

# REPORT OF THE 2020/21 INTERNATIONAL CENSUS OF GREENLAND WHITE-FRONTED GEESE

by

GREENLAND WHITE-FRONTED GOOSE STUDY



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Final report – October 2021

## SUMMARY

**The global population of Greenland White-fronted Geese counted in spring 2021 comprised 20,186 individuals, down by 6.2% on 21,509 in the previous year; 8,410 were counted in Ireland (compared to 10,418 last year) and 11,776 in Britain (compared to 11,091 last year). Numbers fell particularly at Wexford, SE Ireland to 6,262 (by 2,050 birds, a remarkable decline of 24.7%) from 8,312, but numbers wintering elsewhere in Ireland were almost unchanged. Numbers on Islay increased by 16.4% to 6,878, while numbers elsewhere in Britain changed little. Reproductive success was among the lowest ever at 6.4% in Ireland, but was less low in Britain, at 13.0%, a little below average.**

This report presents the results of the surveys of the Greenland White-fronted Goose on the wintering grounds in winter 2020/21, combining counts from all the British resorts (coordinated by the Greenland White-fronted Goose Study) and those in Ireland (co-ordinated by the National Parks and Wildlife Service). The international coordinated count in spring 2021 found a combined global total of 20,186 Greenland White-fronted Geese, down by 6.2% (1,323 birds) on the previous world population estimate of 21,509 in spring 2020.

Coverage of Greenland White-fronted Goose wintering resorts in **Ireland** during spring 2021 generated a total of 8,410 birds (compared to 10,418 last spring), mostly the result of a count of 6,262 at Wexford (compared 8,312 last spring), with 2,148 birds elsewhere in the rest of Ireland (contra 2,106 last spring). Difficulties with finding flocks and mobility problems associated with covid-19 require substitution of missing spring counts during the census period at only ten flocks, constituting 17.0% of the Irish total.

In **Britain**, 11,776 Greenland White-fronted Geese were counted in spring 2021 (compared to 11,091 the previous spring). This total included 2 in England, 40 in Wales, 6,878 on Islay (remarkably up by 968 on the count of 5,910 last spring) and 4,856 in the remainder of Scotland (down compared to 5,132 last spring). The confirmation of the regular wintering flock locations of Greenland White-fronted Geese on the Welsh island of Anglesey (suspected for many decades) was the most exciting news of the season! Spring coverage in Britain was more or less complete, although counts were missing from the specified count period from seven resorts, all substituted with counts from close to the defined international count dates, amounting to 3.8% of the British total.

Among wintering geese in **Ireland**, samples found the percentage young among aged flocks after the 2020 breeding season was just 6.4% (based on 3,072 aged individuals) compared to 10.8% last season. Mean brood size among the Irish flocks was 3.24 ( $n = 54$ , all but four of which were sampled at Wexford) compared to 3.07 last season. There were 6.2% young among 2,921 geese aged at Wexford (compared to 10.8% last year, the highest for some years). Elsewhere in Ireland, reproductive success was 11.3% but based only on samples from three sites ( $n = 151$ ). The proportion of young in aged samples from among **British** wintering geese was reasonable after the 2020 breeding season, with an average percentage young of 13.0% ( $n = 4,619$  aged, compared to 19.5% last season and 11.1% the year before); mean brood size was 2.41 ( $n = 145$  broods, compared to 2.70 last season). This included 11.5% on Islay, ( $n = 2,231$  aged, well down on 20.7% last year) where the mean brood size was 2.64 ( $n = 55$  compared to 2.83 last year).

## INTRODUCTION

The 2020/21 survey represents the 39th annual census of Greenland White-fronted Geese co-ordinated in Great Britain by the Greenland White-fronted Goose Study and in Northern Ireland and the Republic of Ireland co-ordinated by the National Parks and Wildlife Service. Table 1 shows the most recent six seasons of total census data available to the present, based on the full survey of all known regular winter haunts for this population, broken down by totals for Wexford and the rest of Ireland, and from Islay and the rest of Britain.

**Table 1. Spring population census totals for Greenland White-fronted Geese, 2016-2021.**

	Spring 2016	Spring 2017	Spring 2018	Spring 2019	Spring 2020	Spring 2021
<b>Wexford</b>	6421	7047	7637	7436	8312	6262
<b>Rest of Ireland</b>	2172	1912	1950	1899	2106	2148
<b>Islay</b>	5183	6141	5319	6771	5910	6878
<b>Rest of Britain</b>	5103	5456	5379	5360	5181	4898
<b>Population total</b>	<b>18879</b>	<b>20556</b>	<b>20285</b>	<b>21466</b>	<b>21509</b>	<b>20186</b>

## ARRIVAL PATTERNS IN AUTUMN 2020

The first birds reported back were from Pete Dale at 08:50 on 16 September 2020 at Glenfinnan, when two skeins of Greenland White-fronted Geese, totalling 152 birds passed high above Shlatach heading east. Pete also had some of the first of the winter back on the ground at his wintering site at Kentra Moss on 9 October at 17:27 Kentra Moss (17 geese), where he also had 25-35 heard flying over on 18 October just after midnight flying towards Loch Sunart. Numbers at Kentra/Claish Moss increased to 54 on 23 October and peaked on 7 November at c.90 birds before settling back to 68 counted regularly throughout the rest of the month.

Subsequent to Pete's initial record, a single Greenland White-fronted Goose was reported from Udale Bay, Easter Ross on 24 September, which remained there through October, was joined by a second on 22 October increasing to 3 individuals in November and staying at least until 24 November. A lone Greenland White-fronted Goose was also seen at Balblair, Sutherland on 28 September, but it was not until well into October that numbers started to appear as usual. Twenty-two were seen on Tiree on 9 October by John Bowler and Arthur Thirlwell reported his first 29 geese back at Blackpark, Loch Ken on 10 October, including two collared birds, XU and AFL. A single was also reported from Munloch Bay, Easter Ross on 7 October. At Croftamie, near Loch Lomond, seven geese were reported back on 13 October, rising to 21 on 22 October and 39 by the 26<sup>th</sup>. Sixty-six Greenland White-fronted Geese were already counted back at Loch Bee, South Uist on 16 October, with 72 there the next day. Ten Greenland White-fronted Geese were reported flying south over the Back of Keppock, Arisaig (on the mainland, due south of Skye) on 17 October, the same day as 10 passed over Bornish, South Uist. Numbers locally at Loch Ken increased to 63 on 17 October, 108 by 7 November and counts of 123 on 13 November and 125 on 14 December. On Islay, Teresa Morris had 12 Greenland White-fronted Geese including local regular collared bird AAY on 19 October, but Malcolm Ogilvie reported that the main arrivals came during 2-4 November. Two Greenland White-fronted Geese were reported from Bandearth, Throsk (Stirling) on 23 October and Andy Knight reported his first on 26 October on Colonsay. Niall Tierney had 2 fly over his house at Seil, south of Oban on 2 November and Tom Kistruck was lucky enough to witness the arrival from up high of 15 Greenland White-fronted Geese apparently first returning to the Dyfi Estuary in mid-Wales early afternoon on 3 November, most birds immediately falling asleep on landing (as geese so often do after a migration leg). Numbers there increased to 26 the very next day and to 27 on 5 November. A remarkable 18 Greenland White-fronted Geese turned up on the Insh Marshes in Badenoch and Strathspey on 2 November, one of which remained until 15 November and a lone juvenile turned up at North Cave Wetlands, near Brough in East Yorkshire on 4 November, when Ian Hopkin saw his first 87 birds back on Bute (although numbers had built to 135 by the beginning of 2021). Catriona White saw no at all birds on Lismore in October (the first time in many years of watching), the first being 100 back on 9 November.

At Wexford, the first six birds were reported on 8 October, rising to 29 next day, 150 on 11 October, 300 the next day and to 870 by 26 October 2020, including several collared individuals, with numbers building slowly over following days and a major arrival on the night of 1-2 November, resulting in the count of 6,556 on 3 November.

