

# REPORT OF THE 2022/23 INTERNATIONAL CENSUS OF GREENLAND WHITE-FRONTED GEESE

by

GREENLAND WHITE-FRONTED GOOSE STUDY



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## SUMMARY

The global population of Greenland White-fronted Geese in spring 2023 comprised 18027 individuals, made up of 7792 in Ireland and 10235 in Britain. This was coincidentally unchanged compared to the same total counted the previous spring. Numbers at Wexford, SE Ireland, remained little changed at 5531 (compared to 5361 last spring), numbers on Islay also changed little falling slightly from 5297 in spring 2022 to 5168 in 2023. Counts elsewhere in Ireland continued to fall (2261 compared to 2928 in 2022), while numbers counted elsewhere in Britain increased from 4441 to 5067. The percentage of young among wintering Wexford and Islay geese were the lowest on record (2.1% and 3.3%) and low elsewhere, due to a late spring and late snow lie on the west Greenland breeding areas.

We here present the results of the Greenland White-fronted Goose surveys carried out on their wintering grounds in winter 2022/2023, combining counts from all 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 2023 found a combined global total of 18027 Greenland White-fronted Geese, which amounts to no net increase over the precisely same previous world population estimate counted in spring 2022.

The annual spring 2023 census in **Ireland** found a total of 7792 Greenland White-fronted Geese (compared to 8289 in spring 2022), made up of 5531 birds at Wexford and 2261 elsewhere in Ireland (compared with 5361 and 2928 respectively in the previous spring). Missing spring counts again had to be substituted for 19 flocks, more than has been the case in normal years, accounting for 27.5% of the total for down-country flocks, away from Wexford. The annual spring count of all known Greenland White-fronted Goose wintering flocks in **Britain** found a total of 10235 in spring 2023, compared to 9738 in spring 2022, and comprised three counted in England, 31 in Wales, 5168 on Islay (compared to 5297 last season) and 5033 in the rest of Scotland (compared with 4390 last season). Spring coverage in Britain was reasonably complete. Counts from the specified spring count period were missing from 13 resorts, but all were substituted with counts undertaken very close to the defined international count dates, amounting to 7.8% of the British total.

Among **Irish** wintering geese, the percentage young among aged flocks after the 2022 breeding season was an extraordinarily low 2.5% (based on 4311 aged individuals) compared to 5.6% last season. Mean brood size among the Irish flocks was low (2.7,  $n = 35$ ) but slightly up on 2.2 last season. There were 2.1% young among 4030 aged at Wexford (substantially down on last season's already very low 4.9% but reflecting a long trend there since the late 1980s). Mean brood size at Wexford was 2.7, based on 28 broods (compared to 2.2 last season). Elsewhere in Ireland, reproductive success was also very low at 8.5% based on a sample of 281, with mean brood size 2.7 ( $n = 7$ , compared to 2.4 last season). The proportion of young in aged samples from **British** wintering geese was also far below the recent average with an overall percentage young of 4.9% ( $n = 4437$  aged, compared to 11.2% last season), mean brood size was 1.7 ( $n = 82$  broods, compared to 2.5 last season). This included 3.3% young birds on Islay, ( $n = 2159$ , compared to 10.5% last year) and 6.4% ( $n = 2278$ ) elsewhere in Britain. Mean brood size on Islay was very low at 1.3 (compared to last year's 2.7) and 2.2 elsewhere ( $n = 32$ , almost identical to 2.3 after summer 2021).

In the face of the incredibly low reproductive success in 2022 across the entire population, it was a little surprising that the overall numbers did not change at all compared to last winter. Interestingly, numbers in Ireland declined somewhat, balanced by counts from British resorts. Continued declines in the overall size of this small population gives continued cause for concern. The most likely explanation for the declines continues to be poor reproductive success that fails to balance annual mortality, linked apparently to poor spring and early summer weather in west Greenland that has characterised several recent years. The poor conservation status of this population requires continued vigilance and monitoring into the future.

## INTRODUCTION

The 2022/2023 survey represents the 41st 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, 2018-2023.**

	Spring 2018	Spring 2019	Spring 2020	Spring 2021	Spring 2022	Spring 2023
<b>Wexford</b>	7637	7436	8312	6262	5361	5531
<b>Rest of Ireland</b>	1950	1899	2106	2148	2928	2261
<b>TOTAL IRELAND</b>	<b>9587</b>	<b>9335</b>	<b>10418</b>	<b>8410</b>	<b>8289</b>	<b>7792</b>
<b>Islay</b>	5319	6771	5910	6878	5297	5168
<b>Rest of Britain</b>	5379	5360	5223	4898	4441	5067
<b>TOTAL BRITAIN</b>	<b>10698</b>	<b>12131</b>	<b>11133</b>	<b>11776</b>	<b>9738</b>	<b>10235</b>
<b>Population total</b>	<b>20285</b>	<b>21466</b>	<b>21551</b>	<b>20186</b>	<b>18027</b>	<b>18027</b>

## AUTUMN ARRIVAL PATTERNS IN AUTUMN 2022

The earliest record was of a single Greenland White-fronted Goose among Pinkfeet in Angus on 2 October 2022, which was followed by a single adult at Miavaig, on the Isle of Lewis on 5 October and a lone first winter bird which turned up at Udale Bay, Highland Region on 7 October, which remained there until at least 11 October. Eighteen crossing Dinnet Bay on 6 October were the first reports from Caithness. On Tiree, the first arrivals were 23 at Loch a'Phuill on 7 October, with a single arrival over The Reef next day, numbers rising to 45 at Loch a'Phuill by 12 October. There were already 57 birds back at Kinnabus on Islay by 16 October (David Dinsley), rising to 63 two days later and 125 by 24 October (David Wood). First birds seen migrating from Colonsay were 14 on 17 October, followed by 7 the next day and 8 the day after, with an island count of 53 (including 7 first winter birds) on 24 October. David Jardine counted 54 on Colonsay (including the Anglesey collared bird A2A which also spent part of the winter there last year) on 18 October. Sixteen Greenland White-fronted Geese came off the sea at South Galston, Lewis on 19 October, when 20 were seen passing Carinish and 35 (in two flocks) passing Loch Paible (both on North Uist). Twenty-three passed SE through the Sound of Barra on 22 October. Some 30 geese were present on Forss Water Caithness in the week up to 23 October and 17 coming in from Philip's Mains in Caithness to land in the corner of Loch of Mey on 25 October by Julian Smith may well have been new arrivals. "Many hundreds" were reporting calling flying over northern Wexford on the morning of 23 October, with more calling some 2.5 nautical miles off Brownstown Head, Co. Waterford at 20.00 hrs that same evening. The first 15-18 geese were seen by Tom Kistruck to have returned to the Dyfi on the morning of 2 November and by the next day, Mary Legg was reporting 55 feeding on stubbles on her patch at Loch of Mey; Ian Fulton did not observe his first birds back at Loch Lomond until 4 November. White-fronted Geese were recorded calling over Kinloch, Rum on 4 November during nocturnal migration observations (Sean Morris) and 12 Greenland White-fronted Geese flying south along the machair at Askernish on 15 November may have been local birds or late arrivals.

