

GREYLAG AND PINK- FOOTED GEESE IN IRELAND 2017/18-19/20



BirdWatchIreland



I-WeBS



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Summary

Greylag Geese

- This report provides an update of the status of Greylag Geese, from both the Icelandic and Irish-breeding feral populations, during the winter period of winters 2017/18 to 2019/20.
- A peak count of 2,176 Icelandic Greylag Geese were recorded during the international Goose Census in November 2019, which constitutes around 2% of the flyway total.
- Icelandic Greylag Geese are known to frequent five sites in Ireland: Lough Swilly and Foyle (Donegal), Dundalk Bay (Louth), North Wicklow Coastal Marshes and Poulaphouca Reservoir (Wicklow) and River Suit Lower (Waterford). Icelandic Greylags are also occasionally recorded at Rogerstown Estuary in Dublin, though not with the same consistency as in previous years.
- The population of Irish-breeding feral Greylag Geese is estimated at 3,579-4,218 individuals during the winter period. This represents an increase of 109-147% since the last assessment in 2008. These estimates assume a high level of fidelity to the wider natal area during the non-breeding season.
- Twenty-seven extant flocks of feral Greylag Geese were recorded. Since 2007/08, three flocks decreased in number, nine flocks increased, and 13 new flocks became established. Both Donegal Bay and South Wexford flocks are considered stable. A further three flocks recorded in 2007/08 have not been seen in recent years.
- The Swilly/Foyle and River Shannon flocks showed increases of 610 (110%) and 219 (118%) birds respectively). Another three flocks showed increases of 100-200 birds compared to 2007/08 and six of the newly established flocks had peak counts of >100 birds in recent years. Numbers at the two urban feral goose flocks in Cork City and Arklow have declined, as has the South Mayo/North Galway flock, although it should be noted that a number of new flocks have established near the latter.
- Recommendations for the future monitoring of Irish feral Greylag Geese include coordinated breeding season counts, increased ringing effort, further data collection as to the origins of established flocks, examination of genetic origins and relatedness, and the collection of hunting bag data, to better inform their management.

Pink-footed Geese

- There has been a significant increase in Pink-footed Geese at flyway level in recent years, to a peak of 530,961 individuals in October 2015. That has been reflected in increased numbers and wintering range in Ireland. Between 2004/05 and 2008/09 there was an annual peak of 86 Pink-foots in Ireland, whereas totals of 629 and 225 were recorded in November 2018 and 2019 respectively, as part of the International Goose Census.
- Pink-feet were recorded at 26 sites between 2009/10 and 2015/16 (Lewis *et al.* 2019) and at 45 sites during the recent study period 2017/18 to 2019/20. Most of those sites were only used occasionally however, i.e. for brief periods during the winter and not on an annual basis. They were recorded in five sites in each of those three winters, in ten sites in two of the three winters, and in a single winter in the remaining 30 sites.
- The largest numbers of Pink-footed geese in the Republic of Ireland during the study period were at Lough Swilly, with a peak of 926 individuals in winter 2019/20. Dundalk Bay also hosted large numbers (peak 360 in 2017/18). Both sites were used on an annual basis, as were North Wicklow Coastal marshes, Tacumshin Lake and Wexford Harbour and Slobs, albeit in much smaller numbers.
- A total of 30 sites were used by Pink-footed geese in one of the seasons from 2017/18 to 2019/20. Pink-feet were recorded in a single month at 23 of these sites, in two months at five sites, in three months at one site and in four months at one site, indicating that for the most part these were likely to be birds only temporarily using the site before moving elsewhere.

Introduction

Goose Monitoring & I-WeBS

Annual monitoring of the distribution and abundance of wintering waterbirds is carried out in the Republic of Ireland through the Irish Wetland Bird Survey (I-WeBS). This monitoring programme, which commenced with the 1994/95 winter season, is delivered by BirdWatch Ireland under contract to the National Parks and Wildlife Service. I-WeBS monitors a large number of wintering waterbirds at 'typical' wetland sites (e.g. estuarine coast, inland lakes, river callows), but there are a number of species that use other habitats away from core I-WeBS sites and subsites (Lewis *et al.* 2019). In order to effectively monitor such species, additional, more focused and in some cases species-specific surveys are carried out (under the auspices of I-WeBS or by species-specific study groups) to better account for their distributions, population sizes and changes in both over time. All of Ireland's wintering goose populations utilise feeding areas away from core I-WeBS sites and therefore require more targeted monitoring efforts.

Icelandic Greylag Goose

The Icelandic-breeding Greylag Goose *Anser anser* population predominantly winters in northern Britain, with smaller numbers in Ireland, south-west Norway and the Faroe Islands, as well as some birds remaining in Iceland (Brides *et al.* 2019). An annual census (Icelandic-breeding Goose Census; IGC) is coordinated by the Wildfowl and Wetlands Trust (WWT) each November across their wintering range. Total autumn counts have exceeded 80,000 geese for much of the last 40 years, with over 100,000 birds estimated during periods in the mid-1980s and mid-2000s, and occasional decreases below 80,000 in the late 1990s and early 2000s (Brides *et al.* 2019). The most recent IGC results for Greylag geese (November 2018; Brides *et al.* 2019) recorded a total of 58,136 individuals (corrected figure; K. Brides pers. comm.) across their wintering range, of which 3.1% were recorded in the Republic of Ireland. Although wintering Greylag geese have been recorded in most Irish counties in recent years (Lewis *et al.* 2019), most of these are assumed to be from the resident (feral/naturalised) population. The sites used by flocks assumed to be of Icelandic origin are based on an assessment made in the winter of 2007/08 (Boland & Crowe 2008) and records of Greylags from these sites are compiled for the IGC each November.

Feral Greylag Goose

Much of Ireland's resident Greylag Goose population is descended from birds released in the 20th century (Boland & Crowe 2008). This group is referred to here as the 'feral' population, in keeping with previous literature (e.g. Merne 1986, Boland & Crowe 2008, Lewis *et al.* 2019). The term 'naturalised' may be more appropriate (or perhaps naturalised introduced) (Kampe-Persson 2010) and the historic status of breeding Greylag geese in Ireland is not fully clear (Boland & Crowe 2008, Mitchell *et al.* 2012). Although this population falls under the monitoring remit of the Irish Rare Breeding Birds Panel as a non-native breeding species and is recorded during the winter at wetland sites through I-WeBS, the true distribution and changes in numbers of the feral Greylag Goose population in Ireland has only been monitored intermittently and is not well understood. Birds determined to be from the feral population were recorded at 52 sites in the Republic of Ireland during I-WeBS counts from winters 2011/12 to 2015/16 (Lewis *et al.* 2019). Based on the 2007-11 Bird Atlas (Balmer *et al.* 2013), breeding Greylag geese were recorded in 10% of 10km squares on the island of Ireland, representing a 326% range increase in 20 years (since 1988-91; Gibbons *et al.* 1993).

Pink-footed Goose

The Pink-footed Goose *Anser brachyrhynchus* (hereafter 'Pink-feet') population that breeds in Iceland and Greenland winters almost exclusively in Britain, with small numbers visiting Ireland (Mitchell & Hearn 2004). Numbers have increased in recent years (Bridges *et al.* 2019) and the highest flyway population estimate ever recorded was in 2015 (536,871; Mitchell 2016). Their numbers in Ireland have also increased. Between 2004/05 and 2008/09 they reached a peak of 86 geese (mean 30; Boland & Crowe 2012), rising to 188 between 2011/12 and 2015/16, with a mean peak of 135 over those five years (Lewis *et al.* 2019). Despite being recorded at 33 sites during the latter period, few of those site counts reached double-digits and many involved single birds associating with flocks of other migrant geese and swans for short periods of time during the winter.

This Report

Since winter 2017/18, additional counts of Greylag and Pink-footed geese have been organised by the I-WeBS office and further supplementary counts compiled from a range of sources. This report provides an up-to-date picture of the status of both species (three populations: feral Greylag, migratory Icelandic Greylag, and Pink-feet) in the Republic of Ireland. Comparisons are made with the Greylag Goose distribution during the last comprehensive assessment in 2008 (Boland & Crowe 2008).

In the case of the Pink-footed Goose population, this is the first time their wintering status in the Republic of Ireland has been analysed in this level of depth.

Methods

The period under consideration in this report covers winters 2017/18 to 2019/20, although some additional records from the summer (of 2017) immediately before this period also informed the study. The consideration here of three years of data should minimise the influence of missing out on records from the most recent winter, however.

Greylag and Pink-footed geese are generally under-recorded during core wetland counts under I-WeBS (Lewis *et al.* 2019) due to the fact that they feed away from major wetland sites. With this in mind, goose counts from a broad range of sources were collated for this report. Those sources are as follows:

- Core counts from the main I-WeBS database
- Supplementary counts from the main I-WeBS database
- Targeted counts at key locations for the IGC each November, as organised by the I-WeBS office
- Appeals to the I-WeBS counter network via email and the *I-WeBS News* newsletter
- Appeals to NPWS Regional staff
- Appeals via BirdWatch Ireland social media (Facebook, Twitter)
- Following up records on social media (Facebook, Twitter) not otherwise submitted to BirdWatch Ireland or the I-WeBS office
- IrishBirding website (<http://www.irishbirding.com/birds/web>)
- BirdTrack (<https://www.bto.org/our-science/projects/birdtrack>) (formal data request)
- eBIRD (<https://ebird.org/>) (formal data request)

In the case of requests made to the regular IGC counters, I-WeBS counter network and broader appeals on social media, an ArcGIS mapping page and SurveyMonkey questionnaire were set up with the intention of providing a focal point for record submission and to ensure all relevant details were recorded. In practice however, counters preferred to submit records either directly via email or as part of their I-WeBS core counts. Each of the additional data sources proved invaluable in sourcing (often significant) counts not submitted directly to the I-WeBS office.