Elsewhere in Ireland, the first 10 White-fronted Geese were reported back at Rahasane Turlough on the early date of 27 September, remaining until at least 4 October, then rising to 21 by 23 October. Six were present at Glenmaddy (Galway) on 10 October and three were reported from Inishtrahull (Donegal) on 16 October. Thirty Greenland White-fronted Geese were back at Lough Gara (Sligo) on 18 October and two were back at Lurgangreen (Louth) on the 30 October, followed by many reports of White-fronted Geese on 2 November, with 45 at Brittas (Wicklow), 23 at Sandymount and 16 at Dalkey (Dublin) and 31 at Riverchapel (Wexford).



*Greenland White-fronted Geese feeding in the edge of their winter quarters on Danna. Photo: Ian Francis*

### **SPRING 2021 DEPARTURE PATTERNS**

Five White-fronted Geese flying north over Lehaunstown, County Dublin on 4 March may have been the first sign of spring migration, or perhaps just relocation between wintering sites (Irish Birding). A skein of 16 was reported flying very high, NNW over Boolavogue in northern County Wexford (20 km N of the North Slob) on the afternoon of 21 March, and a large flock of about 100 was seen flying north late afternoon on the same day over Vartry Reservoir in County Wicklow, reportedly the biggest flock for the county and surely the first major northward movement from Wexford (Irish Birding). There was very evidently a major departure northwards from the Wexford Slobs on 30 March 2021. Brian Haslam had

more than 400 flying north over Glenranny/Booavogue, County Wexford at 10:00 hrs, with 50-60 flying north over Baldoyle (County Dublin north of the city) seen by Cian Merne, 250 flying north over Ciara Flynn's house in Laragh, Co. Wicklow at 18:35 hrs and two flocks of 240 and 480 seen by Joe Proudfoot travelling northwest over Ravens Rock, Glencullen Mountain, County Dublin (south of the city) between 19:00 and 20:00 later that same day.

On South Uist, Yvonne Benting witnessed 234 Greenland White-fronted Geese flying north in smallish groups on 31 March (often with a few Greylags, although with that species never constituting more than 30% of the flocks). In the afternoon, Yvonne also counted another 300 going north past Askernish, South Uist, including 106 feeding on the ground where the local flock normally feed, which included two collared birds CAR and X7Z. These two birds were caught and marked together at Hvanneyri in west Iceland in autumn 2017, when they were recorded as adult male and first winter female, respectively. They have associated together since when seen wintering at Wexford in 2017/18 and 2019/20, and on Islay in winter 2020/21. The 31 March saw many other observations from the Western Isles including 8 White-fronted Geese flying north off Rubh' Arnal and 17 seen at Loch Nam Feithan on North Uist, 35 north over Kilbride, South Uist in the afternoon and 290 north mid-afternoon past Barra. Next day, Yvonne also had 40 definite Greenland White-fronted Geese passing north from the same watch point but much higher in the much improved weather, followed by another goose flock of similar size, likely the same species but too high to be certain. Thirty Greenland White-fronted Geese flew north-west off the west side of Berneray, North Uist on 1 April, when a single turned up at Ringasta, South Mainland, Shetland. Flocks of 8, 12, 14 and 24 were reported moving north off Balranald, North Uist on 2 April. The WeBS count at Loch Bee on 10 April reported a total of 122 birds, but only 52 of these on the ground, the rest were migrating north in two large flocks. A further 17 were reported on a WeBS count from South Ford, South Uist the same day. Mary Legg who had been witnessing 134-135 birds at Loch of Mey, Caithness throughout the winter, still counted 132 on 28 March, falling to just 40 on 10 April, despite the strong winds and snow of 4/5 April which affected so many birds departing at that time. There were still 167 on Lismore on 7 April, with the last 13 remaining until 10 April (Catriona White), while on Tiree, there was also a major movement north on 10 April, most departed on 10-11 April and the last single was seen on 15 April (John Bowler).

On 31 March, 13 Barnacle Geese and 21 Greenland White-fronted Geese turned up at the Insh Marshes while 8 Greenland White-fronted Geese were at Blargie, west of Laggan, both in Badenoch and Strathspey. Birdguides reported a singleton at Budle Bay, Northumberland during the week 24-31 March 2021, remaining into the first week of April. One Greenland White-fronted Goose with 2 first winter Russian White-fronted Geese turned up at their old resort of Loch Eye in Easter Ross on 8 April, the same day one was seen with Pink-footed Geese at Skelbo, Sutherland, increasing to two Greenland White-fronted Geese next day. At Loch Shiel, Pete Dale and Andrew Dacre counted 73 on 1 April, but were very confident that 52 left between 15:45 and 19:33, leaving just 21 which remained (and were counted daily) until 10 April, when they may have left at 06:28. The same day, a flock of White-fronted Geese were heard flying over by the same observers at 10:37, but too high to see, followed by a mixed flock of 200-250 White-fronted and Pink-footed Geese at 13:50.

Following the severe weather of 4/5 April, there were a smattering of Greenland White-fronted Geese that put down on the Shetland Islands on 7 April including one at Scatness and two at Loch of Spiggie, South Mainland and other seem to have been displaced further south, with a single Greenland White-fronted Goose reported Goldcliff Saline Lagoons in Gwent and five from the Point of Ayre Gravel Pit on 11 April at the very northern tip of the Isle of Man, with a final report of a single bird seen at Crowdy Reservoir, Cornwall on 12 April. During the severe weather, Hanna Joensen on the Faroe Islands reported collared birds CCZ (a Hvanneyri, west Iceland, ringed bird that has wintered at Wexford), V0Z, V2Z and V3Z (Loch Ken birds) stopping off briefly on Sandoy during inclement snowy weather there between 4 and 9 April. Mummi reported CCZ safely arrived at Hvanneyri by 16 April.

The first reports from Iceland were four seen on Stokkseyri on the morning of 28 March, and Mummi (Guðmundur A. Guðmundsson of the Natural History Museum of Iceland) found 19 sleeping on the ice of Vatnsharavatn at Hvanneyri (and therefore likely recently arrived), including N9H, a loyal Wexford collared and wintering bird regularly seen at Hvanneyri, later the same afternoon.



*Collared CNT and an unmarked Greenland White-fronted Goose among Whooper Swans feeding in stubble fields at Myroe Levels, County Derry. Photo: Lindsay Hodges*

## **COUNTS IN BRITAIN 2020/21**

Thanks once again to the enthusiasm and willingness of the committed count network to cover their respective flocks, we are again able to provide comprehensive coverage of maximum monthly counts from the regular wintering sites, together with the census period totals (Table 2). The resightings of collars and the tracking information from the geese fitted with telemetry devices continue to show that these geese are highly site faithful in their use of their wintering resorts. Hence, while Greenland White-fronted Geese do occasionally switch between wintering resorts both within winters and a little more frequently between winters, we can be fairly confident that by covering the regularly occupied haunts, we can derive a reasonably good idea of their annual global abundance. Of course, that is not to say that poor birds do not get lost or blown off course, something we see very often, but it is the case that in the 40 odd years we have been following the fortunes of this goose population, we have yet to see permanently newly colonised wintering sites set up in Britain. The only known example was a little flock that established itself at Sullom Voe on Shetland for a few brief years before abandoning the site. Likewise we are not aware of wintering birds establishing themselves on continental Europe, where many enthusiastic observers are quick to identify the incredibly rare Greenland White-fronted Geese amongst the Russian breeding birds that winter there, but never has it been the case that a wintering group has become established. Vagrant Greenland birds blown off course from their regular course often fetch up in Norway, where they may even remain for protracted periods, but we know from observations of collared individuals seen there that most make it back to their wintering grounds eventually. This winter site loyalty seems very strong, and of course may contribute to why the species is doing badly compared with other goose species that wander more in the course of their winter and therefore have “personal” experience of other foraging opportunities throughout their flyway. On the other hand, the site fidelity of Greenland White-fronted Geese means that it is easier and more convenient for us to monitor their distribution and abundance by visiting and assessing the numbers

present at each of the know regular wintering sites. This is why we have been so excited to learn this year of confirmation of the regular presence of a flock of Greenland White-fronted Geese on Anglesey, off the coast of north Wales. Reports of small bands of Greater White-fronted Geese on the island has for more than five decades defied confirmation of a regular wintering group of Greenland birds, despite strong suspicions. Finally, the capture (to confirm the race of the geese involved) and tracking of the birds using sites in winter 2020/21 that were also used by the geese in former years has confirmed the persistence of the flock, which we are convinced has been an overlooked feature of the island for many decades.