Shimmy, our indefatigable Norwegian correspondent, alerted us again to two Greenland White-fronted Geese reported by Bertil Casslen on the Norwegian bird portal photographed at the east beach at Ekkerøya near Vadsø in the far north of Norway on 23 October 2022. We think this may well be the furthest north report of any Greenland White-fronted Goose on continental Europe.

## SPRING 2023 DEPARTURE PATTERNS

Interestingly, winds were not at all suitable during the latter part of March, so there were no signs of major departures from Wexford before the end of that month as in recent years. Fifteen feeding at Butt of Lewis on 19 March could have been early migrants waiting for favourable conditions. A skein of 32 unidentified grey geese north over Ardnish, Broadford, Skye on 26 March were very likely Greenland White-fronted Geese, among the first reported heading north (Paula Olde-Wolburg). On the Western Isles, 84 flew north over Barra on 26 March, with 100 heading northwest over Vatersay the same day probably this subspecies. There followed 80 NW over North Bay, Barra next day, 27 March, followed by 80 north on 1 April past Skigersta, Lewis and another 34 north past Loch Stiapabhat, also on Lewis the same day. During a very brief period of SE winds on 27 March, Cameron Clotworthy seen a flock of c.30 Greenland White-fronted Geese flying over the southwest corner of Lough Conn, Co. Mayo. On 2 April 47 flew north over Askernish, South Uist and another 42 were seen over Barra early evening the same day, although there were still 50-60 present at Loch Bee that day. There were large departures observed from Wexford Slobs starting around 11:00 on the morning of 2 April continuing until the evening, with flocks reported passing north westwards over Clonegal in the very north of County Wexford, following the River Slaney. Pete Dale and Andrew Dacre saw most of the Loch Shiel flock had departed by 3 April, but Pete watched the last 26 Greenland White-fronted Geese lift from Claish Moss at 06:54 hr on 7 April and climb heading NNW departing the site on migration. On the Dyfi, Carol Fielding witnessed five departed on the night of 2/3 April, four more left on the night of 3/4 April and the remaining six were last seen on the saltmarsh at 19:25 hr on 6 April and were all gone the next morning. A single was seen at Carinish, North Uist on 4 April, some 34 birds lingered until at least 5 April on Colonsay, while 16 Greenland White-fronted Geese were still on the west bank of Loch Bee and 26 at Achreamie, Caithness on 6 April. Although there still 55 at Balephuill on 2 April and 15 at Balephetrish on 5 April, most geese departed on 7 April from Tiree, with 12 at Baugh and 3 at Balinoe being the last observations. Elsewhere, 47 Greenland White-fronted Geese moved northwest with c.700 Barnacle Geese over Locheynort on 7 April, with seven north over South Glendale (both South Uist) and three small groups (eight, six and four) passing over Port Nis, Isle of Lewis the previous day. The last major movement reported was of 75 flying north over Butt of Lewis on 16 April.

## COUNTS IN BRITAIN 2022/2023

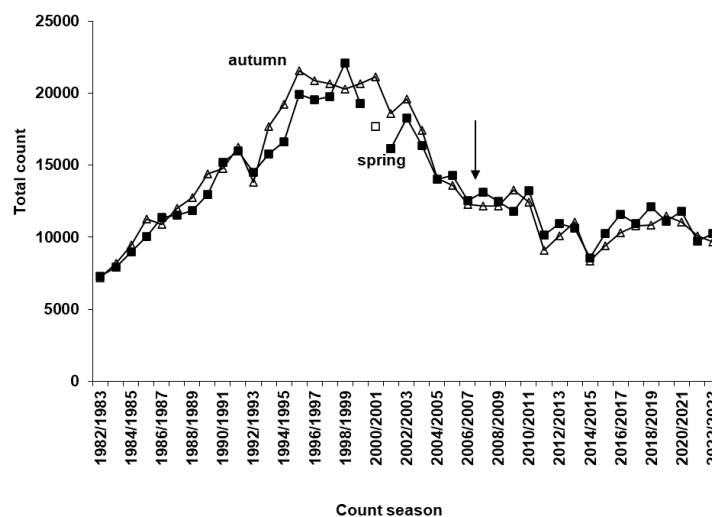
As ever, we are deeply grateful to the army of observers who again made a magnificent effort to achieve coordinated counts of all resorts occupied by wintering Greenland White-fronted Geese in winter 2022/23. We also appreciate the efforts of all the other observers who contributed their records though either 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) which gave us an overview of geese away from regular sites and via the Wetland Bird Survey (WeBS, organised by BTO with project partners RSPB and JNCC in association with WWT) at those regularly monitored sites. We express our grateful thanks to Neil Calbrade and Justin Walker at and their staff at the British Trust for Ornithology for prompt and efficient access to all records of Greenland White-fronted Geese lodged with them. While these counts add little to our regular basic monitoring, we are extremely grateful for these observations at non-regular sites and especially during migration periods for contributing to our understanding of the wintering population.

Monthly maximum counts from all known regularly occupied British Greenland White-fronted Goose wintering haunts for Greenland White-fronted Geese are shown in Table 2, where we also present the totals from the nominated internationally coordinated census periods in December and March. Each year, we encourage count coverage during these two periods to ensure coordination with parallel counts in Ireland. Counts from other sites, not known to support regular numbers of Greenland White-fronted Geese are shown in Table 3, and their totals are added to the master totals in Table 2.

As explained in earlier reports, we feel the March count provides a more representative assessment of total numbers in the population each winter. Our experience continues to be that geese are seemingly more aggregated and therefore more easily counted during this spring period at most resorts compared to other times of year. It also has the advantage that it represents the population size after the course of the preceding winter.

Against all expectations and particularly because of the exceptionally low production of young following the summer of 2022, spring counts in British wintering resorts were not as bad as feared. Numbers wintering in Orkney hardly changed compared to winter 2021/22. The combined numbers in spring 2023 in Caithness were up 15% on the previous year, with a spring count of 170 in the Westfield flock being a positive increase over 114 last winter. Although the Lewis (Western Isles) flock proved hard to find, there were 25 geese early season. Numbers on the Uists were a little down, but Loch Bee continued to hold well over 100 birds (180 early in the season), although numbers failed to break 100 during the international count period. A regular flock wintering on Skye now hangs very much in the balance, with no records from the southeast of the island and a mere four geese at Kilmuir. The magnificent Loch Shiel flock held up also this winter, with 82 representing a modest decline over last years' impressive numbers. Combined totals for Lismore, Appin and Benderloch area were also a little down in spring 2023 over the previous winter, but while Tيرة counts were a little down, the spring 2023 count on Coll was an encouraging 247 compared to just 79 (and low numbers throughout winter 2021/22) the winter before. Although only 8 Greenland White-fronted Geese were counted on Mull during the spring count period, an encouraging 22 were present for most of the season there. After a disappointing 70 odd in the latter part of winter 2021/22, it was cheering to see 146 counted on Colonsay in the latter part of winter 2022/23. Numbers on Danna/Kiells/Ulva rallied a little over last year and three birds still just hung on at Moine Mhor! After a disappointing count in spring 2022, combined numbers on Kintyre increased by 31% in spring 2023, while numbers on Bute (where the geese are proving very difficult to find) and Loch Lomond remained a little below last year. Overall numbers counted during the spring count on Islay were a little down compared to 2022, but the lack of a major change there is important, because this island makes such a large contribution to the overall British totals. Numbers at Loch Ken and Stranraer were down somewhat and disappointingly numbers at both Welsh resorts were down on the Dyfi and Anglesey from 24 and 20 respectively in 2022 to 15 and 16 in spring 2023. As usual, we did not manage to obtain counts for all sites in the international count periods, necessitating substitutions from other times in the winter. This amounted to five sites in the international autumn count period (contributing 311 birds, or 3.2% to the total) and 13 regular resorts in spring (shaded grey in Table 2; 811 birds 7.8% of the total).