Greylag Goose

A special request was put to NPWS staff in August 2019 to provide counts of Greylag geese in their areas, in an attempt to capture an up-to-date picture of feral Greylag Goose flocks around the country in advance of the return of the Icelandic flocks. Given that individuals from the two Greylag Goose populations cannot be differentiated in the field, the origin of Greylag flocks in recent years has been largely based on targeted survey work in 2007/08 (Boland & Crowe 2008), as well as any subsequent summer or breeding records. Those flocks identified as being of Icelandic-origin are listed in Table 1. Where there is no such evidence, and a flock is not particularly close (generally >30km away) to a flock of known origin, birds at a site are deemed to be of 'unknown' origin at this time. The only exception to this is the Swilly/Foyle flock where both populations are known to mix and so counts of Greylags in August or September are treated as totals for the naturalised population and subtracted from winter counts to determine the size of the Icelandic flock using the area that winter.

Counts from all sources were matched to the corresponding I-WeBS subsite. Where a corresponding subsite did not exist in the I-WeBS database, a new one was created. Based on within-winter variations of counts at regular sites, and discussions with counters, there are still locations outside of I-WeBS sites used by Greylag geese – both known and unknown - and increased focus will be put on ensuring they are documented and counted in the coming years. Note that peak monthly counts are discussed here at site level and therefore reflect levels of site usage in a given month and year. These often give a good indication of flock size at a regional level (i.e. across multiple sites) but counts from the same month at different sites cannot always be added to determine regional flock size, except where counts took place on the same date at different sites.

Table 1. Sites known to be used by Icelandic Greylag geese, as per Boland & Crowe (2008).

Site	Main County
Lough Swilly & River Foyle *	Donegal
Dunfanaghy New Lake	Donegal
Dundalk Bay	Louth
Rogerstown Estuary & Skerries grasslands & Lambay Island	Dublin
North Wicklow Coastal Marshes	Wicklow
Poulaphouca Reservoir & Mountseskin/Gortlum	Wicklow
Barrow Estuary	Wexford
River Suir Lower	Waterford
* Used by both the Icelandic and naturalised resident populations of Greylag Goose	

Pink-footed Goose

Pink-footed geese have only recently begun to winter at sites in Ireland with regularity and in substantial numbers. Their recent distribution here is examined in terms of how regularly sites were used i.e. in how many of the last three years was the species recorded at a given site. Secondly, the number of months per winter that the species was recorded at a given site was considered (although this is more subject to count effort variation). Total numbers at a site within and between years are also discussed.

Icelandic-breeding Goose Census (IGC)

Each October and November the IGC is coordinated by the WWT across the wintering grounds of the Icelandic Greylag and Pink-footed Goose populations. The main census dates for Greylags are usually scheduled around a weekend in late November, although counts from outside that period from Republic of Ireland flocks are also included, where deemed representative of flock numbers by the I-WeBS office and local I-WeBS counters.

Census dates in late October and mid-November are organised to account for Pink-footed Goose numbers each year. Records from the Republic of Ireland are generally only submitted for the November census, but as with Greylag geese, records from outside the census window are also included where deemed appropriate by the I-WeBS office. The current study will allow for a more coordinated approach to Pink-footed Goose censusing in future years.

Results

Greylag Goose

The distribution and status of Greylag geese of feral and Icelandic origin are detailed below. Overall, 1,299 records of Greylag geese from 2017/18 (345 records), 2018/19 (492) and 2019/20 (392) were considered. Distribution of birds of Icelandic, feral and unknown origin are illustrated at national level in Figure 1. Peak monthly counts of Icelandic, feral and unknown Greylag geese at site level are presented in Appendix 1.

Icelandic-breeding Greylag Goose

The Icelandic Greylag Goose flock numbers during the November IGC in recent years are outlined in Table 2 below. Note that some IGC totals may differ from other numbers presented here due to additional count data subsequently being collated. Based on records submitted in recent years (as outlined in 'Site Accounts by County' below), the current distribution of Icelandic Greylag geese in Ireland is similar to that described in 2008 (Boland & Crowe).

Table 2. Numbers of Icelandic Greylag geese in Ireland during flyway censuses in November 2017, 2018 and 2019.

Flock	Nov-17	Nov-18	Nov-19
Swilly/Foyle (incl. Dunfanaghy)	1,077	1,226	1,553
Rogerstown	0	12	0
Dundalk Bay	111	517	375
North Wicklow Coastal Marshes	128	141	116
Poulaphouca Reservoir	19	73	8
River Suir Lower	43	113	124
Ireland Total	1,378	2,082	2,176

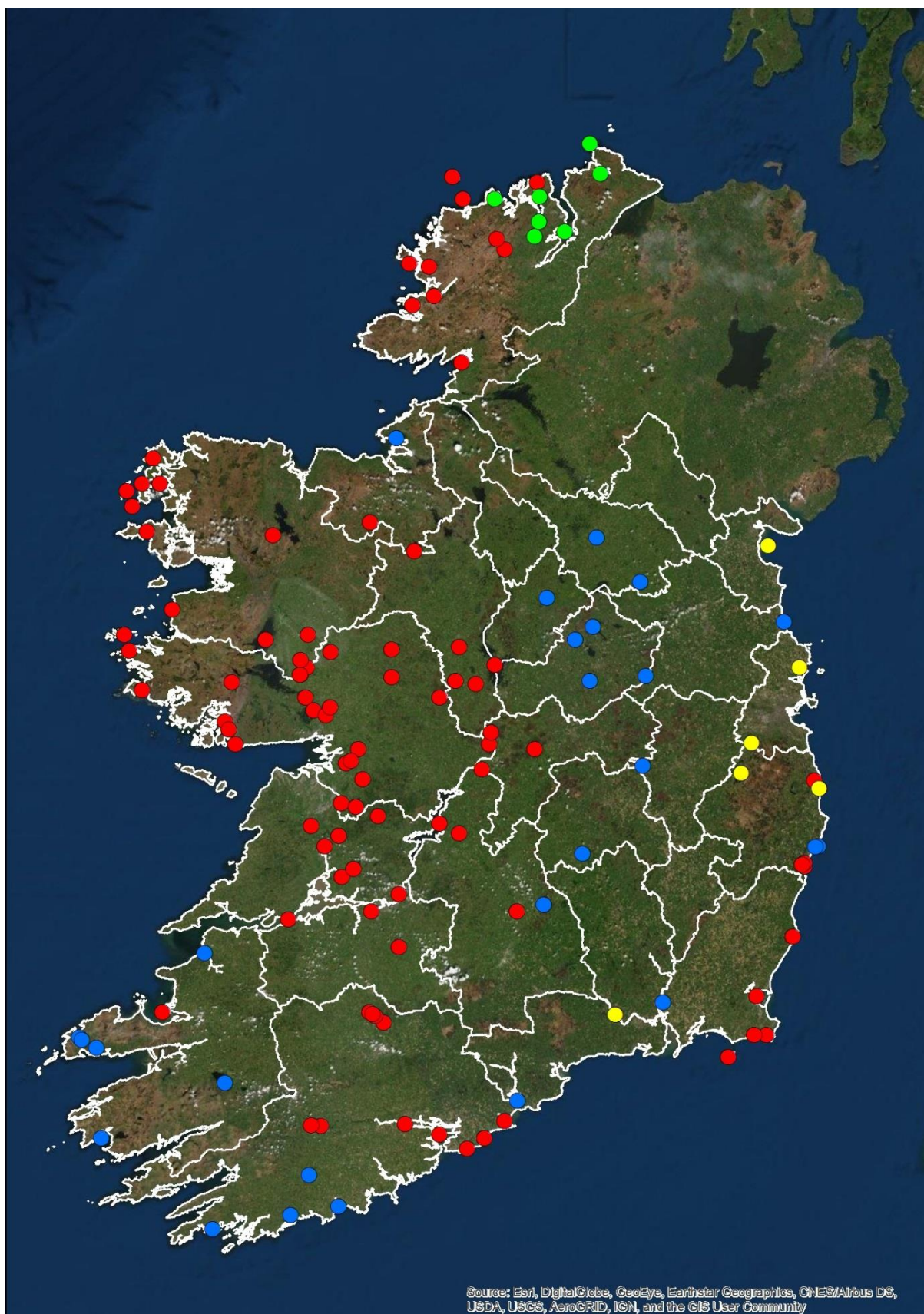


Figure 1. Sites in the Republic of Ireland where Greylag geese of Icelandic (yellow), feral (red) and unknown (blue) origin, as well as both Icelandic and feral birds (green), were recorded from 2017/18 to 2019/20.

Feral Greylag geese

I-WeBS sites have been grouped where movement of feral Greylag geese between them is known or suspected. These 'flocks' and their constituent sites are listed in Appendix 1 (Table A2, A3) and are discussed in 'Site Accounts by County' below. Table 3 shows the annual peak count for each flock during the current study period, based on counts at sites/subsites carried out on a single date. In many cases, the entire range (i.e. all known sites and subsites) used by a given flock will not have been counted on a single date and so these totals likely represent underestimates in some cases. In some cases, flocks seemingly use currently unknown feeding sites, and in others they use feeding sites that are known but not currently included under I-WeBS. For these reasons, as well as detection difficulties at some sites, the peak count for each flock over the three-season study period is used as the basis for comparison here, with results from the last comprehensive national survey of Greylag geese in 2007/08 (Boland & Crowe 2008).

Based on peak counts, the Republic of Ireland population of feral Greylag geese stands at 4,218 individuals (note: this does not include counts of flocks of unknown origin). This represents a 147% increase since 2008 (1,711 in ROI; Boland & Crowe 2008). This estimate assumes that birds from this population don't undertake distant seasonal movements, but rather spend the year using a network of sites in a given region. In support of this, for each flock there is evidence of Greylag geese in the area during both the breeding and wintering seasons. Furthermore, this does not include flocks of unknown origin. A more conservative estimate, based on the peak count for each flock counted within a given season rather than across three seasons, results in a total of 3,579 individuals (2019/20), which represents a 109% increase since 2007/08. There are insufficient data available to derive a complete population estimate based on counts from any single month during the study period.

Based on the period 2017/18 to 2019/20, three flocks decreased, nine flocks increased, and 13 flocks became established since 2007/08. Given the relatively low change in numbers, both Donegal Bay and South Wexford flocks are considered stable. A further three flocks recorded in 2007/08 have not been seen in recent years. The Swilly/Foyle and River Shannon flocks showed the greatest increases (increase of 610 (110%) and 219 (118%) birds respectively). Another three flocks showed increases of 100-200 birds compared to 2007/08 and six of the newly established flocks had peak counts of >100 birds in recent years. Numbers at the two urban feral goose flocks in Cork City and Arklow have declined, as has the South Mayo/North Galway flock, although it should be noted that a number of new flocks have established near the latter.