Because some birds do get blown off course, we increasingly attempt to collate as many records of the sub-species reported from elsewhere as possible. In this endeavour, we are very grateful to Neil Calbrade for the supply of data from the British Trust for Ornithology to supplement our observations. BTO have kindly provided observations of Greenland White-fronted Geese from the BirdTrack database (organised by BTO with project partners Royal Society for the Protection of Birds, BirdWatch Ireland, Scottish Ornithologists Club, Welsh Ornithologists' Society and BirdLife International) and the Wetland Bird Survey (WeBS, organised by BTO with project partners RSPB and JNCC in association with WWT). A few of these reports may be mistakenly assigned as Greenland White-fronted Geese, but despite these data sources adding little substantially to our regular basic monitoring, we are deeply grateful to all the observers and to the schemes for adding counts non-regular sites and during migration periods. These observations from irregularly used sites are provided in Table 3 and incorporated in the International autumn and spring count totals where relevant in Table 2.

With changing times, we are increasingly having to adapt to shifting circumstances, especially since climate change and extremes affect our ability to complete the annual surveys effectively. We always attempt to capture the annual size of the population in the "spring" count, which once took place in mid-April. However, with birds increasingly departing before the end of March, we are backpedalling to ensure that we can still achieve good count coverage on the wintering areas well prior of the departure of birds. We continue to believe this is the best means of adapting to the new set of circumstances, but of course it does mean that our recording methods have changed over time. We remain convinced that a spring count is more robust than attempting this in the autumn (when Greenland White-fronted Geese may be late to arrive to winter quarters and may exploit mire habitats that are incredibly difficult to census effectively) or in mid-winter (when for reasons that we do not fully understand, flocks tends to fragment and disperse, making them more difficult to count effectively). However, we continue to be extremely grateful to you all for taking the trouble to count monthly where possible and especially during autumn and spring. This means that if anything should go wrong (as for instance, with the outbreak of Foot and Mouth disease), we at least have counts from other times of the winter upon which to base calibrated estimates.

Numbers counted in Britain during 202/21 were little changed on last winter, a little disappointing given the reasonable breeding success during the summer of 2020 (see later). Numbers were up on Islay by almost 970 birds on the previous spring, which buffered the otherwise rather lacklustre numbers which returned in 2020/21 elsewhere in Britain. The flock centred around the Loons on Orkney proved difficult to find at times during the winter, peaking at 102 in January, although fewer were evident in March. Numbers here appeared to have modestly increased on last winter, but without being able to see the entire flock consistently together, it was difficult to determine if this was somehow a mid-winter amalgamation of other satellite groups from elsewhere. It will be interesting to try and look for the existence of other groups in the coming winter, as Orkney was formerly difficult to assess for total numbers throughout the winter because of the aggregation and fragmentation on numbers between different resorts.

The two Caithness groups totalled altogether 180-210 birds, but again numbers could have been swollen by migrants passing through and exchanging between the two flocks, either way suggesting a continued decline in fortunes. The Westfield flock especially proved difficult to find this year suggesting they are venturing further afield to exploit farmland further away from their regular beat. Their numbers also appeared slightly down on those of the previous year. Regrettably, local observers were not able to count the little flock on Lewis so we miss a total for those which have been encouragingly at 30-40 birds recently. At Askernish on South Uist, 12 turned up in autumn, but only seven birds (6 adults and a single

offspring) wintered there, while the Loch Bee flock further north on South Uist remained at a similar level to last winter (123 in spring) after higher numbers during the autumn census, perhaps swollen by staging birds passing further south.

Just like the Askernish flock, so many of the very small groups continue to give us cause for concern as they teeter closer to extinction. This was the case for the Kilmuir flock on Skye that again just hung on during 2020/21, but this was another year when the old flock that used to frequent the Broadford area of Skye was not seen at all. While that group might remain on Pabay and feed on other remote areas away from sight, the fact remains that there used to be over 60 birds in that conspicuous flock that was easy to encounter on mainland Skye not more than 15 years ago.

Hugely encouraging has been the continued presence of good numbers of Greenland White-fronted Geese on Kentra and Claish Mosses. As you will have read earlier, very large numbers arrived and passed onwards in September very early on but seemingly did not stay, but high counts of 90 in November and up to 102 were peaks above the regular 73 that wintered on the mires all winter. Numbers at the Benderloch resorts continue to fall alarmingly. It seems to be increasingly the case that this is not because of the geese being missed; rather they seem genuinely not present in their former haunts and several areas where grazing has ceased are no longer suitable for them. At least this little flock seem still to just hold their numbers. The greater numbers that winter on the larger islands of Lismore, Tiree and Coll all more or less held their abundance compared to the previous winter, but again the very small numbers wintering on Mull in 2020/21 seem perilously close to disappearance.

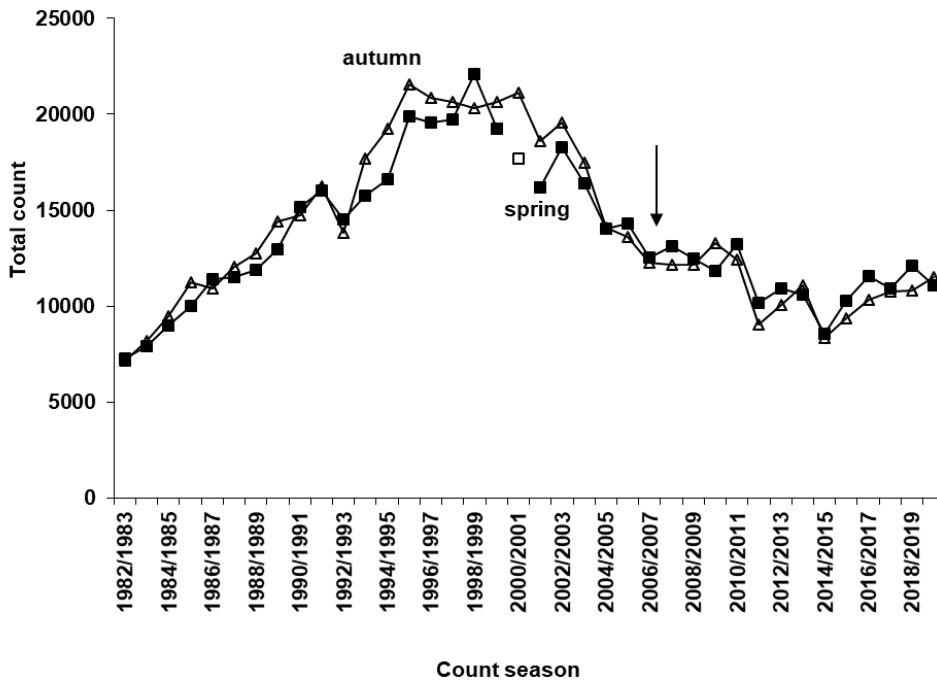
Numbers on Oronsay were difficult to assess but were a little down on 2019/20, while counts from Danna/Ulva/Kiells and the combined numbers on Kintyre showed little change over the previous winter. It was pleasing to see the spring 2021 count on Islay at 6,878 Greenland White-fronted Geese up by over 16% on last year as this resort makes such an overall difference to the Scottish total. The difference between years is another reminder of the potentially inconspicuous shifts between this resort and Wexford. Finally, the Bute and Loch Lomond flocks were down by c.10% on the previous year, while the numbers wintering in the two more southern flocks at Loch Ken and Stranraer were similar to, and slightly down on last year respectively.