Overall, the numbers in spring 2023 were encouraging compared to 2022, reflected in a modest 5% increase year-on-year (Figure 1). This is especially so because of the low reproductive output registered at all resorts following the 2022 summer season, and rather implies some shifts of individuals between resorts in winter. Numbers on Islay were surprisingly similar given the low levels of breeding success among geese wintering there.



**Figure 1.** Counts of Greenland White-fronted Geese in Britain, 1982/1983-2022/2023, 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.

**Table 2. Summary counts of Greenland White-fronted Geese in Britain 2022/23**

*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			89	84	84	65	58	60	84	
Stronsay			5	5		4			4	
Mainland			1							
<b>CAITHNESS</b>										
Westfield		30	170	170		110	120	112	170	
Loch of Mey			120	130	130	130	76	138	138	
<b>WESTERN ISLES</b>										
Barvas/Shawbost, Lewis				25	25				25	
Loch Stiapabhat, Port of Ness							5	5		
Carinish, North Uist			9							
Benbecula				7		7			7	
Kilpheder/Askernish, South Uist			12	8	8	15	9		15	
West Loch Ollay, South Uist				2	8					
Loch Bee/Kilaulay, South Uist			180	180	70	140+			96	
<b>INNER HEBRIDES</b>										
Kilmuir, Skye				4		4			4	
Broadford/Pabay, Skye										
<b>LOCHABER/NORTH ARGYLL</b>										
Muck/Eigg										
Loch Shiel/Claish Moss			74	84	84	84	82	82	82	26
Lorn:Benderloch			13	24	24		31		31	
Lorn: Appin				8	8				8	
Lismore			75	75	73	60	80	75	63	35
Tiree			505	653		649	770		883	
Coll		76	205	107		161	75		247	
Assapol, Mull				0					0	
Fidden Mull				22			22		8	
<b>SOUTH ARGYLL</b>										
Colonsay/Oronsay		53	108	140	140	114	111	146	146	34
Jura: Loch a'Chnuic Bhric				0					0	
Jura: Lowlandman's Bay				0	0			0	0	
Danna/Kiells/Ulva			52	159		121	147		156	
Moine Mhor			2	2			3	3	3	
Rhunahaorine			281	254	351			220	324	
Machrihanish				1629		1590			1763	
Clachan				0					100	
Gigha			89	40					51	
Glenbarr				30					17	
Isle of Bute				106	106				106	
Endrick Mouth, Loch Lomond			120	160	184	192	155	150	192	
<b>ISLAY</b>			3538	5243	5243	5114	5470	5168	5168	
<b>DUMFRIES &amp; GALLOWAY</b>										
Loch Ken		12	145	136	136	140	115	120	140	19
Stranraer			118	137	137	166	168	168	168	
<b>WALES</b>										
Dyfi Estuary			16	16	16	16	15	15	15	
Cors Ddyga, Cefni valley, Anglesey			14	16		16	16		16	
<b>ENGLAND</b>										
Grindon Lough, Northumberland		1								
<b>OTHER IRREGULAR SITES</b>										
England combined	0	2	3	1	2	4	22	13	3	0
Scotland combined	0	0	1	5	5	7	2	2	2	0
Wales combined	0	0	0	0	0	1	0	0	0	0
<b>TOTALS</b>										
<b>Rest of GB less Islay</b>				<b>9662</b>					<b>10235</b>	
<b>Rest of Scotland less Islay</b>				4419					5067	
<b>England</b>				4386					5033	
<b>Wales</b>				1					3	
				32					31	

*Table 3. Summary counts of Greenland White-fronted Geese at irregular sites in Britain 2022/23*

	SEP	OCT	NOV	AUTUMN CENSUS	DEC	JAN	FEB	MAR	SPRING CENSUS	APR
<b>OTHER IRREGULAR SITES</b>										
<b>Scotland</b>										
Loch of Houlland, Shetland			1							
North Ronaldsay, Orkney							11			
Loch Fleet, Highland								2	2	
Skelbo, Highland								2		
Balblair, Dingwall, Highland								1	1	
Udale Bay, Highland		1					1			
Dornoch Highland		1								
Dulnain Bridge, Highland						1				
Cawdor, Highland										
Loch Spynie, Moray						1	5			
Peterhead, Aberdeenshire								1		
Kemnay, Aberdeenshire								1		
Ratray Head, Aberdeenshire			1	1	1	1	1	4		
Kintour, Aberdeenshire								1		
Loch of Strathbeg, Aberdeenshire								1		
Blairdaff, Aberdeenshire						1				
Loch Fitty, Dunfermline								1		
Gauldry, Fife								1		
Kinskettle, Fife			1							
Mountcastle Quarry, Fife							1			
Ladybank, Fife							1			
Black Cat Water/Erskine/Paisley, Renfrew					1					
<b>England</b>										
Town Moor, Gosforth, Tyne & Wear						3				
Carthorpe Mires, North Yorkshire						5				
Cockerham, Lancashire							1	1	1	
Leighton Moss, Lancashire							1	1	1	
Bar Mere, Cheshire						1				
Martin Mere Lancashire			1							
Westwoodside, Idle Bank, Nottinghamshire						1				
Slimbridge, Gloucestershire						4				
Hollesley, Suffolk						1				
Farlington Marshes, Hampshire				5	5					
<b>Wales</b>										
Garreg, Traeth Mawr, Gwynedd						1				
<b>TOTALS</b>										
<b>Scotland</b>		2	3	1	2	4	22	13	3	0
<b>England</b>		0	1	5	5	7	2	2	2	0
<b>Wales</b>		0	0	0	0	1	0	0	0	0



*Greenland White-fronted Geese on under sown stubbles, Sunderland Farm, Islay*

*Photo: Ian Francis*

## COUNTS FROM IRELAND

Excellent monthly count coverage was achieved throughout Ireland for most Irish wintering flocks in 2022/23 (Table 4). As we reported last winter, it is becoming increasingly challenging to find the feeding geese during the March coordinated spring count period, as flocks seem to fragment more and feed out in smaller groups on the periphery of their ranges. For this reason, again we have been forced to substitute the spring count for counts earlier in the winter to contribute to the International count totals. Although it is clearly not possible to know for certain, we do this on the understanding that the local counters are confident that the flock has remained within their traditional area, but the counts obtained do not reflect the true numbers present. As a result, the numbers of substituted counts have risen a little this year. In autumn 2022, this meant 11 sites have substituted counts from other parts of the winter that contribute 13.2% of the total International autumn count. In spring 2023, values from counts from other months were substituted for sites in spring where birds were either not found or the count considered not include the true numbers present at 18 sites down country, contributing 27.2% of the spring count. The spring count at Wexford (5278) was also considered not to reflect the true numbers present because the dense concentrations of geese feeding in beet made estimation of numbers difficult. As a result, the February full count was substituted (5531) for the International count when counting conditions were considered perfect and the total therefore more representative.