Table 3. Peak annual counts of feral Greylag Goose flocks in the Republic of Ireland during the period 2017/18 to 2019/20, compared to peak counts during the 2007/08 survey by Boland & Crowe (2008).

Flock	County	17/18	18/19	19/20	Peak	2007/08
Arklow	Wicklow	41	27	23	41	75
Druids Glen	Wicklow	3	3	6	6	-
North Wexford	Wexford	12	80	100	100	59
South Wexford	Wexford	146	90	133	146	136
Cork City	Cork	28	20	1	28	83
Inishcarra	Cork	120	168	163	168	42
North Cork	Cork	100	150	100	150	111
Ring of Kerry	Kerry	-	-	4	4	-
River Shannon	Limerick, Clare, Tipperary, Offaly	116	218	404	404	185
Boora	Offaly	6	35	90	90	26
Connemara	Galway	4	-	100	100	7
East Galway	Galway	19	24	7	24	-
Lough Corrib	Galway	160	137	296	296	-
South Galway	Galway	72	70	123	123	-
Mullet Peninsula	Mayo	246	5	206	246	139
South Mayo/North Galway	Mayo, Galway	2	174	63	174	261
South Mayo/West Galway	Mayo, Galway	119	136	157	157	6
Loughs Mask & Carra	Mayo	13	31	44	44	-
Lough Gara	Sligo, Roscommon	284	95	17	284	-
Lough Ree	Longford, Roscommon	-	6	40	40	-
Lough Funshinagh	Roscommon	42	106	15	106	-
Donegal Bay	Donegal	1	2	2	2	3
Dungloe & Gweebarra Bays	Donegal	120	171	182	182	-
Fanad	Donegal	-	-	30	30	-
Glenveagh	Donegal	2	2	8	8	-
Tory Island	Donegal	27	7	100	100	-
Swilly/Foyle	Donegal	870	936	1,165	1,165	555
						23*
Total		2,553	2,693	3,579	4,218	1,711

*Feral flocks not recorded in 2017/18-2019/20 (Lower Blackwater River, River Suir Middle, River Erne & Lough Oughter)

Greylag Goose Site Accounts

Site Accounts Structure

Greylag Goose distribution in the Republic of Ireland between July 2017 and June 2020 (i.e. 2017/18 to 2019/20) is outlined below, on a mostly county-by-county basis. I-WeBS sites are written in bold on first mention, together with the site code. Comparisons are drawn between this recent distribution and that outlined in Lewis *et al.* (2019) for the period 2011/12-2015/16 and for the 2007/08 season (Boland & Crowe 2008), when the last detailed examination of Greylag Goose distribution in Ireland was made.

Maps (Figures 2-17) illustrate Greylag Goose distribution at site level, colour-coded based on the origin of the flock (i.e. Icelandic, feral, both, unknown). Note that mapping at site level provides a general indication of the part of the county/country that a flock is found in and a site may encompass subsites from a large distance around the central grid reference. Site-level mapping is useful to compare Greylag distribution at a course level and should not be interpreted as fine-scale distribution data. Fine-scale distribution data (i.e. subsite level) can be requested via the I-WeBS office where needed.

Tables A1 to A4 in Appendix 1 outline the counts received for each site for the 2017/18, 2018/19 and 2019/20 seasons. Note that due to variable I-WeBS core count coverage and the partial nature of counts received through other sources, some counts are based on only some of the subsites within a site. With this in mind, the month-to-month variation at many sites in these tables is not indicative of true variation in site usage by Greylag geese. However, annual peak counts and the timing of records (e.g. summer months) give an indication of site usage and the direction of trend of flock numbers.

Site Accounts by County

Louth (Icelandic)



Figure 2. Sites in County Louth where Greylag geese of Icelandic (yellow) origin were recorded from 2017/18 to 2019/20.

Dundalk Bay (0Z401) hosts significant numbers of Icelandic Greylag geese each winter. The Greylags and other geese predominantly use the reclaimed grassland at Lurgangreen Fields (0ZS03), although when disturbed or when sward height is unsuitable, they will move to the saltmarsh at nearby Lurgangreen North (0Z497) or Lurgangreen South (0Z472) on the coast. Annual peak counts in recent years have numbered close to 350 individuals, although counts of ≥ 500 birds were recorded in November and February 2018/19. These may have included birds moving through from other sites, and the site's proximity to Scotland is perhaps noteworthy in that regard. Low numbers during some midwinter months suggest use of a feeding site away from areas regularly covered by I-WeBS. Nearby **Braganstown (0Z301)** was formerly used by hundreds of Greylags but was only "seldom used" by 2008

(Boland & Crowe 2008) and no Greylags have been seen here during winter surveys in recent years. Their absence has also been confirmed by local residents. The mean annual peak at Dundalk Bay was 327 between 2011/12 and 2015/16, with maxima of 702 in 2013/14 and 650 in 2010/11 (Lewis *et al.* 2019). Thus, the general pattern of 300-350 birds regularly using the site, and occasional counts of a couple of hundred higher than that, has been a consistent pattern in recent years. Boland & Crowe (2008) recorded 497 and 434 birds in November and January respectively of winter 2007/08, noting that this was “much lower than previous counts during the early 2000’s” indicating a decline to the present day.

Meath (Unknown)



Figure 3. Sites in County Meath where Greylag geese of unknown (blue) origin were recorded from 2017/18 to 2019/20.

There are no sites in Meath that are used by Greylag geese with any regularity. A flock of 13 individuals was recorded at **Croboy Lough & Fields (0VS23)** in January 2018, and a single bird was present a year later. There was also a count of 12 Greylags at **Nanny Estuary & Shore (0V401)** in December 2019. It is not possible to determine the origin of these flocks, although the proximity of the latter to other Icelandic Greylag Goose sites along the coast in neighbouring counties Louth and Dublin would suggest good potential for them to be Icelandic birds.

Dublin (Icelandic)

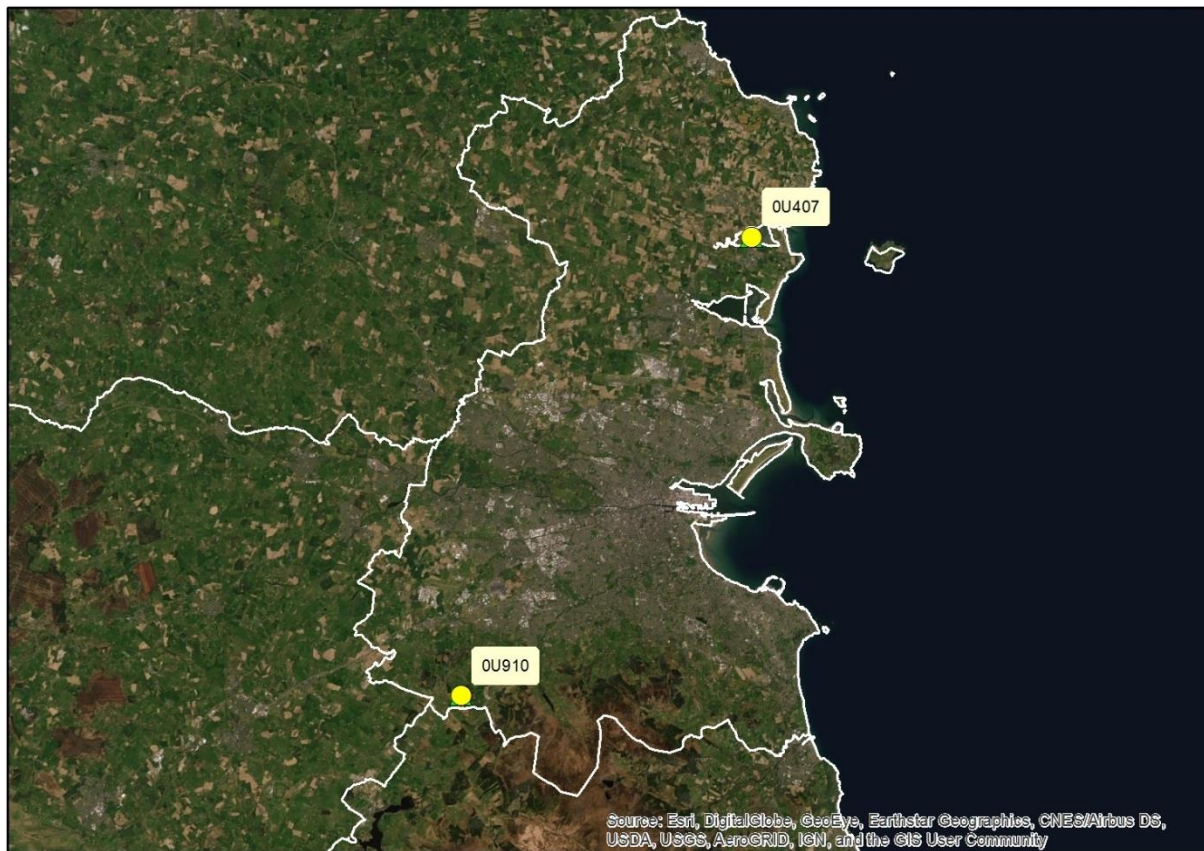


Figure 4. Sites in County Dublin where Greylag geese of Icelandic (yellow) origin were recorded from 2017/18 to 2019/20.

Icelandic Greylag geese have been recorded at both **Rogerstown (0U407)** and **Mountseskin/Gortlum (0U910)** in recent years. Despite regular I-WeBS count coverage at Rogerstown, Greylags were recorded during a minority of winter months in the last three years. Birds from Rogerstown have been reported as possibly residing on **Lambay Island (0U903, c. 6km offshore)**, having been seen flying in that direction and based on old records of Greylags on the island. Lambay was formerly used by >1,000 Icelandic Greylag geese until at least the 1980's, and at the time of a census in 1986 was the largest wintering site for the population in Ireland (Merne 1986). The island has not been routinely counted by I-WeBS in recent years and the most recent records of Greylags on the island are from 2008 (60 individuals in February and March). The possibility that birds from Rogerstown may join flocks in either Louth or Wicklow cannot be ruled out. Usage of Rogerstown has certainly declined, given that 120 birds were recorded there in November 2007/08 (Boland & Crowe 2008) and the mean annual peak between 2009/10 and 2015/16 was 51 birds (Lewis *et al.* 2019). A flock of 20 Greylags was recorded

at Mountseskin/Gortlum in January 2020 and this has long been known as an alternative site used by the **Poulaphouca (OT198, Wicklow)** flock.