From Wales, we had the truly wonderful news that the combination of much greater count attention and the capture and marking of some Greenland White-fronted Geese on Anglesey has proven the flock there finally to be definitely present with a regular series of resorts (see the special report later in the report)! To some of us oldies, this has been vindication after very many years of pure belief in this being a regular flock, finally shown to be case after being described in both Atkinson-Willes (1963) and Ruttledge & Ogilvie (1979) as likely extinct and/or White-fronted Geese of uncertain origin! It is simply so wonderful to think that such a discrete flock may have existed continuously throughout the period without certain detection, and it reminds us all that there still remain many Greenland White-fronted Goose mysteries to be solved, even in our modern day! The flock numbered 17-19 for most of the winter, which combined with the 22-27 monitored on the Dyfi gave a very healthy total for Wales, although there is no room for complacency about either of the Welsh flocks.

Count coverage was extremely good again this year, we only needed to substitute seven missing counts in the international count dates window for the spring survey, amounting to 449 birds in all (3.8% of the total) all from counts in the same winter and most from February/March the same year.

The final overall picture was a slightly depressing one after recent years, with almost all the flocks remaining stable or declining in abundance by up to 10%. Thanks to the slight lift in numbers on Islay compared to the previous year, this had a balancing effect, resulting in a spring 2021 count of 11,776 an overall 6% increase on that of spring 2020 as a whole (Figure 1), but with numbers away from Islay showing a 5% decline since the last census.





**Figure 1.** Counts of Greenland White-fronted Geese in Britain, 1982/83-2020/21, showing autumn (open triangles) and spring (filled squares) census results for each season. The value for spring 2001 (unfilled square) was missing on account of the outbreak of Foot and Mouth Disease that year and was therefore estimated from previous counts. Vertical arrow indicates the start of the hunting ban in Iceland in autumn 2006.



*WHAT ARE YOU LOOKING AT?! CNT a collared Greenland White-fronted Goose marked at Lough Swilly in November 2019, present back there again in October 2021 at Myroe Levels, County Derry. Photo: Lindsay Hodges*

**Table 2. Summary counts of Greenland White-fronted Geese in Britain 2020/21**

shaded values are estimates for sites where no counts were received for the precise period of the international census periods

SITE NAME	SEP	OCT	NOV	AUTUMN CENSUS	DEC	JAN	FEB	MAR	SPRING CENSUS	APR	
<b>ORKNEY</b>											
Loons			9	62	77	102	22	30	102		
Stronsay							2				
North Ronaldsay											
<b>CAITHNESS</b>											
Westfield				130					130		
Loch of Mey	14	98	180	180	113	153	157	157	157	122	
<b>WESTERN ISLES</b>											
Barvas/Shawbost, Lewis			5	5					5		
Benbecula			4	4					4		
Berneray, North Uist			4	4	1	1		6	6		
Balranald, North Uist										58	
Kilpheder/Askernish, South Uist			12	7	7	7	7	7	7	27	
Loch Bee/Kilaulay, South Uist	72	110	183	138	188	53	123	123	123	52	
Gleann/Allasdale/Borve, Barra			1	1	1	1					
<b>INNER HEBRIDES</b>											
Kilmuir, Skye				8		8	9	8	8		
Broadford/Pabay, Skye											
<b>LOCHABER/NORTH ARGYLL</b>											
Muck/Eigg											
Loch Shiel/Claish Moss	152	54	90	73	73	73	73	102	73		
Lorn: Balure/Barcaldine			21	21		38	28	0	28		
Lorn: Appin			12	12		0	13	13	13		
Lismore		0	148	82	82	98	104	137	83	167	
Tiree			685	886	886	866	861	909	909		
Coll			138	256	256	155	210		158		
Assapol, Mull			16	14			6	6	6		
Fidden Mull				11	5			2	2		
<b>SOUTH ARGYLL</b>											
Colonsay/Oronsay		104		17	31				109	6	
Jura: Loch a'Chnuic Bhric				0					0		
Jura: Lowlandman's Bay				0					0		
Danna/Kiels/Ulva			178	182	182	159	121		209		
Moine Mhor			3	0	3			2	5		
Rhunahaorine			416	456	336	226	295	272	332		
Machrihanish			1050	1143					1607		
Clachan			119	120					118		
Gigha			134	120					66		
Glenbarr				75					0		
Isle of Bute			87	135	135	134	134	134	134	40	
Endrick Mouth, Loch Lomond	51	220	170	227	220	168	164	164	164		
<b>ISLAY</b>			5763	6350		5493			6878		
<b>DUMFRIES &amp; GALLOWAY</b>											
Loch Ken	63	123	125	110	145	133	129	129	129	16	
Stranraer		109	166	166	163				163		
<b>WALES</b>											
Dyfi Estuary			27	27	27	15	22	22	22	7	
Cors Ddyga, Cefni valley, Anglesey			17	17	17	19	18	18	18		
<b>ENGLAND</b>											
Brampton, Carlisle						2					
<b>OTHER IRREGULAR SITES (see following table for details)</b>											
England combined		0	3	14	15	7	7	17	2	8	
Scotland combined		16	25	3	7	12	20	14	6	60	
Wales combined		0	0	0	1	0	0	0	0	1	
<b>TOTALS</b>				<b>11059</b>					<b>11776</b>		
<b>Rest of GB less Islay</b>				4709					4898		
<b>Rest of Scotland less Islay</b>				4651					4856		
<b>England</b>				14					2		
<b>Wales</b>				44					40		

**Table 3. Summary counts of Greenland White-fronted Geese at irregular sites in Britain 2020/21**

	SEP	OCT	NOV	AUTUMN CENSUS	DEC	JAN	FEB	MAR	SPRING CENSUS	APR
<b>OTHER IRREGULAR SITES</b>										
<b>Scotland</b>										
Ardersier, Inverness							2	1	1	
Auchlea, Westhill, Aberdeenshire						1				
Back of Keppock, Arisaig, Argyll		10								
Balloch, Inverness					1					
Balmacree, Inverness						1				
Bandeath, Throsk, Stirling		1								
Beaully, Inverness						2				
Blargie, Badenoch & Strathspey										8
Boddam, South Mainland Shetland							1			
Bogloch, Auchlossan, Aberdeenshire					1		1			
Cambus, Clackmannanshire							1			
Ciumlie, South Mainland Shetland							1			
Cullicudden, Black Isle, Inverness			1							
Dornoch Firth, Inverness/Sutherland								1	1	
Dornock School, Sutherland								1	1	
Embo/Skelbo, Sutherland										2
Fail Loch, South Ayrshire						5				
Gartartan Floods, Stirling								1		
Inch Marshes, Badenoch & Strathspey			1							21
Loch Eye, Highland										1
Loch Fleet, Sutherland										
Loch of Skene, Aberdeenshire		1	1	1	1	2				
Loch of Spiggie, South Mainland Shetland					1					2
Loch Spynie, Moray										6
Longhaugh Point, Renfrewshire						1	2	2	2	2
Martnaham Loch, Ayrshire		1					5			
Monymusk, Aberdeenshire					1					
New Cumnock, Ayrshire										
Ratray Head, Aberdeenshire			1	2	2					
Ruthven Barracks/Inch, Badenoch & Strathspey			18							
Scatness, South Mainland Shetland										1
Shiskine, Arran							6	7		
South Ford, South Uist										17
Strathbeg, Aberdeenshire		1								
The Mound-Golspie, Sutherland							1			
Udale Bay, Inverness		2	3					1	1	
<b>England</b>										
Apex Park/Brue Estuary, Burnham-on-Sea, Somerset			2			2				
Banks Marsh, Lancs						1				
Branton Gravel Pits, Powburn, Northumberland										1
Branton Pond, Northumberland										1
Brigsteer, Cumbria						2				
Burscough Moss, Lancs			1							
Burwell Fen, Cambridgeshire								13		
Crowdy Reservoir, Cornwall										1
Filey Dams, East Yorkshire				2	2					
Gosforth Park, Northumberland										
Hamford Water, Essex				12	12					
Hurworth Burn Reservoir, Co. Durham							1			
Lytham Beach, Fylde, Lancs							2			
Mere Farm Quarry, Chelford, Cheshire							1			
Old Hartley, Northumberland										
Point of Ayre Gravel Pit, Isle of Man										5
Prestwick Carr/Dinnington/Big Waters, Northumberland										
Redesmere, Cheshire										
Ribble Estuary, Lancs							2	2		
Slimbridge, Gloucestershire						1	1			
Warton Marsh, Fylde, Lancs								2	2	
Watermead Lake, Buckinghamshire					1	1				
<b>Wales</b>										
Cilsarn, Carmarthenshire					1					
Goldcliff Saline Lagoons, Gwent										1
<b>TOTALS</b>										
<b>Scotland</b>		<b>16</b>	<b>25</b>	<b>3</b>	<b>7</b>	<b>12</b>	<b>20</b>	<b>14</b>	<b>6</b>	<b>60</b>
<b>England</b>		<b>0</b>	<b>3</b>	<b>14</b>	<b>15</b>	<b>7</b>	<b>7</b>	<b>17</b>	<b>2</b>	<b>8</b>
<b>Wales</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>