The Rathlin Island flock numbered 17 throughout the season and continued to commute to the mainland to feed. After an encouraging increase in numbers at Lough Foyle/Swilly with 1418 counted in February 2022, numbers in 2022/23 generally were back down to those in winter 2020/21, peaking at 861 in January. Numbers at Dunfanaghy also fell back a little, but at Sheskinmore, there was an encouraging increase from 17 last year to a consistent 23 through winter 2022/23. Numbers at Pettigo held up at 72 birds, as at Stabannon (with 20 geese in both years) and numbers in Mayo remained reasonably stable as well. Unfortunately, with no counts from the Errif and Derrycraff, Glenmaddy, Connemara or Tullagher flocks in 2022/23, the counts were substituted from the previous winter (115, 133, 33 and nine respectively). Wintering numbers fell slightly in the lowlands of Galway, and a concerted effort to find geese on their Lower Lough Corrib haunts in all months failed to find any birds. Encouragingly, numbers in North County Clare recovered to 55 individuals in February an increase of ten or more on the last counts from this flock. Lough Gara numbers changed relatively little between the two winters, but numbers counted between the Suck River and Little Brosna in the middle and lower Shannon floodplain increased by 13.5%. While numbers counted on the Midland Lakes fell back to 226 compared to 280 in the previous winter, it was cheering to report four Greenland White-fronted Geese seen on the Nore River. There used to be a flock of 70-80 Greenland White-fronted Geese wintering in the South Midlands, centred on the Nore River, but despite most other flocks increasing during the 1990s, this flock declined rapidly during the 1990s (thought due to drainage and disturbance) to number just seven in 2007/08. The group hung on with erratic observations of small numbers until six were last seen in winter 2016/17. The news of 4 in December 2022 may not mark the return of this flock to its former glories, but at least shows birds are still exploiting the area and could potentially return.

Numbers at Wexford in the latter part of 2022 were not spectacularly high, the autumn December count of 3190 representing a staggering 40% decline compared to the previous year. Numbers recovered in the New Year, with the accepted spring count of 5531 from February 2023 representing a 9% increase over the previous spring count in 2022, again in the face of record low reproductive success (see later).



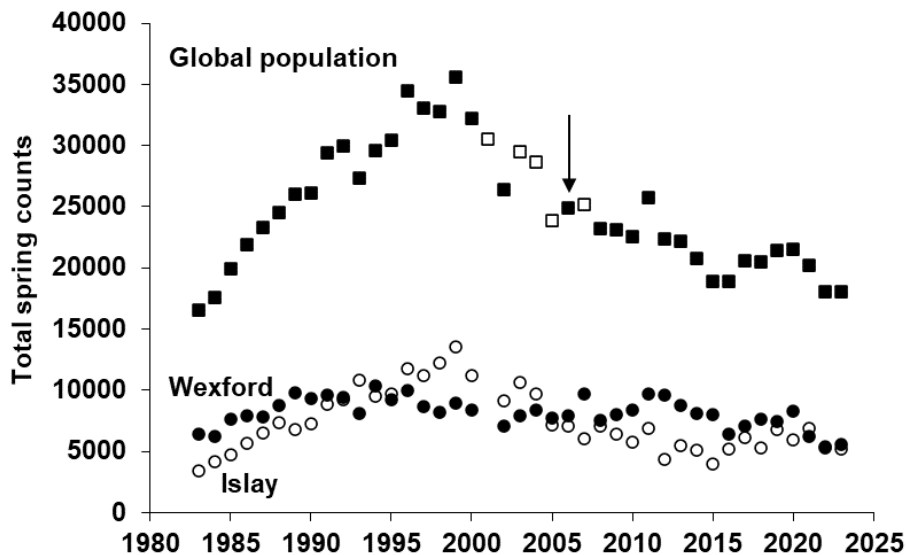
Table 4. Summary counts of Greenland White-fronted Geese in Ireland 2022/23

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
Rathlin Island		17	17	17	17	17		17	
<b>DONEGAL</b>									
Loughs Foyle & Swilly		742	720	720	861			861	
Dunfanaghy			52	20	52	87	41	87	
Sheskinmore Lough		16	23	23	23	23	23	23	
Pettigo		18	72	17	72	36	18	72	
<b>NORTH CENTRAL</b>									
Bunduff									
Lough Macnean									
Caledon									
Lough Oughter									
Stabannon			20			20	15	20	
Kilcoole Marshes		3	3					3	
<b>MAYO</b>									
Lough Conn			55			50	55	55	
Bog of Erris									
a. Mullet	11	11	11	11	11	1	1	11	
b. Carrowmore		10	10		13	0		13	
c. Owenduff			20				20	20	
<b>MAYO/GALWAY UPLANDS</b>									
Errif & Derrycraff			115		115			115	
Connemara			33	33				33	
<b>GALWAY LOWLANDS</b>									
Rostaff & Killower		47	47	47		63	49	63	
Lower Lough Corrib		0	0	0	0	0	0	0	
Rahasane turlough	26	51	51	35	52	0	0	52	
<b>CLARE/LIMERICK</b>									
Tullagher			9				9	9	
North County Clare			55				55	55	
<b>SHANNON HEADWATERS</b>									
Lough Gara		38	112		112	44		112	
<b>MIDDLE &amp; LOWER SHANNON</b>									
River Suck		12	96		96	51		96	
Glenmaddy			133					133	
Little Brosna	109	147	195	195		181		181	
<b>MIDLANDS</b>									
Midland lakes		180	180		226	160	194	226	
			4	4				4	
<b>SOUTH WEST</b>									
Killarney valley									
<b>SOUTH EAST</b>									
Wexford North Slob	648	4250	3190	3190	4996	5531	5278	5531	
Wexford South Slob	0	0	0	0	0	0	0	0	
Tacumshin	0	10	0	0	0	0	0	0	
Cahore	0	0	0	0	0	11	0	0	
<b>COUNT TOTALS</b>									
Ireland without Wexford			5223					7792	
Wexford			2033					2261	
			3190					5531	

## THE INTERNATIONAL TOTALS

The Irish totals comprised 5531 counted at Wexford added to the 2261 geese counted elsewhere in the rest of Ireland. In Britain, 5168 were counted on Islay and 5067 at sites elsewhere in Scotland, Wales and England, giving a global total of 18027 Greenland White-fronted Geese in spring 2023, coincidentally exactly the same count as in spring 2022. We should be relieved that there was no large decline in overall population size given the incredibly low reproductive success in summer 2022 (see below). So while this is the next lowest spring count since the 1984 spring count (17537), at least numbers overall seem not to have seriously decreased further (Figure 2).



