0% per annum. The rate has been remarkably constant since the 1960s (correlation coefficient $r=+0.999$, $P<0.001$). This is considerably faster than the rate of

increase of the Canada Goose, at 8% per year³.

Future Prospects

The increase and spread of the Greylag as a breeding bird in areas outside its remaining native range has been welcomed by many birdwatchers and wildfowlers. As the flocks have increased, however, so have the numbers wintering on agricultural land and causing problems to farmers. So far, only in Warwickshire have numbers shown a decline in recent years, although pressure from farmers in Anglesey may also at least have halted the increase there.

If the rate of increase were maintained, Figure 2 would predict populations of 26,600 by 1990 and 96,600 by the year 2000. This is probably unrealistic since in many districts farmers are likely to intervene well before these numbers are reached. During the period of establishment of most of the flocks, wildfowlers have shown restraint and have given the species virtually complete protection on many of its main roosts. Clearly such protection is not now necessary to ensure viable populations and the shooting pressure is likely to increase. Since the population's surplus of breeding birds over the annual mortality is 13%, a slight increase in the number shot would be sufficient to stabilise numbers. In most localities this means shooting less than an additional 100 birds. However, because of great differences in the areas used and in the attitude of landowners, future changes are likely to be locally uneven.

Another factor which might limit further spread and increase is the shortage of safe nesting sites. Breeding Greylags are vulnerable to predation by foxes and island sites are ideal. Lake islands are not plentiful in Britain, but in central and southern England there is abundant gravel pit habitat which is highly suitable for nesting. The species has not yet colonised the basins of the Thames or the Trent in any numbers and there is ample scope for spread here. These areas are already occupied by large numbers of Canada Geese, but in some places increases in Greylags have occurred despite the presence of that species. One consequence of their sympatry has been the regular occurrence of hybrids in several areas.

In south and central England at least, the size of local Greylag Geese populations will eventually depend on how many the farmers are prepared to tolerate on their land. The species will always be vulnerable to determined efforts to reduce its numbers or even to eradicate it from limited areas. There were close to 40,000 Canada Geese in Britain in 1985-86¹⁰, in line with predictions on the basis of a constant rate of increase³. It seems probable that the Greylag could reach at least those numbers in the 1990s. If there is competition between the species the smaller Greylag will probably lose out, but because it is a native species it should undoubtedly be favoured by those seeking to control the numbers of geese in the lowlands.

The Greylag's native habitat on natural fens, bogs and marshes has disappeared from much of Britain and Ireland, but the species has shown itself capable of using the modified or new habitats for breeding and wintering. It is now firmly established and will undoubtedly spread and increase its numbers, at least in southern and central England, for the foreseeable future.

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Table 1. The time of establishment (birds introduced or first record of a regular flock) and numbers during the period, of all the groups of feral Greylag Geese mapped in Figure 1. The establishment dates do not necessarily indicate that there is a viable population - in some cases they indicate the time of first release. Areas listed from north to south. Numbers refer to the areas marked in Figure 1.

Area	Estab.	Maximum numbers in			
		1960s	early '70s	late '70s	1985-86
1 Strangford Lough	1967	0	100	c300	580
2 Co. Fermanagh	1960s	few	few	few	150
3 Loch Tummel, Perth	c1975	0	0	50	300
4 Loch Achray, Central	1969	0	c20	c50	200+
5 Duddingston Loch, Lothian	1965	30	100	250	300
6 Galloway	1934	1000+	1300+	1500+	1500+
7 North Lake District	1964	70	200	350	300
8 Morecambe Bay	1958	350	400	550	700
9 Durham and Cleveland	1960s	few	100	180	450
10 Swale and vicinity, N. Yorks	1970s	0	0	40	600
11 Castle Howard N. Yorks	1970	0	30	150	230
12 Humberside	1967	0	50	300	900
13 Derwent Valley	1976	0	0	40	460
14 Martin Mere, Lancs	1970s	0	0	30	150
15 West Anglesey	1970	0	150	300	400
16 Central Lincolnshire	c1978	0	0	c50	300
17 South Derbyshire	1980	0	0	0	70
18 North Norfolk	1960s	50	100	300	450
19 Norfolk Broads	1935	300	200	250	600
20 Yare/Breydon Water	c1971	0	20	50	200
21 Peterborough area	1976	0	0	150	650
22 Warwickshire	1965	20	150	200	100
23 Northampton area	1979	0	0	10	100
24 North Bucks./E. Beds.	1967	0	50	150	700
25 West Cambridgeshire	c1970	0	50	60	600
26 Minsmere, Suffolk	1976	0	10	40	200
27 Essex	1977	0	0	60	160
28 Severn Estuary	1971	0	40	100	220
29 St. James's Park	1970s	0	0	few	80
30 North Kent	c1975	0	0	80	600
31 Inland Kent	1961	50	100	370	700
32 Dungeness	1968	10	10	30	60
33 Stratfield Saye	1964	15	30	80	320
34 Test Valley	1970s	0	80	150	200
35 East Sussex	1977	0	0	10	100
TOTAL (to nearest 100)		1900+	3300+	6200+	13600+