Wicklow (Icelandic & Feral)

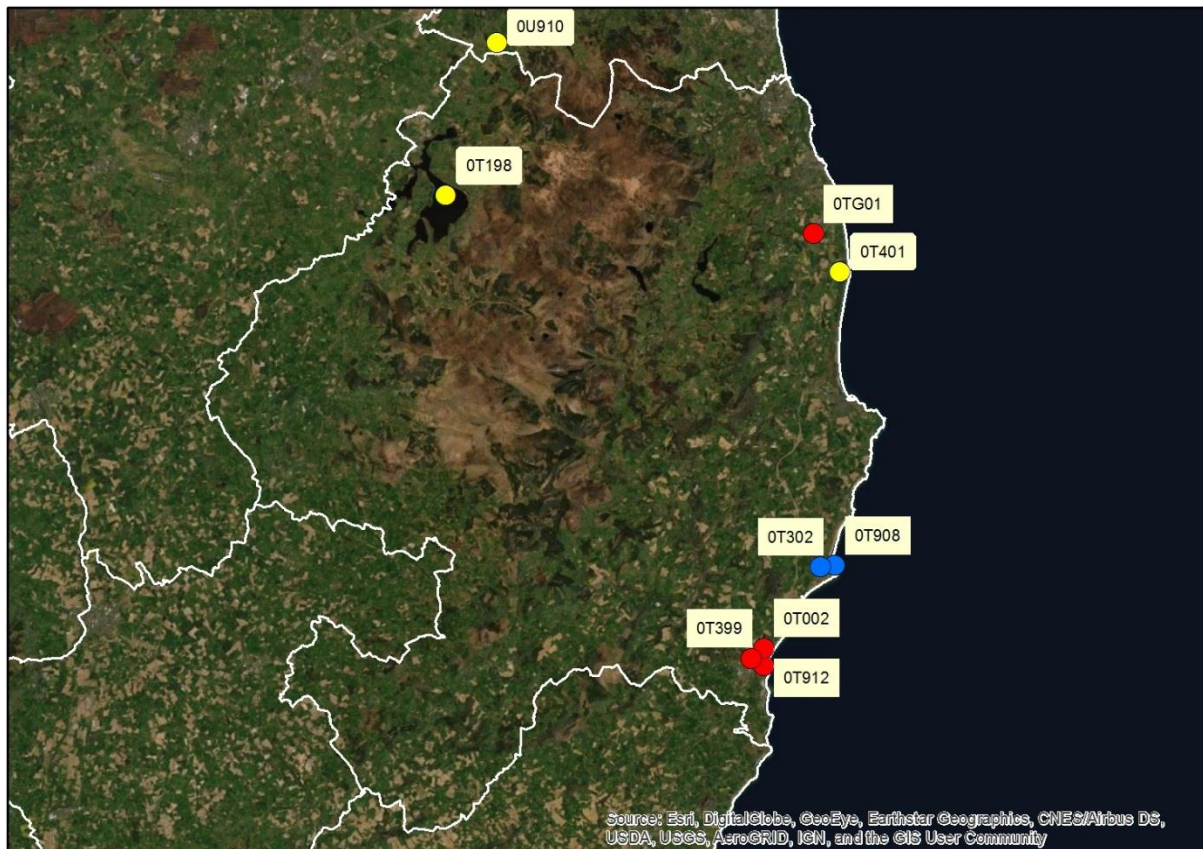


Figure 5. Sites in County Wicklow where Greylag geese of Icelandic (yellow), feral (red) or unknown (blue) origin were recorded from 2017/18 to 2019/20.

Wicklow hosts both Icelandic Greylag geese and a population of feral birds. The Icelandic population uses sites in the north of the county, namely **Poulaphouca Reservoir (OT198)** and **North Wicklow Coastal Marshes (OT401)**. Marked birds have been recorded at both sites within and between winters. The peak count at Poulaphouca during the study period was 96 birds in January 2018, with counts of up to 73 birds the following winter. When present, the geese almost exclusively use the Threecastles subsite (OT197). The very small numbers seen at this site in some midwinter months is possibly due to birds temporarily moving to nearby locations including **Mountseskin/Gortlum (OU910)** in Dublin. Depending on habitat availability, some birds may also locate to North Wicklow Coastal Marshes for extended periods. Numbers there are consistently higher through the winter, with regular counts of >120 and occasional counts in excess of 200 birds. Along the coast, the geese are generally found in Webb's field (OT502), elsewhere between Kilcoole and Newcastle (OT903) or further south between Kilcoole and Five Mile Point (OT902). One grassland feeding site at Five Mile Point has recently been afforested. Boland & Crowe (2008) reported numbers of around 200 birds in 2007/08, similar to

numbers recorded in recent years, although peak counts of 315 in December 2007 and 501 in 1999/2000 were much higher than in recent years. Comparisons with annual peak counts in 2007/08 and previous years suggest decreased usage of Poulaphouca by Greylags in recent decades (Boland & Crowe 2008).

The flock at North Wicklow Coastal Marshes was occasionally recorded venturing further south and inland around the time of the 2008 report (Boland & Crowe) and this may account for the single count of 73 birds at **Brittas Bay & Mizen Head (OT908)** in late-October 2018. Small numbers (1 or 2 birds) recorded at **Buckroneys Fen (OT302)** could have been either Icelandic or feral birds.

A pair and a family group of resident feral Greylags have been recorded on the ponds at **Druids Glen (OTG01)** Golf Club and Hotel in recent years. Otherwise Wicklow's resident Greylag population is largely confined to the south of the county around Arklow, including at **Arklow Ponds (OT002)**, **Arklow Harbour (OT912)** and the **Avoca River (OT399)**. Birds move between these sites and have numbered 20-40 individuals each year. Boland & Crowe (2008) indicated that this flock has been present since the late 1980's and early 1990's, reaching a peak of 166 birds in 2005/06. A peak of 75 birds was recorded in winter 2007/08 and numbers have seemingly declined since.

Wexford (Feral)

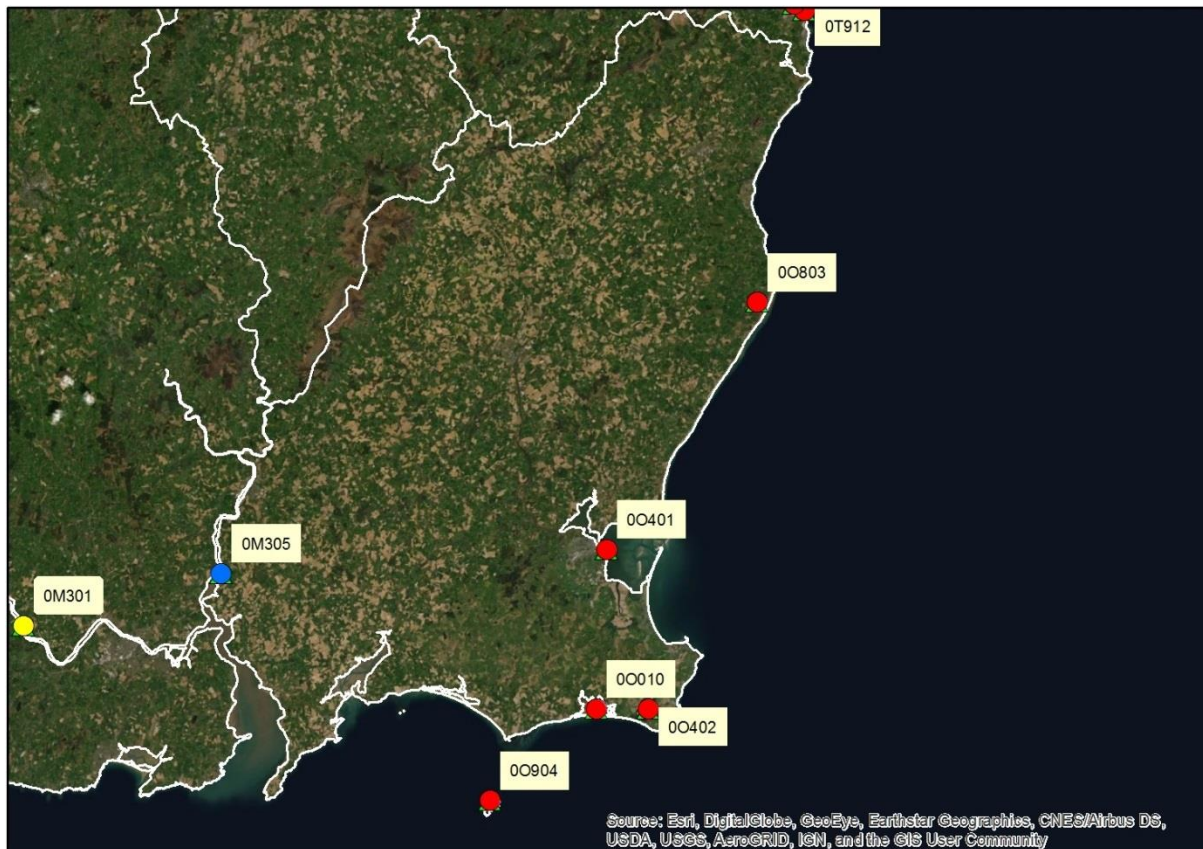


Figure 6. Sites in County Wexford where Greylag geese of feral (red) or unknown (blue) origin were recorded from 2017/18 to 2019/20. Icelandic (yellow) Greylag Goose location in Waterford also shown.

All of the regularly-occurring flocks of Greylag geese in Wexford are of feral origin. The flock at **Cahore Marshes (OO803)** first established in 1995/96, increasing to 34 by 2001/02 and 63 in 2007/08 (Boland & Crowe 2008) and reaching 100 birds in 2019/20. Within-winter count variation has been previously attributed to birds being undetected in patches of dense vegetation. Given the extent of fluctuation and the fact that the highest numbers coincide with the wintering period for Icelandic Greylag geese, further survey effort is recommended between June and September to confirm the size of the resident feral flock and determine if Icelandic birds are using the site during mid-winter.