## COUNTS IN IRELAND 2020/21

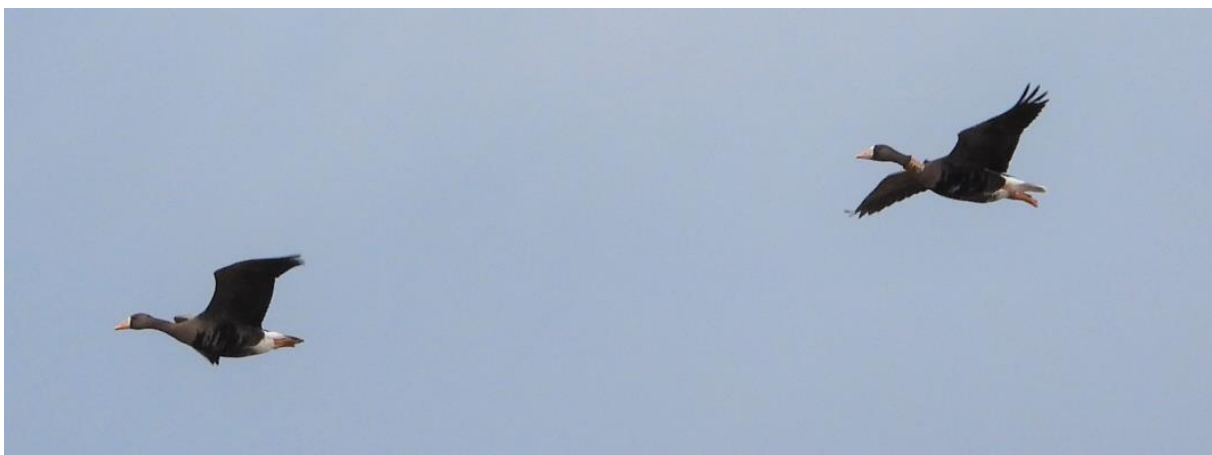
Good count coverage was achieved throughout Ireland and again many of the more important Irish sites were covered every month (Table 4). As seems to be the case when wintering numbers of Greenland White-fronted Geese reduce, many of the small, remote and multi-feeding site flocks prove elusive to find, especially at the time of the spring census. What was quite striking was that despite incredibly low reproductive success at Wexford (which usually indicates poor production of young throughout Ireland), the numbers of wintering birds in flocks away from Wexford changed very little from last year. This is especially cheering in a year when numbers fell back overall, because we are increasingly concerned about the viability of some of the down-country flocks in very recent years of low overall population size.

Although it proved impossible to locate the entire flock at Loughs Foyle and Swilly in the spring census window, numbers in spring 2021 held up, with 1,290 in January suggesting that at least some of the Wexford birds might have been remaining there at that time. Assuming numbers in the spring count remained close to the count in February, the total of 899 was a welcome return to abundance locally after spring counts of 604 (2019), 607 (2018) and 720 (2017). Dunfanaghy consistently held 95 geese for much of the winter, and Sheskinmore retained 21-23 individuals throughout. Happily, the Pettigo flock retained 68 Greenland White-fronted Geese for the spring count, even peaking at over 100 in mid-winter. Numbers peaked at 115 at Lough Macnean and 24 persisted at Stabannon, 36 on Lough Conn and modest numbers on Bog of Erris, albeit that none were reported this winter from the Mullet. No counts were received from Connemara, where counts were substituted.

Winter numbers remained more or less stable compared to the previous winter at Errif and Derrycraff, Rostaff and Killower and Rahasane Turlough, while numbers just held on at Lower Lough Corrib, numbering seven birds this winter. Alas, there were no reports again from Tullagher despite intensive searches, but numbers at the medium flocks in North County Clare, Lough Gara, The Midlands lakes, the River Suck and Little Brosna all maintained numbers more or less in 2020/21 compared to 2019/20.

The spring 2020 count from Wexford came in at 6,262, dramatically down on the 8,312 counted in spring 2019 and the lowest by a whisker since 1982/83. This fall was perhaps less surprising given the low reproductive success among the sample taken at Wexford this winter (see later) but does mark a dramatic down turn in local abundance.

Only ten flocks were missed during the spring census in Ireland and the counts substituted constitute 17.0% of the Irish total, show as shaded in Table 4. The Irish total fell by 19.3% from 10,418 in 2019/20 to 8,410 in 2020/21, mostly the result of 2,050 fewer birds in the spring count at Wexford.



*Collared CNT and an unmarked Greenland White-fronted Goose landing at Myroe Levels, County Derry. Photo: Lindsay Hodges*

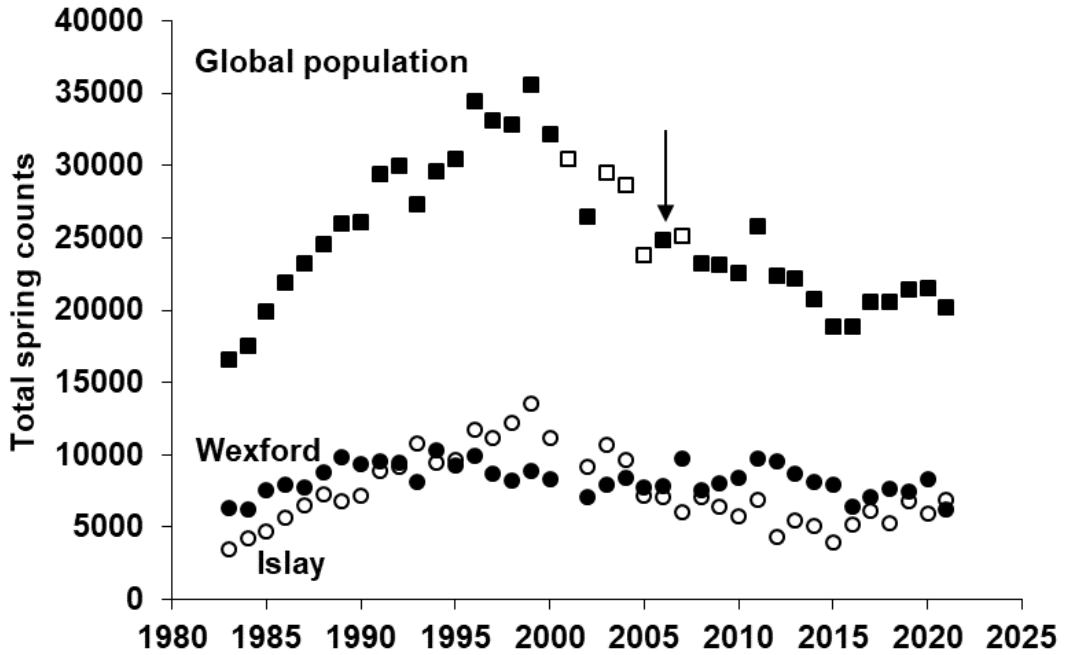
**Table 4. Summary counts of Greenland White-fronted Geese in Ireland 2020/21**