**Figure 2.** Spring counts of Greenland White-fronted Geese from Wexford Slobs and Islay and the global population count, 1983-2023. 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, Loch Guinart, Islay, December 2022*

*Photo: Ian Francis*

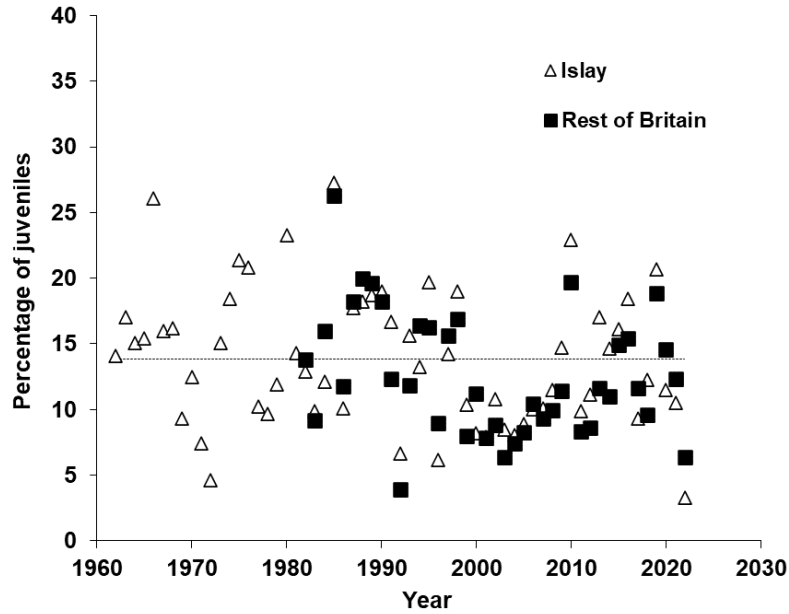
## AGE RATIOS IN BRITAIN

Grateful thanks as ever to everyone who sampled age ratios and brood size data in Britain during 2022/23 achieving extremely good cover from many flocks (Table 5).

**Table 5.** Summary of age ratio determinations and brood sizes for Greenland White-fronted Geese wintering in Britain 2022/2023.

	Percentage young	Number aged	Number of first winter birds	Mean brood size	Number of broods	Number of first winter birds
Orkney	12.28	57	7			
Lewis	12.00	25	3			
Askernish	14.29	7	1			
Kilmuir, Skye	0	4	0			
Loch Shiel	8.54	82	7			
Tiree	8.36	550	46	1.92	24	46
Coll	5.78	173	10			
Ardnaclach, Appin	0	7	0			
Lorn, Benderloch	8.33	24	2			
Colonsay	10.53	114	12	3.00	4	12
Mull, Pottie	36.36	22	8			
Clachan	9.09	66	6			
Rhunahaorine, Kintyre	5.45	220	12			
Machrihanish, Kintyre	2.76	399	11			
Gigha, Kintyre	3.37	89	3			
Glenbarr, Kintyre	2.50	40	1			
Islay	3.29	2159	71	1.34	50	67
Loch Ken	4.32	139	6	3.00	2	6
Stranraer	8.85	113	10	3.50	2	7
Endrick Mouth	0	117	0			
Anglesey	0	14	0			
Dyfi Estuary	0	16	0			
Britain, excl. Islay	6.37	2278	145	2.22	32	71
OVERALL	4.87	4437	216	1.68	82	138

Following the impressive reproductive success of Greenland White-fronted Geese following the 2019 summer, we became a little more optimistic about the capacity of the population to replace annual losses with reasonable levels of reproductive success. Unfortunately, summer 2022 proved to be the least productive breeding season on record, especially among birds wintering on Islay. There, a sample of 2,159 birds contained just 71 first winter birds, at 3.3% (Table 5), the lowest winter percentage young recorded there since records began in 1962. Previous years of low productivity were 4.6 (1972) 6.7 (1992) and 6.2 (1996), whereas the average for 1962-2022 was 13.8% (Figure 3). As is often the case, age ratios elsewhere from Islay in Britain were slightly better with 6.4% among 2,278 geese aged, but also well below average (Table 5, Figure 3). There continues to be no long-term trend in reproductive success on Islay back to 1962 ( $P = 0.10$ ), nor for the annual compounded reproductive success at sites away from Islay elsewhere in Britain back to 1982 ( $P = 0.07$ , Figure 3). Mean brood size was 1.68 overall based on 82 families sampled from many sites, down from 2.51 the previous year, including a very low mean of 1.34 on Islay ( $n = 50$ ) compared to 2.22 elsewhere ( $n = 32$ , compared to 2.70 and 2.28 respectively after the 2021 breeding season).



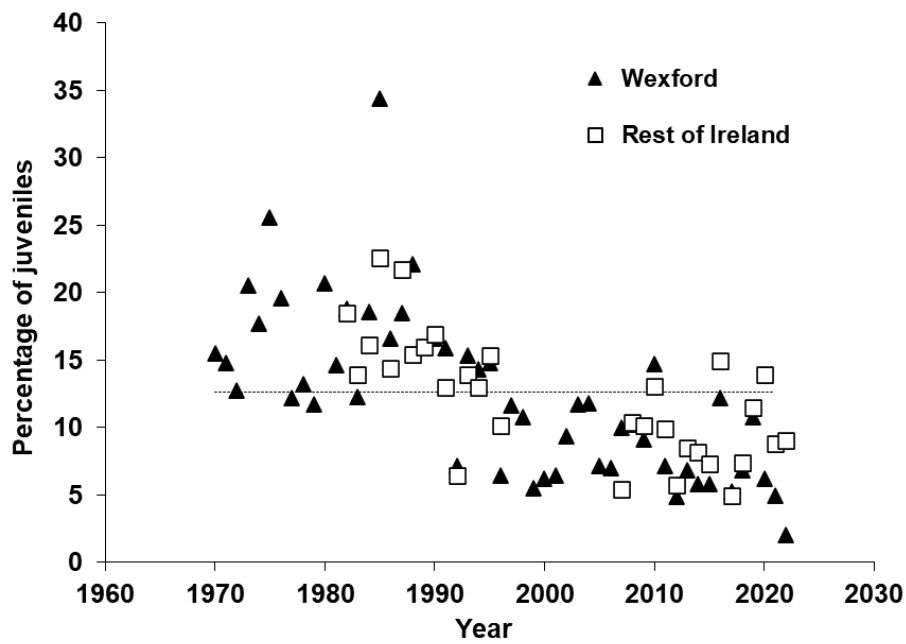
**Figure 3.** Age ratios sampled among Greenland White-fronted Geese at Islay 1962-2022 (open triangles) and compiled from other sites in Scotland and Wales, 1982-2022 (solid squares). The horizontal dotted line indicates the average percentage young among samples from Islay for 1962-2022.