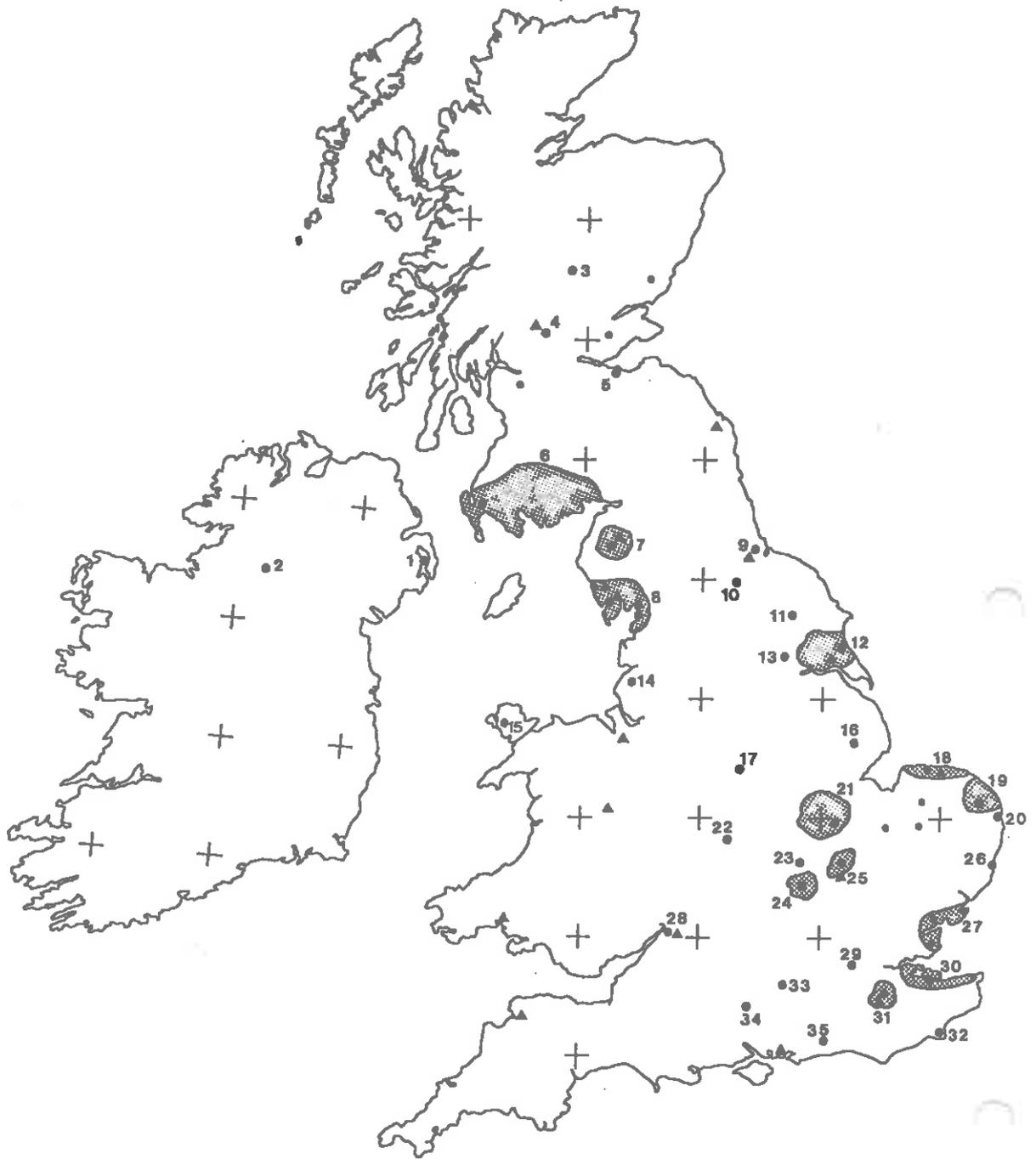


Figure 1. The distribution of feral Greylags in Britain and Ireland, south of the range of the native stocks in the 1980s. Areas are shaded where the group is dispersed, the dots are at the most important sites. Sites with small or irregular numbers are shown as smaller dots. Triangles indicate places