*shaded values are estimates for sites where no counts were received for the precise period of the international census periods*

	OCT	NOV	AUTUMN CENSUS	DEC	JAN	FEB	MAR	SPRING CENSUS	APR
<b>DONEGAL</b>									
Loughs Foyle & Swilly		580	580	460	1290	899	230	899	
Dunfanaghy		60	95	95		35	42	95	
Sheskinmore Lough		19	21	21	21	21	23	23	
Pettigo			70	70	107		68	68	
<b>NORTH CENTRAL</b>									
Bunduff									
Lough Macnean		104	105	105	115	115	113	113	
Caledon									
Lough Oughter									
Stabannon	2		24				24	24	
<b>MAYO</b>									
Lough Conn			36	20				36	
Bog of Erris		9	9	9				9	
a. Mullet									
b. Carrowmore			17	17				17	
c. Owenduff									
<b>MAYO/GALWAY UPLANDS</b>									
Errif & Derrycraff			57	57	3	69		69	14
Connemara			29					29	
<b>GALWAY LOWLANDS</b>									
Rostaff & Killower			80				80	80	
Lower Lough Corrib		0	7	0			7	7	
Rahasane turlough		61	62	62	39	45		45	
<b>CLARE/LIMERICK</b>									
Tullagher	0	0	0	0	0	0	0	0	0
North County Clare			42					45	
<b>SHANNON HEADWATERS</b>									
Lough Gara	30		100	100			73	100	
<b>MIDDLE &amp; LOWER SHANNON</b>									
River Suck		106	106	94	77	73	87	87	73
Little Brosna	91	35	203	203	219	132	113	132	
<b>MIDLANDS</b>									
Midland lakes			270					270	
<b>SOUTH WEST</b>									
Killarney valley									
<b>SOUTH EAST</b>									
Wexford North Slob	870	5763	5904	5904	6569	7348	6155	6155	
Wexford South Slob		153	0	0	0	0	107	107	
Tacumshin		0	0	0	15	0	0	0	
Cahore		0	0	0	0	0	0	0	
<b>COUNT TOTALS</b>									
Ireland without Wexford			7817					8410	
Wexford			1913					2148	
			5904					6262	

## THE INTERNATIONAL TOTALS

Adding the spring total of 6,262 at Wexford to 2,148 in the rest of Ireland, to 6,878 on Islay and 4,898 in the remainder of Great Britain bring the grand total for spring 2021 to 20,186, a slight decline in overall numbers compared to spring 2020 (Figure 2).



**Figure 2.** Spring counts of Greenland White-fronted Geese from Wexford Slobs and Islay and the global population count, 1983-2021. Values for the total population size are missing in some years when complete coverage could not be achieved (open squares, for which estimated counts based on previous counts have been substituted). Values for spring 2001 were missing on account of the outbreak of Foot and Mouth Disease that year and were therefore also estimated from previous counts. The arrow marks the point at which autumn hunting in Iceland was stopped in 2006.



*Greenland White-fronted Geese in the Tayinloan ferry terminal fields on the Mull of Kintyre. Photo: Ian Francis*

## AGE RATIOS IN BRITAIN

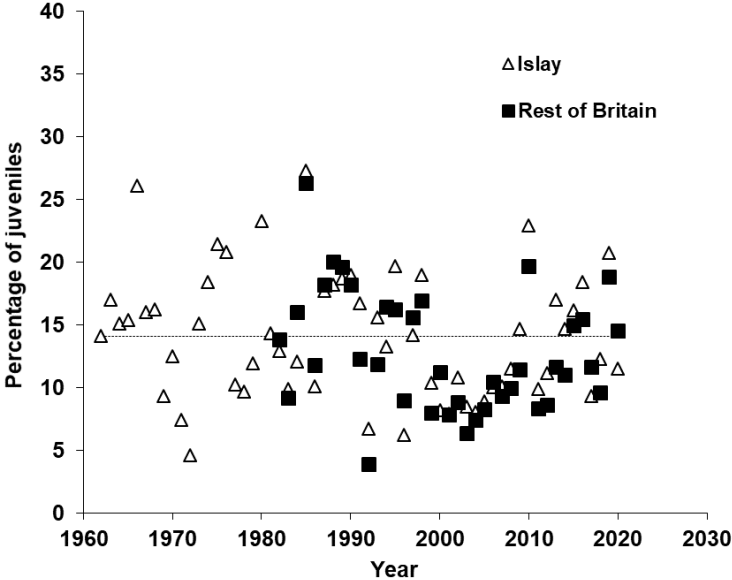
We very much like to try and monitor the annual reproductive success of the Greenland population of White-fronted Geese by assessing the proportions of first winter birds that arrive back with the autumn flocks to the winter quarters. Of course, this is somewhat looking down the wrong end of the telescope, because the arrival of young to the wintering grounds does not reflect true reproductive output. Rather it represents only the surviving remaining offspring after the loss of all the potential young lost to broken or predated eggs, lost or predated goslings on the breeding grounds, lost young that died on autumn migration or those that were predated or simply died in Iceland en route. Nevertheless, in terms of the contribution of birds of the year to the winter population, this annual measure is important and we are so very grateful that you continue to make the effort to gain these measures year after year. This year again we especially proud of the excellent coverage that you achieved, which as we explained last year is so vital to enable us to model and understand population processes. Thanks to you all, we again achieved a very high proportion of assessments in winter 2020/21 (Table 5).

**Table 5. Summary of age ratio determinations and brood sizes for Greenland White-fronted Geese wintering in Britain 2020/21.**

SITE	% YOUNG	AGED SAMPLE	MEAN BROOD SIZE	FAMILIES SAMPLED
Askernish, South Uist	14.29	7		
Isle of Barra	100.00	1		
Loch of Mey, Caithness	13.57	140		
Kilmuir, Skye	11.11	9	1.00	1
Kentra Moss	8.96	67		
Tiree	14.45	692	2.27	44
Coll	6.78	177		
Arднаaclach, Appin	0.00	13		
Lorn, Benderloch	0.00	27		
Mull, Fidden	18.18	11		
Colonsay	7.69	39		
Danna	22.92	48		
Clachan	14.29	84		
Rhunahaorine, Kintyre	16.48	182	2.50	12
Machrihanish, Kintyre	17.91	201	2.00	18
Gigha	20.59	34	1.40	5
Islay	11.47	2231	2.64	55
Bute	10.37	135	3.50	4
Loch Ken	19.44	108	2.20	5
Stranraer	22.22	153		
Endrick Mouth	12.73	220		
Anglesey	16.67	18		
Dyfi Estuary	22.73	22	5.00	1
Rest of Britain, excl. Islay	14.49	2388	2.27	90
OVERALL	13.03	4619	2.41	145

<sup>1</sup>Details from Islay and Kintyre courtesy of Dr Malcolm Ogilvie and Luke Ozsanlav-Harris

The percentage of young in the flocks sampled for age ratios fell back after the rather average success of the 2020 summer (see Table 5). The overall average percentage young sampled was 13.0% (n = 4,619 birds aged, compared to a much better 19.5% recorded after summer 2019), with a mean brood size of 2.41 based on 145 families (compared to 2.70 last year). These included 11.5% young among those aged on Islay (much lower than the impressive 20.7% after summer 2019) and a mean brood size there of 2.64 (compared to 2.83 there in the previous season). Although the age ratios from the rest of Britain away from Islay crept above the average, that for Islay was below average (Figure 3).