Historically, **Wexford Harbour & Slobs (OO401)** was used by Icelandic Greylags – over 6,000 individuals throughout the first half of the 20th century, which declined rapidly to a few hundred in the 1950's and fewer than 10 birds in most years by the mid-1980's (Merne 1986). More recently, small numbers of feral Greylag geese have been present on the North Slob (OO499) and interchange with feral birds at Lady's Island Lake (OO402) is suspected. A large feral flock breeds at Lady's Island Lake, with peak

counts of 90-146 individuals over the period 2017/18 to 2019/20. Numbers were similar during the period 2009/10 to 2015/16 (mean 104, peak 147; Lewis *et al.* 2019) and still similar to the 2007/08 peak of 136 (Boland & Crowe 2008). This is one of the Irish-breeding flocks that is strongly suspected to have originated from gun club releases and was first documented in the 1980s (Merne 1986). Nesting attempts in certain parts of the lake are destroyed under license (Inish and Sgarbheen islands), for the benefit of a number of species of conservation concern that nest there (terns, gulls, wildfowl). This is likely helping to keep the Greylag population at a relatively stable level. The geese do continue to breed in other parts of the site, however. There is some movement of birds between this site and nearby **Tacumshin (00010)** as well as Wexford Harbour & Slobs. Around 30-70 Greylag geese were present at Tacumshin during the mid-winter period for each of the three winters considered here. Numbers outside this period varied a little, but were generally low, likely the result of birds returning to Lady's Island Lake to nest. Winter peaks of 49-95 individuals were recorded here between 2009/10 and 2015/16 (Lewis *et al.* 2019). Two Greylag geese were recorded on Great Saltee in early April 2014, again likely to be birds from Lady's Island.

A flock of six Greylags were recorded at Fisherstown Slob (00393) in the **River Barrow (Cheekpoint-New Ross, 0M305)** site in November 2018. Given the date and the lack of any known flocks in the immediate vicinity, it is not known if these birds were of Icelandic or feral origin. A flock of potential Icelandic origin seemingly became established here in the early 2000's (Boland & Crowe 2008), with links to the **River Suir Lower (0M301)** flock.

Waterford (Icelandic)

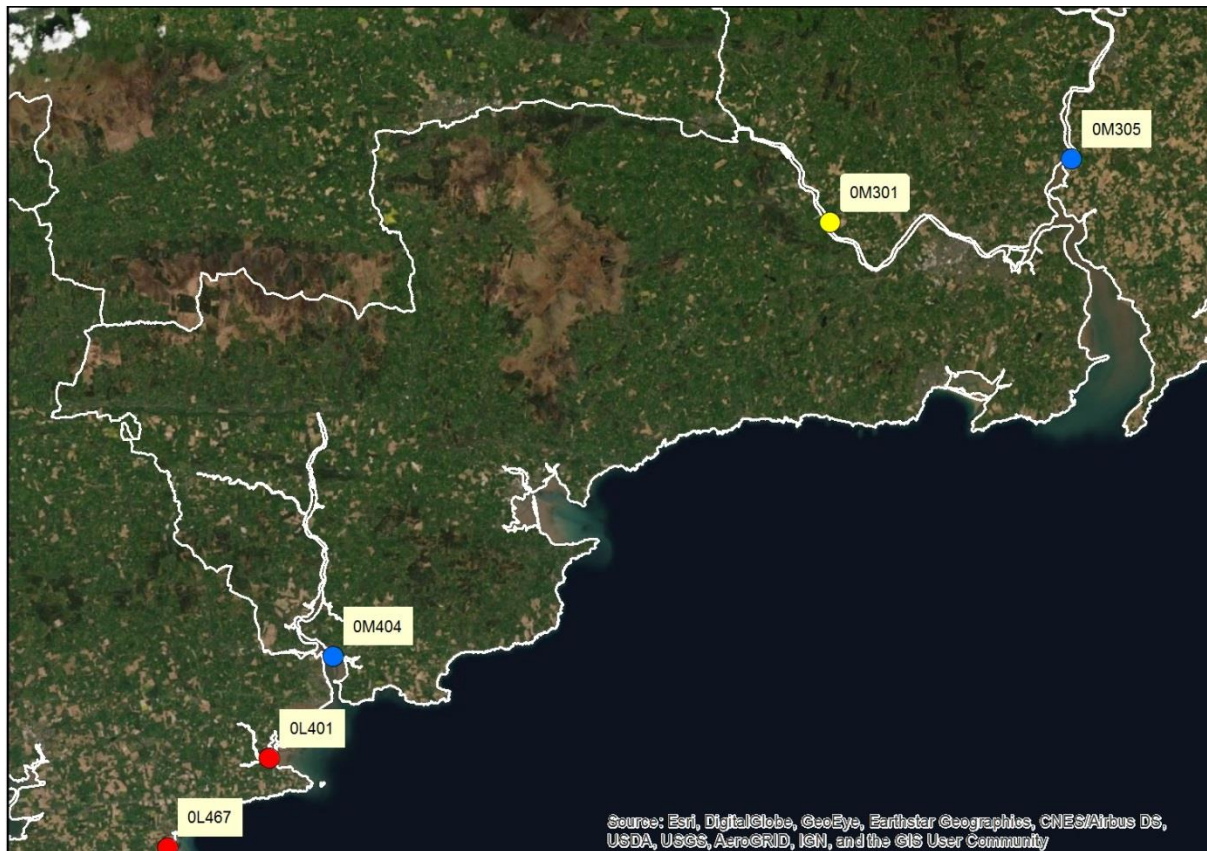


Figure 7. Sites in County Waterford where Greylag geese of Icelandic (yellow) or unknown (blue) origin were recorded from 2017/18 to 2019/20.

The **River Suir Lower (OM301)** is the most southerly site in Ireland that is used by Greylag geese from the Icelandic population. Greylags are present throughout the winter, with peak counts of 216-238 birds in each of the last three years, although this represents a decline from previous years. Between 2009/10 and 2015/16 the mean annual peak was 312 individuals, with an exceptionally large peak count of 564 birds in 2011/12 (Lewis *et al.* 2019). Before that, a peak of 740 was recorded in 1997/98 but the trend around 2007/08 was for numbers in the low hundreds (201 in November 2007). The flock is most often recorded at Fiddown - Tibberaghny (OM389) but also relies on the stretch at Derrigal – Portnascully (OM361). Small numbers of geese, assumed to be from this flock, were recorded at Tramore Backstrand in the past (Boland & Crowe 2008), but Greylags were not recorded there during the current study period.

A single Greylag, of unknown origin, was recorded at the Blackwater Estuary (OM404) in early 2020.

Cork (Feral)

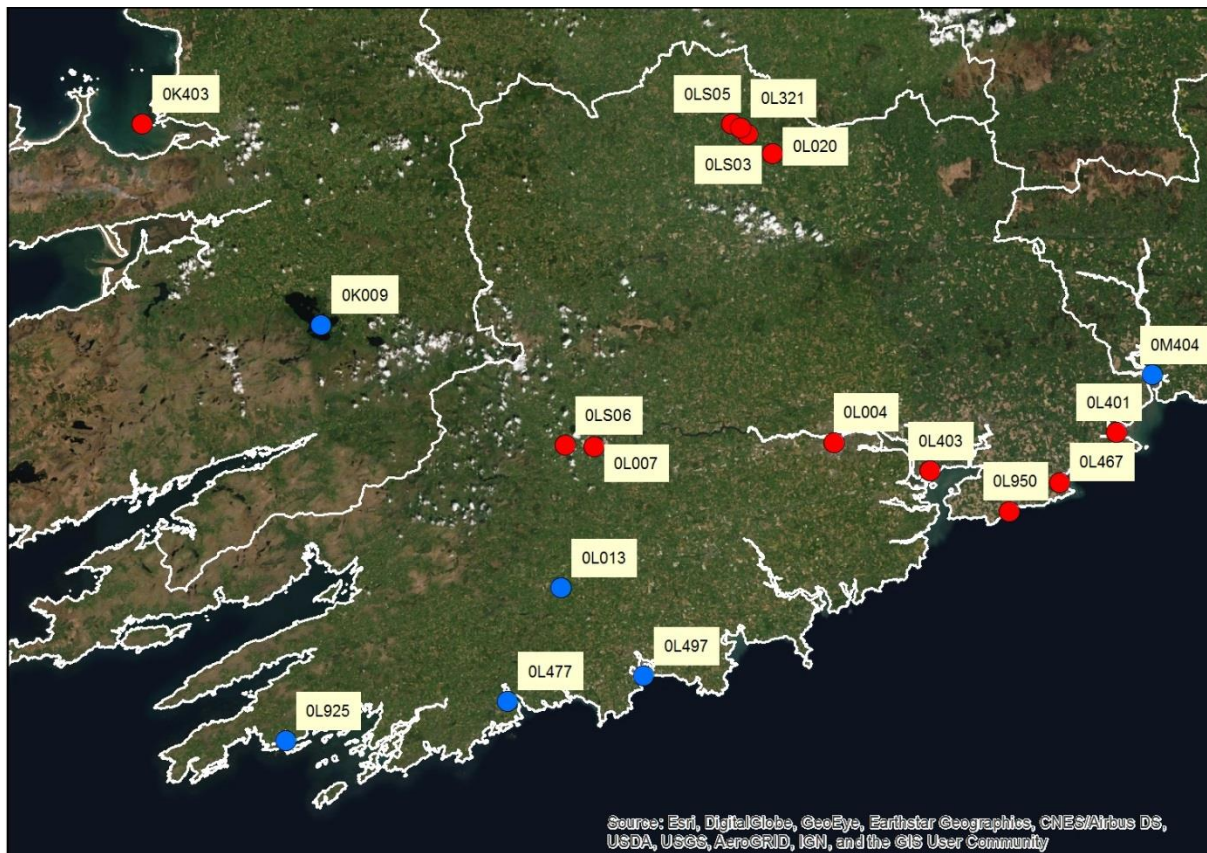


Figure 8. Sites in County Cork where Greylag geese of feral (red) origin were recorded from 2017/18 to 2019/20.