### AGE RATIOS FROM IRELAND

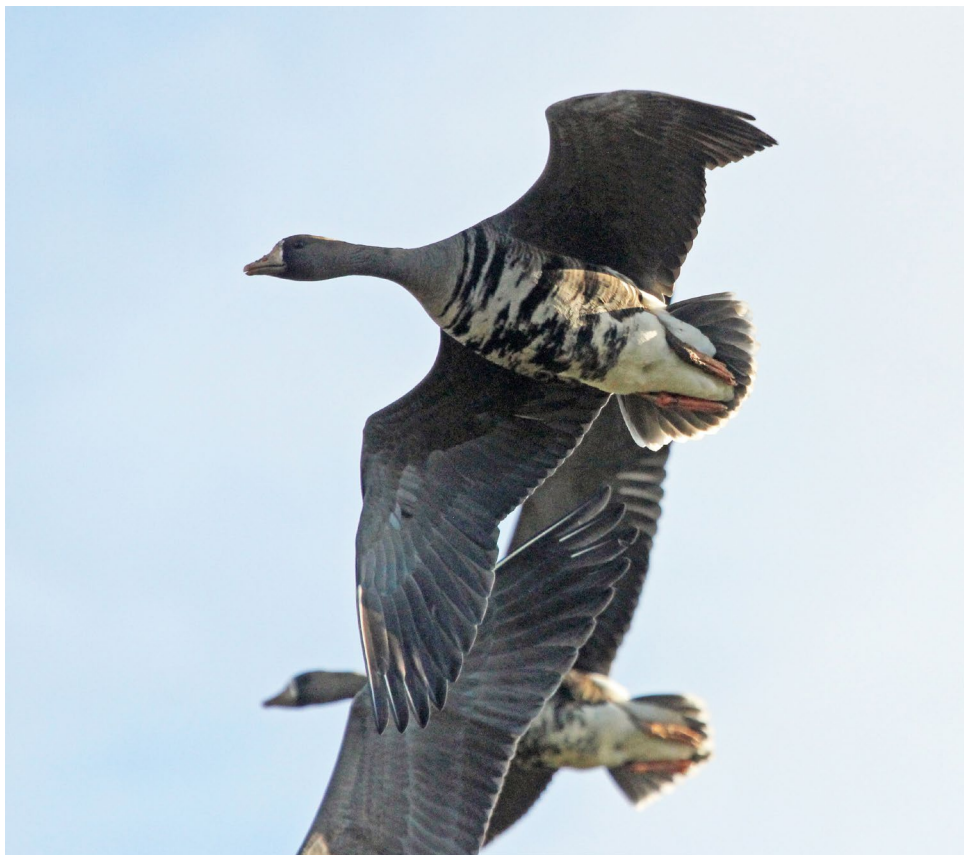
Breeding success following the 2022 summer among flocks returning to Ireland was the lowest ever with just 2.1% first winter birds among 4030 birds sampled at Wexford and 8.5% from 281 sampled elsewhere in Ireland, resulting in a dismal 2.5% young overall (Table 6). There has been a significant decline in the percentage young among birds returning in autumn to Wexford over the period 1970-2022 ( $P < 0.001$ ) as was the case for the percentage young sampled at flocks elsewhere in Ireland over the period 1982-1996 and 2007-2022 inclusive ( $P < 0.001$ , see Figure 4). Mean brood size following the 2022 breeding season at Wexford was 2.7 (compared to 2.2 last season) based on 28 broods and 2.7 from elsewhere Ireland ( $n = 6$ , Table 6).

**Table 6. Summary of age ratio determinations and brood sizes for Greenland White-fronted Geese wintering in Ireland 2022/2023.**

SITE	Percentage young	Number aged	Mean brood size	Number of broods
Ballylawn, Lough Swilly	0.00	17		
Dunfanaghy			2.67	3
Sheskinmore	17.39	23	4.00	1
Lough Conn	6.25	48	3.00	1
Rostaff and Killower	17.24	58		
Termoncarragh, Mullet	27.27	11		
Midland Lakes	3.23	124	2.00	2
Wexford	2.06	4030	2.68	28
Ireland, excl. Wexford	8.54	281	2.71	7
OVERALL	2.48	4311	2.69	35



**Figure 4.** Age ratios sampled among Greenland White-fronted Geese at Wexford 1970-2022 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 1970-2022.



*Flying Greenland White-fronted Geese on Colonsay*

*Photo: Ian Francis*



*Greenland White-fronted Geese, with Canada Geese and Greylag Geese, on the southwest side of Moine Mhor, Barloisnach, Argyll*

*Photo: Ian Francis*



*Greenland White-fronted Geese on Colonsay*

*Photo: Ian Francis*

## 40 years and (still) counting!

It seems hardly conceivable that the international Greenland White-fronted Goose Census has reached its 40<sup>th</sup> anniversary, charting the rise and fall of the population over those four decades.

Back in the early 1980s, the population was, arguably, the least known of all western European Goose populations, occurring in remote locations across Ireland and western Britain far from concentrations of waterbird counters. Yet, over the last 40 years, it has become probably one of the best known, thanks to the massive efforts of the counter network, the inputs of National Parks and Wildlife Service (NPWS) staff in Ireland, and Danish, UK, Irish, Icelandic, US and Canadian academics who have picked apart the complexities of its genetics, migration system, population dynamics, ecology, and movements within and between the traditional sites used.

Back in 1980 we knew a bit of the story but there were no processes to keep that knowledge 'fresh'. Major Robin Ruttledge in Ireland, and Malcolm Ogilvie in Britain had compiled the existing scattered information into a major inventory of sites published in *Irish Birds* in 1979. That was a massive step forward and established the broad picture. Their review has stood the test of time, with subsequent GWGS and NPWS counters locating just a few smaller flocks unknown to them.

The inventory had documented a major decline (and contraction of range) between the 1950s and the mid-1970s, evidence which was used to argue the case successfully for protection from shooting in Ireland and Scotland (from 1982/83). Yet there was no comprehensive monitoring to either track any population change, or to provide contemporary data to support the classification of internationally important Special Protection Areas under the EU Birds Directive adopted in 1979. Further, the co-occurrence of Greenland Whitefronts with much larger numbers of Barnacle Geese on Islay emphasised the need there for much finer-grained data to supplement the annual counts that Malcolm Ogilvie and Hugh Boyd from WWT had been undertaking on the island since the 1960s.

Led by the late Nigel Easterbee and Eric Bignal, the first steps were undertaken by the Nature Conservancy Council to institute monthly counts of Islay in 1981/82. That Islay monitoring developed into a four car, eight-person protocol that ran to the mid-1990s and provided fundamental data for the designation of multiple protected areas in the following decade.