**Figure 3.** Age ratios sampled among Greenland White-fronted Geese at Islay 1962-2020 (open triangles) and compiled from other sites in Scotland and Wales, 1983-2020 (solid squares). The horizontal dotted line indicates the average percentage young among samples from Islay for 1962-2020. It is evident that while birds on Islay failed to return with sufficient young to the winter quarters to exceed the long term average, the birds wintering elsewhere managed to do so.



*Alert Greenland White-fronted Geese at Danna, Argyll. Photo: Ian Francis*

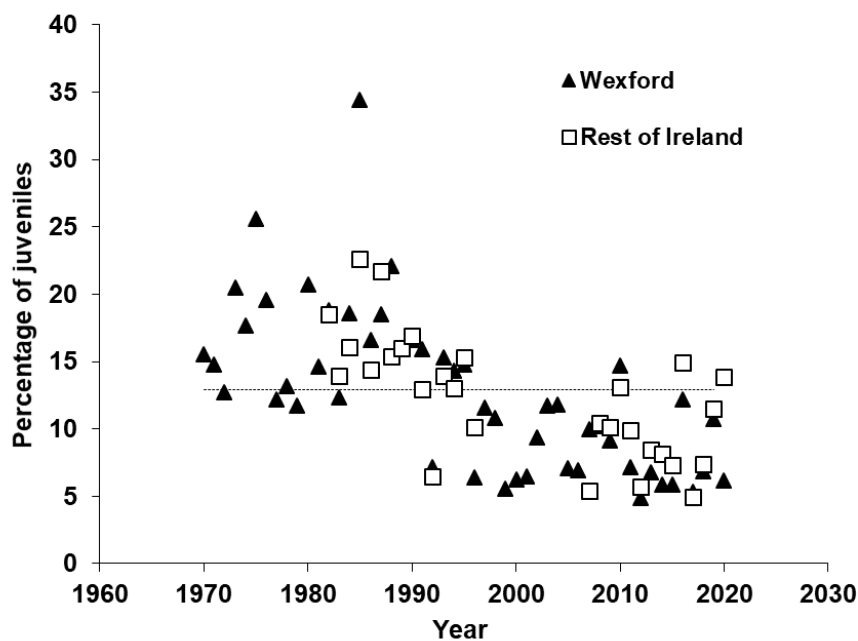


## AGE RATIOS FROM IRELAND

Unfortunately, it did not prove a very successful year for deriving age ratios in Ireland last winter, but after summer 2020 season, age ratios were generally extremely low, especially at Wexford (Figure 4), where there were 6.2% young sampled (based on 2,921 geese, which compared with 10.8% last year) and a mean brood size of 3.26 based on 50 families (compared to 3.14 last season, Table 6). Elsewhere, the mean percentage young was 11.3% (based on an age ratio from 151 birds at just three sites).

**Table 6. Summary of age ratio determinations and brood sizes for Greenland White-fronted Geese wintering in Ireland 2020/21.**

SITE	% YOUNG	AGED SAMPLE	MEAN BROOD SIZE	FAMILIES SAMPLED
Sheskinmore	21.05	19		
Lough McNeen	10.43	115	3.0	4
Carrowmore, Bog of Erris	5.88	17		
Wexford	6.16	2921	3.26	50
Ireland, excl. Wexford	11.26	151	3.0	4
OVERALL	6.41	3072	3.24	54



**Figure 4.** Age ratios sampled among Greenland White-fronted Geese at Wexford 1970-2020 and compiled from other sites elsewhere in Ireland for years in which there exist sufficient data. The horizontal dotted line indicates the average percentage young among samples from Wexford for 1970-2020.

## Putting Anglesey's flock on the map (at last!)

*BTO Cymru (R. Taylor, C. Macgregor & K. Bowgen) and the ECHOES project*



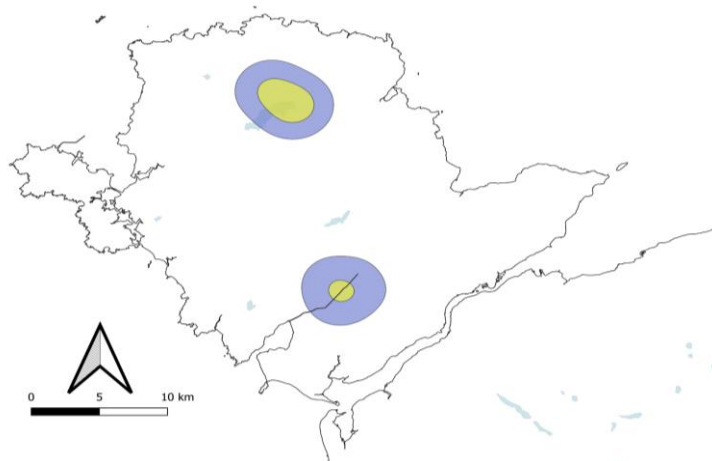
After collating and mapping all the (sparse) records of Greenland White-fronted Geese from Anglesey since 1979, KB spent several days in late October and early November 2020 revisiting every site and scrutinising hundreds of Greylag and Canada geese – on 6 November 2020 finally confirming a group of six birds sleeping on the bank of Llyn Coron (53.205°N, 4.426°W). However, the geese continued to be elusive, a group of six birds being sighted briefly west of the same lake on 18 November 2021. Much more searching, including time and expertise from Gareth Thomas (who normally counts birds on the Dyfi) we finally located a flock of 12 birds on farmland near Cors Ddyga RSPB reserve, and by mid-November numbers had stabilised at 18 using this site but also disappearing at intervals for several days. At this point we thought there were a couple of first-winter birds in the flock, but at distances of 2 km and belly-deep in grass this was hard to confirm.

Having received permission to tag up to three birds using PathTrack integrated GPS/UHF collars, and also received a set of collars and leg-rings from Alyn Walsh for marking any other birds, we started making plans for January. The three GPS collars were painted orange and coded to match the conventional Darvic collar scheme. And after three weeks, three net-resets, ice and floods and a pandemic notwithstanding, we finally caught eight of the birds on a sheep pasture near Gaerwen on 26 January 2021. Five of the eight – which included all three first-winter birds present – were ringed and colour marked with engraved leg-rings and collars. Three adults had the painted GPS collar substituted for the scheme Darvic collar. All birds had full biometrics recorded, and we have face-pattern and belly photographs if these would be useful to any other researchers.



The eight birds caught were five adults (two males and three females) and three first-winter birds. The winter flock of 18 only included these three first-winter birds, thought to be in two distinct family groups. The GPS collars used by the ECHOES project provide relatively high resolution spatial data, since the aim of the project is to tie together detailed habitat use information with diet, vegetation cover and climate change modelling. They are designed to provide consistent data-rates of a location every 15 minutes, 24/7 through November-March, and then switch to a lower rate (hourly or 12-hourly) through the summer. Data are uploaded to small base-stations at distances of up to 1.5km (downloads are disabled on the summer setting since the birds are out of range!). Although we don't receive 'live' updates through the summer, these tags can archive as much as two years' data until they make contact with a base-station, and are capable of providing more frequent locations in winter (low insolation) conditions than GPS/GSM tags of equivalent size and weight.

All three tagged birds provided GPS location data every 15 minutes, 24 hours a day, from 26 January to 21 March 2021 (5,200 locations each) showing a bimodal use of locations between the Cefni river valley (near RSPB Cors Ddyga) and grassland habitat on and around Llyn Alaw to the north. The three tagged birds in the flock showed near-identical patterns of habitat use throughout the same period, with occasional splits into smaller family/sex groups. The last date for any data from any of these birds was received on 24 March 2021 indicating that all three probably departed on migration around the end of March; no more sightings could be made by the field team after this date.