There are well-established feral flocks in Cork, in **The Lough (OL004)** in Cork City, further east along the River Lee at **Inishcarra Reservoirs (OL007)** and in the north of the county around **Kilcolman Marsh (OL020)**. The breeding population at The Lough is small, ranging between 20 and 28 birds during the current study period. This is an urban park with other domesticated and non-native species resident and breeding. This site is not routinely counted for I-WeBS and so all records of Greylag geese from the site came from Birdtrack and eBird. A single record of one Greylag Goose in Cork Harbour in December 2019 is likely to be a bird from the nearby feral flock.

The feral flock at Inishcarra Reservoirs reached annual peak counts of 70-168 individuals from 2017/18 to 2019/20, which represents a trebling of that from 2007/08 (Crowe & Boland 2008) and an increase from annual peaks from 2011/12 to 2015/16 (mean 97, peak 130; Lewis *et al.* 2019). This flock was also recorded nearby at **Toon River Callows, Parkanillane (OLS06)** in September 2019 (163 birds).

In north Cork, Boland and Crowe (2008) reported a peak count of 111 Greylags at Kilcolman in 2007/08. The recent peaks of around 100 birds each year from 2017/18 to 2019/20 indicate that this flock has remained largely stable in the intervening period. It should be noted that this site is not routinely counted for I-WeBS and so recent records have been estimates sourced from IrishBirding.com. From the limited data available, a pattern of peak numbers in January and afterwards is evident, as it was in 2007/08 (Boland & Crowe 2008), which is likely due to increasingly favourable feeding conditions as water levels increase. Birds from this flock have also been recorded at **Awbeg River (OL321)** (60 birds in December 2018), **Buttevant (OLS03)** (60 in December 2018) and **Scart Bridge (OLS05)** (65 in December 2018, 100 in December 2019).

The only other site in Cork with multiple records of Greylag geese during this study period is **Ballycotton Shanagarry (OL467)**, where two birds were recorded through much of winters 2017/18 and 2018/19. Given that these birds were present in September of both years and the proximity to Cork City, they are likely to be of feral origin. There were also single records of birds assumed or known to be of feral origin at **Ballymacoda (OL401)** (1 bird in February 2020) and **Ballybranagan (OL950)** (7 in October 2019), and birds of unknown origin at **Ballynacarriga Lake (OL013)** (1 in January 2020), **Clonakilty Bay (OL497)** (1 in September 2017), **Glandore Harbour/Union Hall (OL477)** (2 in June 2019) and **Croagh Bay (OL925)** (1 in March 2018) during the recent study period.

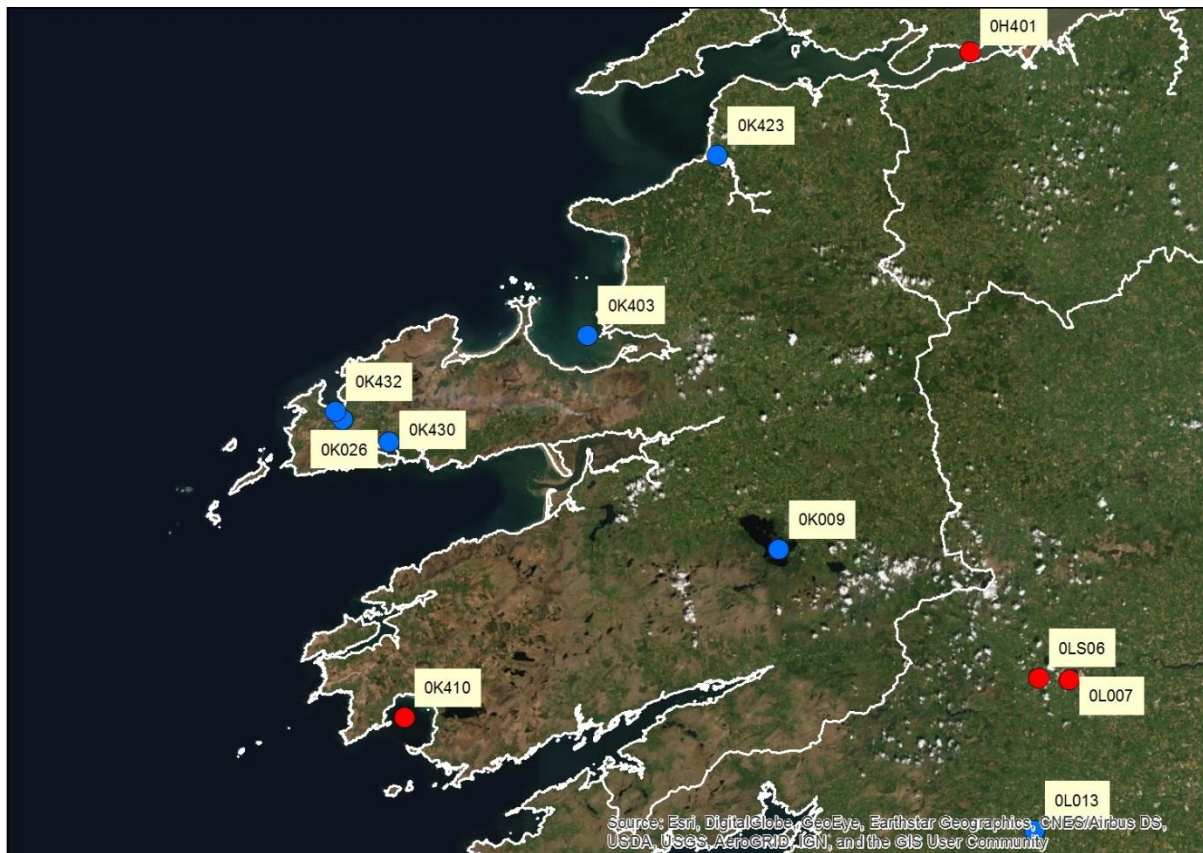


Figure 9. Sites in County Kerry where Greylag geese of feral (red) and unknown (blue) origin were recorded from 2017/18 to 2019/20.

Greylag geese were recorded at seven sites in County Kerry between winters 2017/18 and 2019/20. Birds were recorded between late-September and early March and were only present irregularly. As a result, in most cases it is not possible to ascertain whether they are of feral or Icelandic origin. Greylags are known to breed at Lough Currane (1-3 pairs in recent years; M. O’Clery pers. comm.) near **Ballinskelligs Bay (OK410)**, where four Greylags were seen in October 2019.

Cashen River & Estuary (OK423) and **Smerwick Harbour (OK432)** were the only two sites in Kerry where Greylags were recorded in more than one of the three years under consideration here. Sixteen birds were present at Cashen River & Estuary from December to March 2017/18, with one further record of six birds in January 2020. At Smerwick Harbour, two birds were seen in March 2018 and four birds the following December. Elsewhere, there were single birds in **Dingle Harbour (OK430)** and **Reask Lagoon (OK026)**, two birds in **Lough Leane & Killarney Valley (OK009)** in late-September 2018 and two Greylags at **Tralee Bay, Lough Gill & Akeragh Lough (OK403)** in December 2019.

Limerick (Feral)

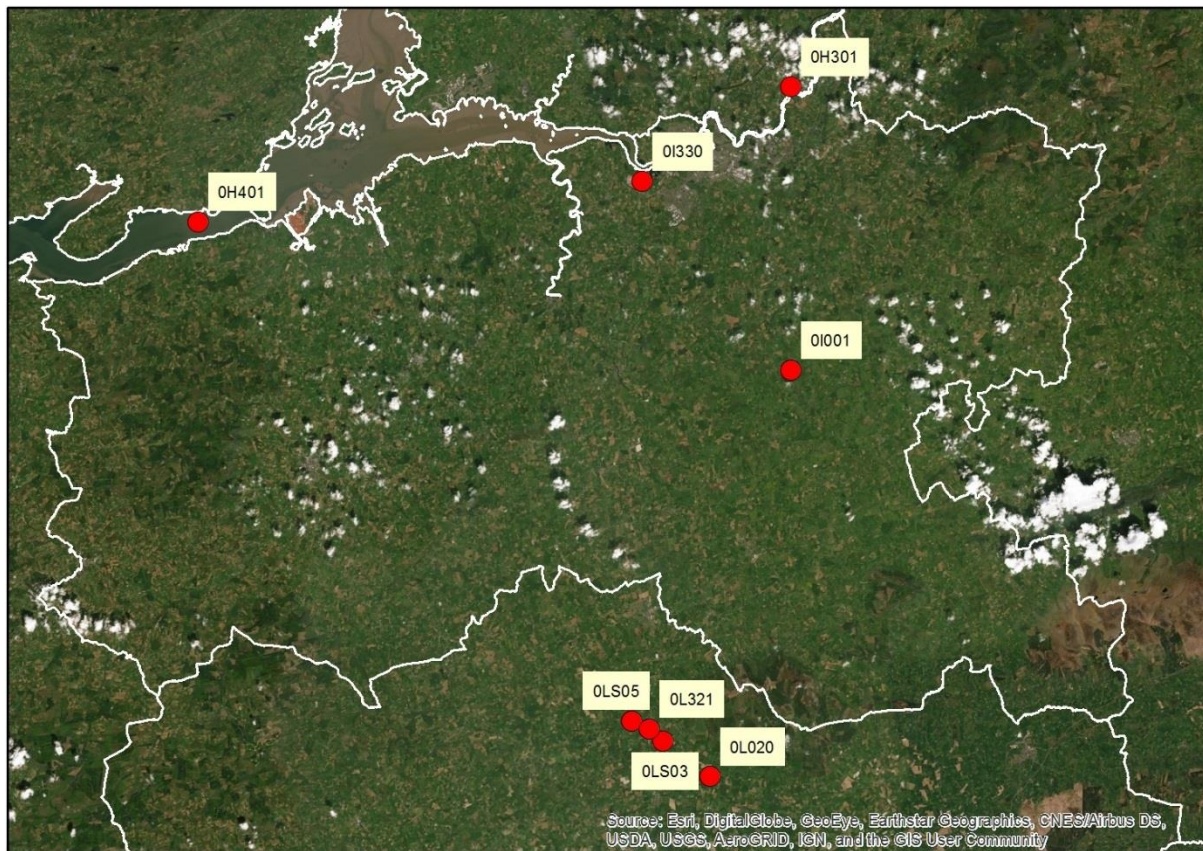


Figure 10. Sites in County Limerick where Greylag geese of feral (red) origin were recorded from 2017/18 to 2019/20.