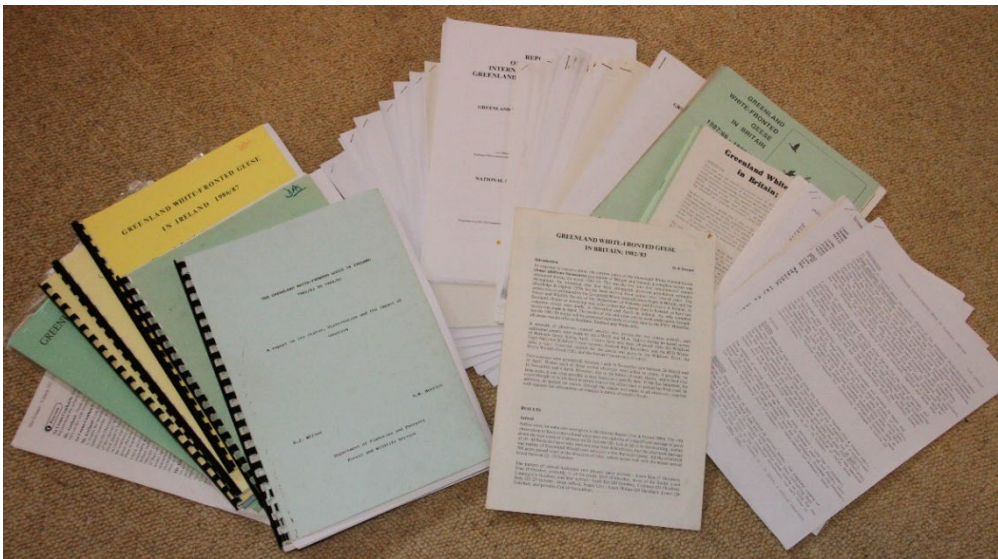
NCC's goose count team c. 1983. Left to right: Richard Thaxton (RSPB); Nigel Easterbee (NCC), Judy Stroud (GWGS); Rosemary Cockerill (NCC); Eric Bignal (NCC); David Stroud (GWGS) and behind the camera Dave Dick (RSPB).

Through 1981 and 1982, correspondence (lots of stamp-licking and trips to the letterbox back then!) had started to assemble the *ad hoc* counts that had undertaken since the *Irish Birds* review. On the back of this, it became clear that it might be feasible to undertake a more or less simultaneous census across the international range. An early meeting in Dublin with Brian Stronach, John Wilson and David Norriss from the National Parks and Wildlife Service (NPWS) established the good international working relations that have endured to the present. NPWS would take responsibility for covering the island of Ireland, whilst GWGS would cover Britain. A major step forward was financial support from the Wildfowl Trust, the World Wildlife Fund (UK) and the Nature Conservancy Council which allowed 'expeditionary' surveys to remoter parts of Scotland where no local counters could be located. These trips were crucial to get to grips with the many island flocks, including on Mull, Coll, Tiree, Jura and those scattered in North Argyll and Caithness. In particular, numbers on Coll, thought to be present in trivial numbers were found to be internationally important (leading to a subsequent SPA there).

But these trips were also very valuable in helping to 'build' the counter network through contacts with interested locals that we persuaded to send us their observations. The initial counter network was a mixed bag (then as now!) including gamekeepers, nature reserve wardens, a Minister's wife, and the owner of a Highland garage... The one thing they all shared, and indeed continue to share, is a fascination with this enigmatic goose.

Additional data in 1982/83 were forthcoming especially from the BTO/IWC *Winter Bird Atlas* which was then stimulating birdwatchers to visit remoter areas. Astonishingly, by the end of that first winter we lacked data from only one regularly used site – Lismore Island in North Argyll. A major tribute to all who made it happen.

Initially the Irish and British census reported separately, but from 2007/8 coming together to provide a joint annual report on the status of the whole population.



*Some, but by no means all, of 40 years of Irish and British census reports. So many words on one bird!*

That the census has endured is no less remarkable than its initial coverage. Some of the biggest glitches in coverage have been due to restrictions on access to the countryside consequent on the Foot and Mouth disease epidemic of 2001 and more recent 'lockdowns' of Covid-19.

The need to sustain monitoring coverage remains. At the outset, we would not have imagined that the population would double, only to halve again to leave a population essentially not dissimilar to what it was in 1982. Any hope of addressing that issue depends on the quality of data we collect and its subsequent use – so keep counting. **And thank you for your part in this 40-year story!**

*David Stroud*



## **Skein Dial – a new sculpture about Greenland White-front migration at Loch Lomond**

Loch Lomond is an important wintering site for Greenland White-fronted Geese, with recent counts peaking at just under 200 birds. The geese use farmland to the south of Loch Lomond as well as the RSPB reserve by the loch. The local RSPB team and many volunteers count the geese each winter, providing data for the International Censuses. The Greenland White-fronted Goose Study has been closely involved there over the years, and we have helped to provide information and advice to this exciting recent project below.

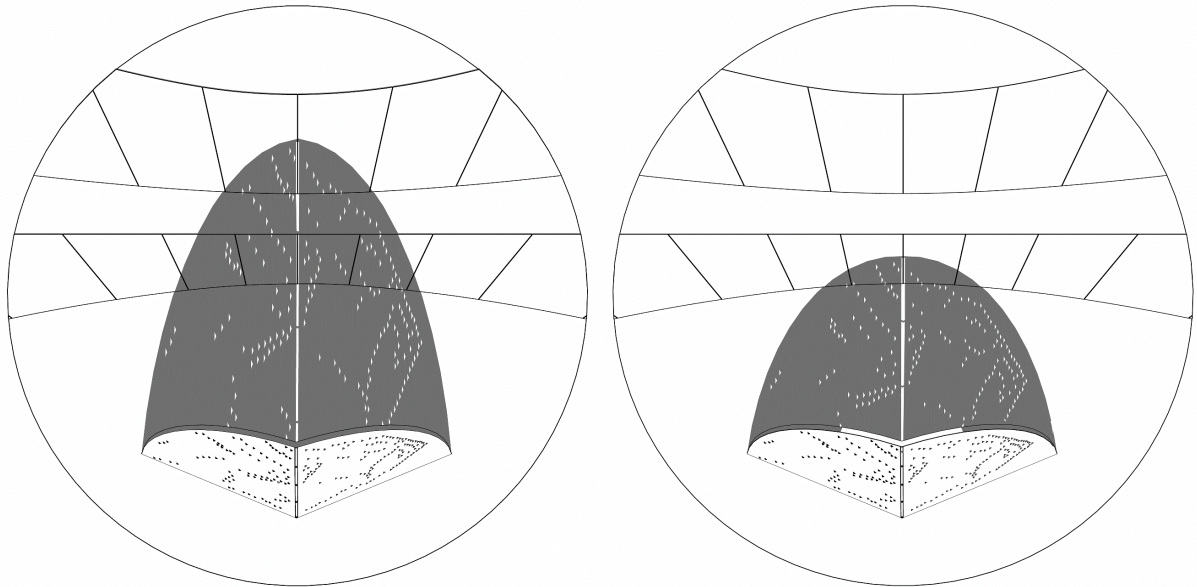
Skein Dial (2023) is a new permanent artwork inspired by the migration of Greenland White-fronted geese. It was created by artist and researcher Hannah Imlach (b.1989) for the RSPB's Loch Lomond nature reserve. The sculpture, which operates as a migration sundial, marks the seasonal arrival and departure windows of the Loch Lomond flock through the relationship between its two sculptural elements: the Gnomon and the Daylight Arcs.

Skein Dial the Gnomon is a perforated semi-circle orientated True North and set into the ground at an angle of fifty-six degrees, making it parallel to the Earth's axis. In fine weather, a channel of light between the Gnomon's two panels shows the time of day – each arc segment represents one hour – while the length and quality of the Gnomon's shadow describes the time of year – short and defined in the summer months, longer and more diffuse in winter. The shadow also depicts an arrow-shaped group of geese which moves across the ground over the course of the day, mirroring the many thousands of geese who fill Loch Lomond's skies in winter.