*The general areas of Anglesey used by the flock last winter. The two yellow circles indicate the core areas and the blue circles show full home range*

Matching up GPS fixes to time and habitat reveals a clear day-night pattern in where the geese spend their time. Almost the entire daytime is spent in improved pastures. After dark, the geese return to large waterbodies, roosting on deep water where presumably they feel safer from predators. Further analysis will help us to understand their choices at much finer resolution - which fields do the geese prefer to feed in, and what are the characteristics of those fields? Why did they always roost on these two waterbodies, rather than any of the many other still waters across Anglesey? Beyond this, we hope to understand what factors influence the birds' choice to spend time at each site, and particularly what factors cause them to invest precious energy into flying 17 km from one site to the other - which they did almost every day during one critical week in late February.

Among the possibilities, we'll investigate variables relating to climatic conditions - a key focus for the ECHOES project, which seeks to understand how ongoing climate change will impact Greenland White-fronted Geese and Curlew around the Irish Sea. The bizarre circumstances of conducting this work during the pandemic has also offered us a completely unique opportunity to link changes in goose behaviour to key dates - such as 13 March, when restrictions in Wales changed from "stay at home" to "stay local". Greenland White-fronted Geese are shy and sensitive to disturbance - so did an increase in recreational activity around this date - especially alongside RSPB Cors Ddyga - influence their behaviour?

Following the departure of the geese from Anglesey, we have all been waiting in anticipation for their return in autumn so it was really exciting to hear that A2A was sighted on Colonsay through the week of 20 October 2021. We will shortly redeploy our array of base stations in anticipation of seeing him back on Anglesey, and ready for the tags switching back to winter settings. Once we make contact with the birds we should receive all the location data archived since April, including the birds' movements on Anglesey before departure, migration pathways from Wales to Greenland, activity throughout the breeding season, and subsequent migration back (likely via Iceland, and of course Colonsay!). Besides a considerable degree of general interest, this will give us our first really important insights into habitat use by the Anglesey flock of Greenland White-fronted Geese in the vital days immediately before departing on migration, and immediately after arriving back post-migration.



The ECHOES project ([www.echoesproj.eu](http://www.echoesproj.eu)) will promote climate change adaptation, associated risk prevention, and management by providing tools for land users. This will enable them to understand climate change and its potential impact at both site and regional levels.

The project uses high resolution tracking data from geese and Curlew to understand and build models of resource availability and habitat selection, to be combined with diet (faecal sampling) and vegetation cover mapping (both remote and field-based). This resource and behaviour model will be used to understand, predict and plan climate and sea-level change mitigation approaches for site managers and stakeholders on coastal areas around the Irish Sea.

The project is funded through the Ireland-Wales Programme 2014-2020, part-funded by the European Regional Development Fund through the Welsh Government, which focusses on seeking solutions to shared challenges on both sides of the Irish Sea.

## ACKNOWLEDGEMENTS

We are deeply appreciate all of your efforts to count, age and read marking on Greenland White-fronted Geese during the last winter! It is not easy to be motivated to do this year after year, but without your careful and meticulous efforts, we would have no census, we could not report on breeding success and we would have no resightings upon which to base our research on survival, reproductive success, site loyalty and many other features of these amazing birds. So thank you so much for helping again this year and our very humble apologies if we have failed to mention you personally!

In Britain, those people who have kindly contributed data and information during 2020/21 include: Paula Baker, Dave and Pat Batty, Yvonne Benting, Ellen Bird, John Bowler, Jack Brown, Rebecca Burton, Abbie Catto, George Christie, Sue Clare, Nicci Cox, Steven Culley, Andrew Dacre, Pete Dale, Jim Dixon, Steve Duffield, Ian Fulton, Craig Gallagher, Steven Gorman, Larry Griffin, Robin Harvey, Ian Hawkins, Brian Henderson, David Holden, Aimee Hood, Ian Hawkins, Ian Hopkins, James How, Richard Humpidge, Hannah Imlach, David Jardine, Tracey Johnston, Ben Jones, Russell Jones, John Kemp, Alan Kerr, Tom Kistruck, Andy Knight, Catriona Laird, Morven Laurie, Mary Legg, Alan Leitch, Alison Leonard, Stephen Longster, Sinclair Manson, Emma Martinelli, Paul Massey, Clive McKay, Rae McKenzie, Bob McMillan, Sam McNeill, Hugh Mailey, Emma Martinelli, Carl Mitchell, Mark Mitchell, Brian Neath, Bill Neill, April Newton, Alex Nicol, Alison and Donald Omand, Malcolm and Carol Ogilvie, Nicky Penford, Dave Pickett, Brian Rabbitts, Bryan Rains, Alan Reid, Robin Reid, Brian Ribbands, Nicola Ritchie, RSPB staff on Anglesey, Pete Skinner, Julian Smith, Andrew Stevenson, David and Judy Stroud, Rachel Taylor, Arthur Thirlwell, Gareth Thomas, Niall and Rachel Tierney, Danielle Tinker, Luke Wake, Lucy Ward, Joyce Watson, Catriona White, Emily Wilkins and Liam Woods.

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Our sincere thanks to BTO for the supply of data from WeBS and BirdTrack. Data were provided by WeBS, a Partnership jointly funded by the British Trust for Ornithology, Royal Society for the Protection of Birds and Joint Nature Conservation Committee, in association with The Wildfowl & Wetlands Trust, with fieldwork conducted by volunteers. BirdTrack is organised by the BTO in a partnership with the RSPB, Birdwatch Ireland, the Scottish Ornithologists Club, Welsh Ornithological Society and BirdLife International. We are very grateful to Neil Calbrade for the efficient supply of these data.

Thanks also to Guðmundur A. Guðmundsson (Mummi), Arnór Sigfusson, Jóhann Óli Hilmarsson and Olafur K. Nielsen for their help collating Icelandic observations.

Thanks to the continuing programme of research and surveillance carried out by the National Parks and Wildlife Service and the count network in Ireland for another fantastic effort to gather all the data for this report. We are especially grateful for the continuing help and support of John Wilson who initiated the entire process of studying White-fronted Geese in Ireland and continues to be the source of great support, but also to Dave Tierney and other members of staff for their support. Thanks to SNH for site coverage throughout Argyll, especially to Andrew Kent, but also Tracey Johnston and Morven Laurie who so kindly helped with count data on Islay, to the counter teams on Kintyre and Islay and to all the contributors for their kind help in preparing sections of the report. Special thanks as ever to Dr Malcolm Ogilvie for his extensive age ratios and for wise counsel at all times. We gratefully acknowledge the financial support of the Joint Nature Conservation Committee through a sub-contract from the Wildfowl and Wetlands Trust under their UK Goose and Swan Monitoring Programme, and we thank Colette Hall

for her considerable help and support for the project. Do not forget that the annual Goose News reporting the Swan and Goose Monitoring Programme is available at the Wildfowl and Wetlands Website at this link:

<https://monitoring.wwt.org.uk/wp-content/uploads/2021/09/GooseNews-20.pdf>

In recent months, the Greenland White-fronted Goose website at <https://greenlandwhitefront.org/> has once again been hacked and debilitated by folk whose motivation we cannot fathom. As we write, the site has yet to be fully restored and does not yet look as attractive as it should and lacks functionality, but we humbly apologise for poor service and continue to work to restore it to its previous state.

Please be aware that the international census periods to count Greenland White-fronted Geese in the coming season are: **11-15 December 2021 and 5-9 March 2022**, but we welcome all counts from any dates, but the other monthly counts especially during the period: **20-24 November 2021, 8-12 January 2022 and 5-9 February 2022.**



*Greenland White-fronted Geese dropping in at Rhunahaorine, Argyll. Photo: Ian Francis*