The main feral flocks in Limerick are centred around the River Shannon. These birds are often found on both sides of the river and estuary, and therefore in neighbouring counties to Limerick. A peak count of 218 Greylags was recorded at **Shannon & Fergus Estuary (OH401)**, which covers subsites in both Limerick and Clare, in December 2018. This is in line with the peak of 238 from 2009/10 to 2015/16 (Lewis *et al.* 2019) and represents a notable increase from the 139 birds recorded here in 2007/08 (Boland & Crowe 2008). The flock has been recorded at three subsites in the three years considered here, namely Bunlicky Lake (OI003; a known breeding location), Coonagh Ponds (OI013) and Bunlicky - Corbally Limerick City (OI486). There has been significant variation in counts from month to month, and between years, at this site which is likely the result of the dispersal of birds within and from the site, as well as difficulties in obtaining complete and coordinated counter coverage of the site. There is undoubtedly interchange with the neighbouring **River Shannon (Lower) (OH301)** site and likely some movement between the Shannon and **Lough Gur (OI001)**. On the River Shannon (Lower), Greylag geese are predominantly found at Reboge (OI326) between Limerick City and University of

Limerick, and the stretch from Killaloe to O'Briensbridge (0H397) on the Clare side, although breeding is known further upriver at Castleconnell (0IS02). Numbers ranged from 2 to 44 during the winter months from 2017/18 to 2019/20, again likely the result of both dispersal and coverage difficulties. The Shannon estuary and neighbouring areas was formerly used by Icelandic Greylag geese until at least the 1980's (Merne 1986).

Further afield, Greylag geese have been regularly recorded at Lough Gur, although numbers mid-winter have ranged from 5 to 39 over the current study period, likely due to variable movements of birds to and from the Shannon (<20km away). Eleven birds were present during the breeding season in June 2017, immediately prior to this study. Lastly, a flock of 20 Greylag geese was recorded at **Mungret (0I330)** in early July 2019.

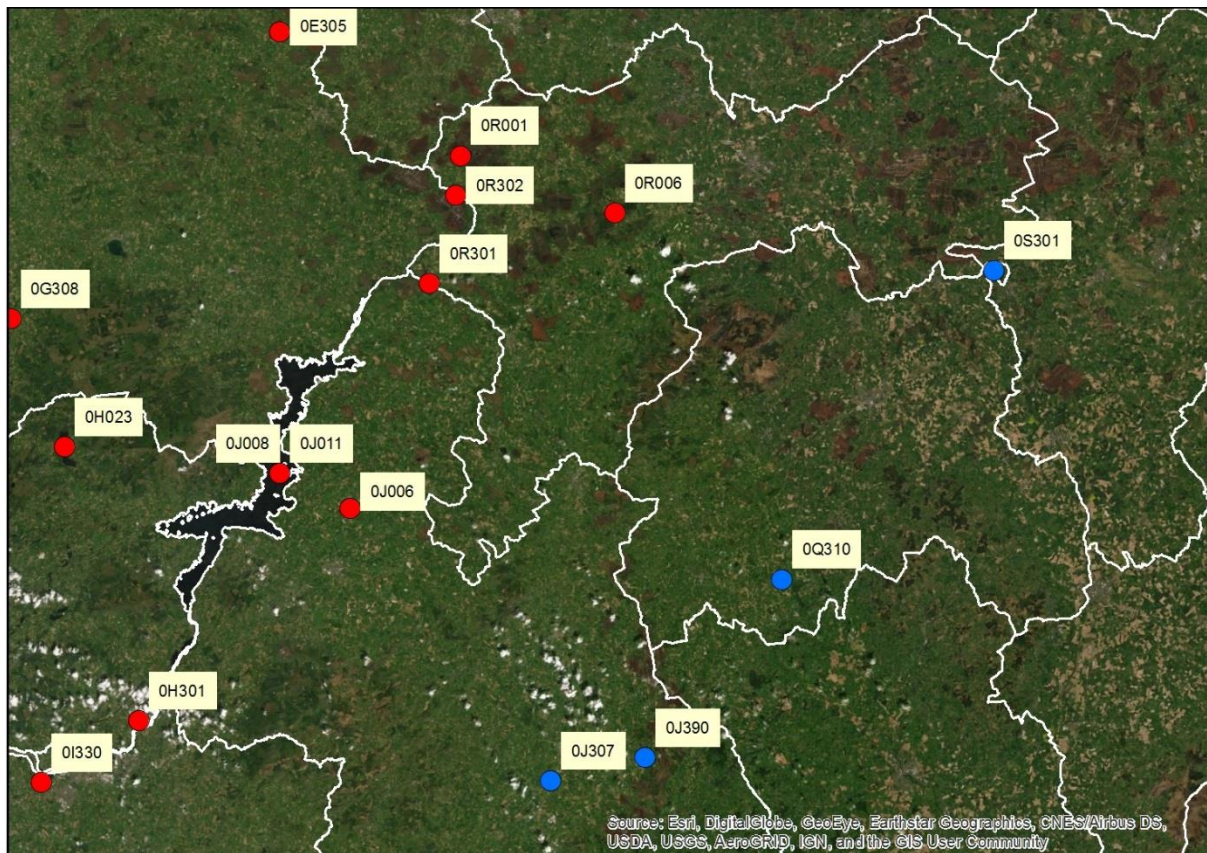


Figure 11. Sites in Counties Tipperary, Offaly, Laois and Kildare where Greylag geese of feral (red) and unknown (blue) origin were recorded from 2017/18 to 2019/20.

County Tipperary is seemingly not regularly used by Greylag geese, from either the feral or Icelandic populations. A flock of 250 Greylag geese was recorded on **Lough Eorna (0J006)** in early-September 2019. Previously, Boland & Crowe (2008) reported a peak of 45 birds there in November 1997 and numbers in the decade that followed rarely exceeded 10 birds. The count of 250 geese during the current study period seems likely to be the result of a temporary influx of birds, likely from the River Shannon (Lower) and Shannon & Fergus Estuary. Counts of four and two Greylag geese were recorded on the Tipperary side of **Lough Derg (0J011 aerial, 0J008)** in January and February 2018 and a flock of 20 geese was recorded on the Clare part of the lake in January 2020. Twenty Greylag geese were recorded at **Cabragh Wetlands (0J307)** and two on the **Clover River (0J390)** in January 2020. Given that these sites are quite far away from any regularly-used Greylag Goose site, the origins of these birds are considered unknown. Boland & Crowe (2008) previously reported small numbers of feral Greylags along the **River Suir Middle (0J301)** in the south of the county but Greylags have only been recorded there irregularly since the 1990's, with a peak count of 9 birds (January 2011).

In County Offaly, there is a feral flock that nests on the lakes in the cutover bog in **Boora Lakes – Back Lakes Finnamores (OR006)** which reached a peak of 75 birds in September 2019, with lower counts and only occasional records in previous winters. A group of six individuals recorded at **Blackwater Railway Lake (OR001)** in November 2018 is also likely to be from this flock. Boland & Crowe (2008) reported birds from this flock at the Tumduffmore Wetlands (OR009) subsite, and also at **Turraun Lake (OR002)** site although no records were received of geese here during the current study period. Elsewhere in Offaly, Greylag geese were recorded on both the **Little Brosna Callows (OR301)** and **Shannon Callows (OR302 aerial, OR303)** in each winter from 2017/18 to 2019/20. Numbers in winter 2019/20 reached 200-300 birds, moving between the Little Brosna and Shannon Callows, but predominantly found on the cutover bog east of Clonfert (Galway) (B. Caffrey pers. comm.). They are not thought to nest locally, but are likely birds dispersing from the River Shannon (Lower) and Shannon and Fergus Estuary. Annual peak counts ranged from 13 to 75 on the Shannon Callows. No Greylags were recorded on either the Shannon Callows or Little Brosna during the 2007/08 survey (Boland & Crowe 2008).

Counts of one and two Greylag geese were recorded at the **Durrow Curragh (River Erkina) (OQ310)** in Laois in winter 2018/19 and there was a single count of four individuals at **River Barrow (Monasterevin - Portarlinton) (OS301)** in December 2019. The origin of these birds is unknown, and with these two minor exceptions neither Laois nor Kildare were used regularly by Greylag geese during the recent study period.