where birds were released during the WAGBI Greylag Conservation Programme in the 1960s and '70s. The major groups are listed by number in Table 1.

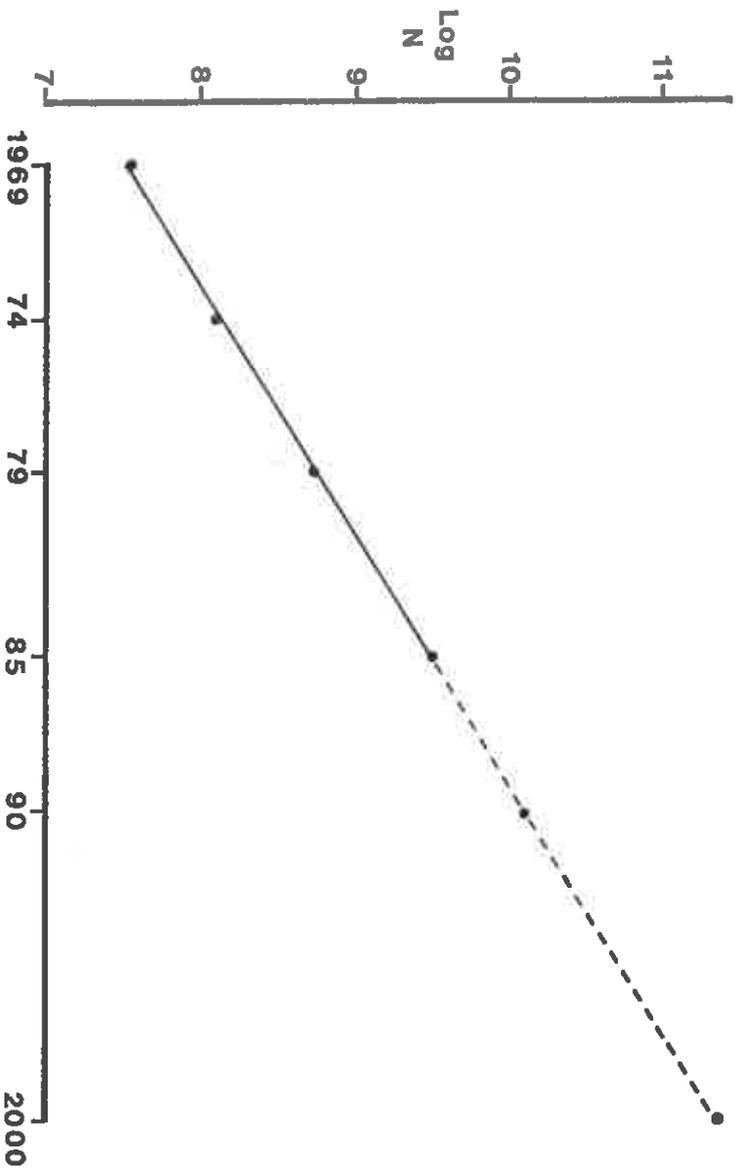


Figure 2. The growth in the number of feral GreyLags in Britain and Ireland, on a log scale, from the 1st-1960s to 1985-6 and projected to the year 2000.