Hannah Imlach, *Skein Dial*, Corten steel and resin-bound gravel, 2023

The Daylight Arcs span Skein Dial's circular pad. These represent the average migration windows of Greenland White-fronted Geese into Loch Lomond. When the shadow of the Gnomon falls within the furthest, Autumn Arc the geese are in the process of arriving to overwinter in the nature reserve. When the shadow of the Gnomon falls within the nearest, Spring Arc the geese are in the process of departing Loch Lomond, first for Iceland and then for their breeding grounds in Greenland. The sculpture hopes to provoke anticipation of these seasonal movements and an awareness and appreciation of the presence of geese even when they are not easily visible to many local visitors.



Above left: The *Skein Dial* shadow falling within the Autumn migration arc, 5<sup>th</sup> – 26<sup>th</sup> of October  
Above right: The *Skein Dial* shadow falling within the Spring migration arc, 20<sup>th</sup> of March – 10<sup>th</sup> of April

Skein Dial was created through an iterative process of research, drawing and consultation involving ecologists, conservation staff and volunteers, sundial experts, fabricators and engineers. Imlach's sketchbooks document this journey, from field notes and photography, through sculpture ideas and experimentation, to detailed calculations and 3D virtual models. The resulting artwork is site-, species-, and time-specific, designed for the latitude and longitude of RSPB Loch Lomond and the specific migratory behaviours of the reserve's flock of Greenland White-fronted geese. It celebrates both the efforts of conservation staff and volunteers, and the lives of geese whose miraculous migrations continue through adversity.

Hannah Imlach has worked in the field of ecological art since 2011. Skein Dial was created as part of her PhD, a unique collaborative partnership between the RSPB and the School of GeoSciences, University of Edinburgh, supported by the Scottish Graduate School of Art and Humanities.

For more information visit: [www.hannahimlach.com](http://www.hannahimlach.com)

## ACKNOWLEDGEMENTS

It is so very difficult to express the extent of our deep gratitude to all the wonderful people who selflessly go out many times every season to find and count birds, sample age ratios and look for markers on geese. It is a thankless task, often in poor weather under difficult conditions, but we remain so very grateful to all of you for making the effort! This population seems to continue to suffer poor reproduction and falling abundance, so even as it become more difficult to find and count your local flocks, the effort is becoming ever more important. As ever, we are deeply grateful for all you have done for us this past and earlier winters and as ever, our sincerely apologies to anyone that we have inadvertently left out in the following listings!

In Britain, those people who have kindly contributed data and information during 2022/2023 include: Dave and Pat Batty, Yvonne Benting, John Bowler, Gavin Chambers, George Christie, Jay Cowan, Andrew Dacre, Pete Dale, Steve Duffield, Ian Fulton, Larry Griffin, Robin Harvey, Brian Henderson, David Holden, Ian Hopkins, James How, Hannah Imlach, David Jardine, Tracey Johnston, Ben Jones, Dave Jones, Russell Jones, John Kemp, Tom Kistruck, Morven Laurie, Mary Legg, Alan Leitch, Sinclair Manson, Kay-Leigh Marais, Paul Massey, Rae McKenzie, Bob McMillan, Amy Millard, Carl Mitchell, Mark Mitchell, Bill Neill, Alex Nichol, Alison and Donald Omand, Malcolm and Carol Ogilvie, Nicky Penford, Brian Rabbitts, Bryan Rains, Alan Reid, RSPB staff on Anglesey, Hannah Sharratt, Julian Smith, Andrew Stevenson, David and Judy Stroud, Rachel Taylor, Gareth Thomas, Arthur Thirlwell (deceased), Niall and Rachel Tierney, Ed Tooth, Morgan Vaughan, Luke Wake, Catriona White and Emily Wilkins.

For Ireland, these include: Joe Adamson, Dominic Berridge, Grace Bettayeb, Ann Bingham, Dermot Breen, Brian Burke, David Cabot, Helen Carty, Cian Cardiff, Cameron Clotworthy, Mary Coleman, Fionnbar Cross, Hazel Doyle, Joe Doolan, Robert Edge, Darren Ellis, Martin Enright, Seamus Feeney, Tom Fiske, Triona Finnen, Eugene Finnerty, Des Finnamore, Michael Gately, Paul Grangel, Helen Greenhalgh, Emma Glanville, Kieran Grace, Aiden G. Kelly, James Hegerty, Andrew Kelly, Paul & Andrea Kelly, Sean Kelly, Noel Keogh, Elaine Keegan, Jennifer Lynch, Lee McDaid, Patrick McDaid, David McDonagh, Eibhlin McGeever, Eoin McGreal, Emer Magee, Michael Martin, Andrew McMillan, Killian Mullarney, Tony Murray, Doireann Nicholls, Irene O'Brien, Aonghus O'Donail, Margaux Pierrell, Andre Robson, Tim Roderick, Fergal Stanley, Alec Schindler, Andrew Speer, Raymond Stephens, Sarah Stapleton, Dave Suddaby, Matthew Tickner, David Tierney, Martin Toye, Eamonn Twomey, Nickey Walsh, Alice Walsh, and John Wilson. Thanks also to Guðmundur A. Guðmundsson (Mummi), Jóhann Óli Hilmarsson and Olafur K Nielsen for their help collating Icelandic observations and to Paul Shimmings for data from Norway.

As in previous years, we are very grateful for permission to incorporate data from BirdTrack and WeBS, kindly provided by the British Trust for Ornithology (BTO), with our sincere thanks to Justin Walker and Neil Calbrade for organising the supply of data. BirdTrack is organised by the BTO for the BTO, Royal Society for the Protection of Birds (RSPB), BirdWatch Ireland, Scottish Ornithological Club and Welsh Ornithological Society. Data were provided by WeBS, a Partnership jointly funded by the British Trust for Ornithology, RSPB and Joint Nature Conservation Committee, with fieldwork conducted by volunteers. Although WeBS data are presented within this report, in some cases the figures may not have been fully checked and validated. Therefore, for any detailed analyses of WeBS data, enquiries should be directed to the WeBS team at the British Trust for Ornithology, The Nunnery, Thetford, IP24 2PU ([webs@bto.org](mailto:webs@bto.org)).

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 for his support. Thanks to Nature Scot for site coverage throughout Argyll, especially to 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. The census is only possible thanks to the financial support of the Joint Nature

Conservation Committee under their UK Goose and Swan Monitoring Programme and we thank Kirsi Peck for her support and help during the past few months. Finally our thanks to Colette Hall and the Wildfowl & Wetlands Trust for their many years of support for our annual census up until 2020/21 under the WWT Swan and Goose Monitoring Programme.

Please be aware that the international census periods to count Greenland White-fronted Geese in the coming winter will be as follows: **Autumn international census dates: 16-20 December 2023 and Spring international census dates: 9-13 March 2024.** However, as usual, we greatly welcome all counts from any dates, but the other monthly counts especially during these periods: 18-22 November 2023; 13-17 January 2024; 17-21 February 2024. Good luck and happy counting!



*Flying Greenland White-fronted Geese, Sunderland Farm, Islay*

*Photo: Ian Francis*