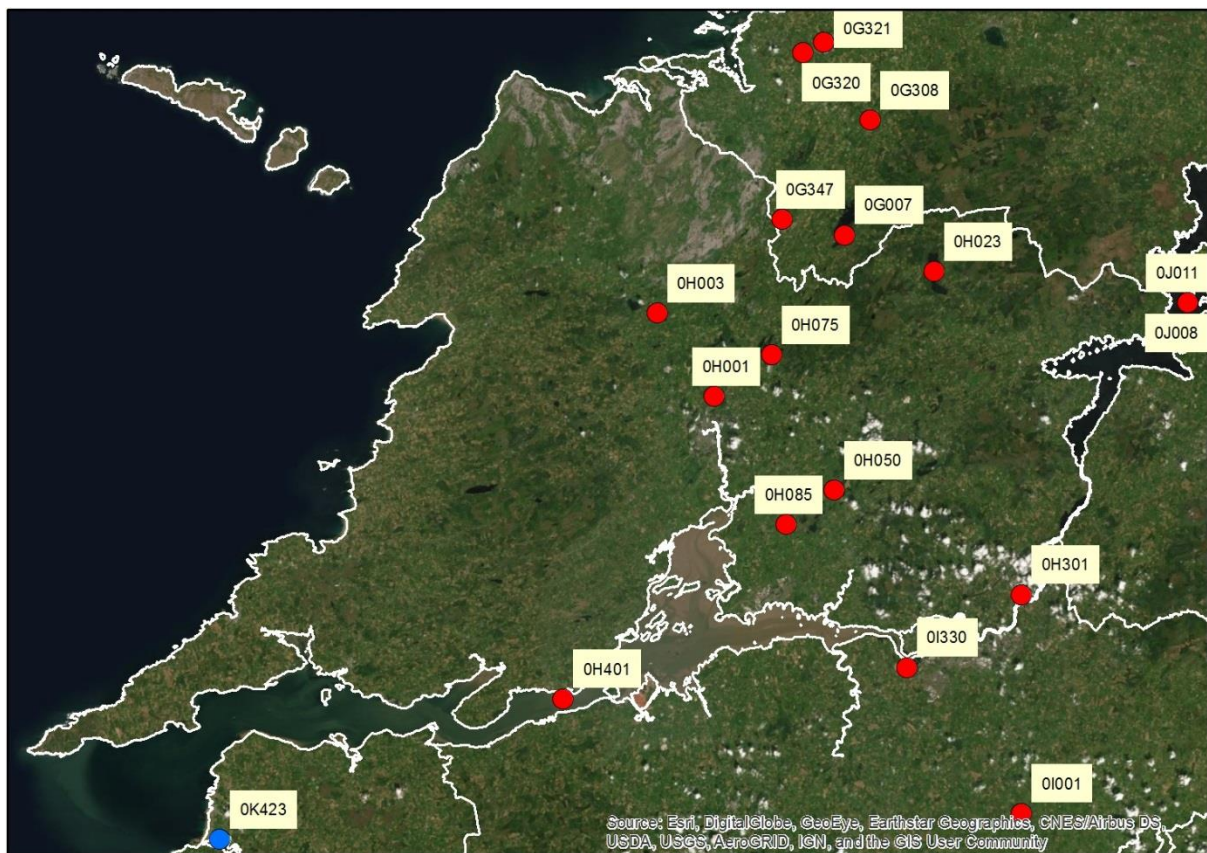


Figure 12. Sites in County Clare where Greylag geese of feral (red) origin were recorded from 2017/18 to 2019/20.

All Greylag flocks in Clare are of feral origin and are likely linked with the River Shannon (Lower) and Shannon and Fergus Estuary. The highest numbers have been at **Corofin Wetlands (OH003)**, where birds are frequently found on Loughs Atedaun (OH005), Cullaun (OH014) and Muckanagh Lough (OH015). Peak site counts in recent years were in September and November 2019 (154 and 141 respectively), with annual peaks of 20-67 birds in the previous two years, the latter of which is most representative of the numbers regularly occurring at the site. Variation in monthly counts is likely due to movements to sites to the south and east. Both **South East Clare Lakes (OH050)** and **Ballyallia Lake (OH001)** had peak counts of >80 birds in recent years, similar to the 2007/08 peak (Boland & Crowe 2008), with smaller numbers at Ballycar Lough (OH085) (peak 38 in December 2018) and occasional counts of small numbers of birds elsewhere, including **Lough Graney (OH023)** and the **Wetlands NE of Ennis (OH075)**. As discussed above, Greylag geese also use parts of the River Shannon (Lower) and Lough Derg sites in county Clare.

Galway (Feral)

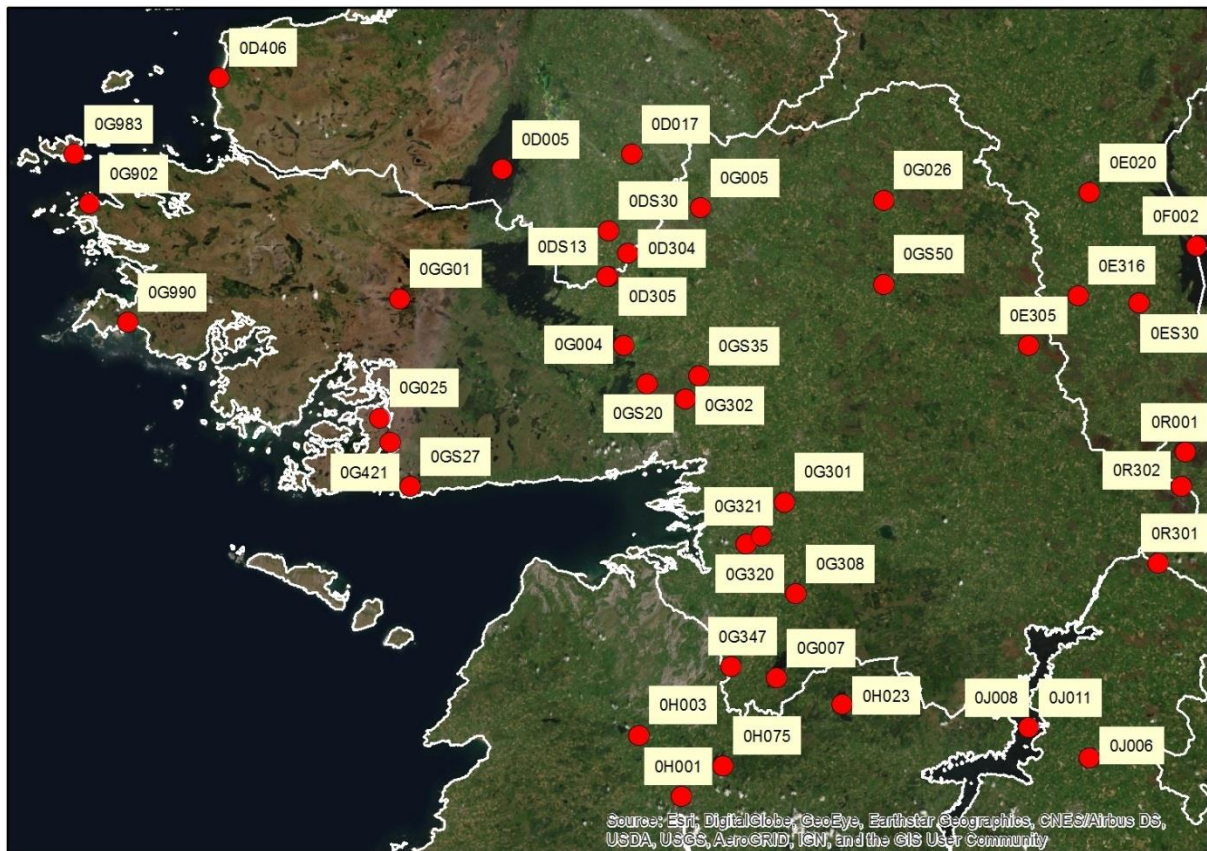


Figure 13. Sites in County Galway where Greylag geese of feral (red) origin were recorded from 2017/18 to 2019/20.

Feral flocks of Greylag geese are well-established throughout County Galway, with numbers in most parts of the county having increased compared to the 2007/08 survey results.

In the south of the county, geese were regularly recorded at **Rahasane Turlough (OG301)** and **Termon Turloughs (OG347)**. No Greylag geese were reported in this part of the county in 2007/08 (Boland & Crowe 2008), but regular counts at sites from 2017/18 to 2019/20, including substantial counts outside the core winter period, show that feral Greylag geese are now well-established. Rahasane Turlough had peaks of around 70 Greylags in the two most recent years, in mid-September as well as mid-winter. Termon Turloughs had a maximum of 123 birds in September 2019, with peaks of 46-72 birds in the preceding two years. Counts varied month to month, likely due to local movements to nearby sites and possibly further afield, given that the feral flocks in north Clare and Lough Corrib are within c.20km of these sites in south Galway. There was also one or two records each from **Caranavoodaun Turlough (OG321)** (52 geese), **Kiltiernan Turlough (OG320)** (3 geese), **L. Coy –**

Blackrock – Bullaunagh – Ballylee (OG308) (65 geese) and **Lough Cutra – Ballynakill L. (OG007)** (4 geese).

In east Galway, small numbers of Greylags have been recorded at **Kiltullagh Lough (OG026)** in July, August and October (max. 7 geese) and c.10km to the south at **Mullaghmore (OGS50)**, there have been midwinter counts of 19 and 24 in 2017/18 and 2018/19.

In south-east Galway, a flock of 200-300 birds has been reported on cutover bog at Clonfert beside the River Shannon Callows, some of which also feed on farmland near Eyrecourt. These are suspected to be birds that moved upriver for winter and are possibly the same birds as recorded on the Little Brosna in 2019/20.

Greylags were regularly recorded on **Lough Corrib (OG004)** and **Lower Lough Corrib (OGS20)** over the last three years. Up to 296 birds were recorded at the Lough Corrib site in the summer and winter months, and the Greylags mostly favoured the Lower Lough: Inchiquin (OG089), Lower: Muckrush-Cregg River (OG095) and Sliabh Rua (near Inchiquin; OGS37) subsites. Lower Lough Corrib, Angliham (OGS19) and Barranny (E of Rabbit Isl. Lwr. L. Corrib; OGS04) were most frequently used. Small numbers of birds (2-4) were also recorded on the nearby **River Clare (OG302)** and **Waterdale (floodplain NW of Claregalway; OGS35)** sites on occasion. It is worth noting that no Greylags were recorded at Lough Corrib (specifically Inchiquin) during the 2007/08 survey. To the northeast, **North Central Galway Lakes (OG005)** supported up to 365 Greylags in winter 2019/20. It seems likely that there would be interchange with the cluster of lakes and turloughs 10-15km to the west in south Mayo, and such a large one-off count perhaps suggests interchange with sites further afield such as Lough Corrib

Only small numbers of Greylag geese have been recorded in Connemara in the past, with 7 birds in Camus Bay in 2007/08 and a single count of 20 Greylags before that. A single count of 100 individuals at **Loughaunavneen/Loch Tanaí (Camus) (OG025)** in June 2019 indicates the local breeding population has increased substantially in recent years, although limited count coverage may have resulted in the true size of the local population being underestimated in the past. Elsewhere in Connemara, 4-16 individuals were recorded at **Maam Cross Lakes (OGG01)** during the summer months and five and one birds respectively at **Clynagh Bay (OG421)** and **Loch na Créibhinne (OGS27)** from 2017/18 to 2018/19.

Along the west coast, small numbers of Greylag geese have been recorded on **Inishbofin (OG983)** (peak 6 individuals), **Rossadillisk (OG902)** (peak 3) and **Ballyconneely Bay (OG990)** (peak 2). The timing of some of these records indicates that they are likely to be from the feral population, possibly linked to the flock on the **South Mayo Coast (OD406)**, where small numbers had been documented up to 2007/08 (Boland & Crowe 2008).

Mayo (Feral)

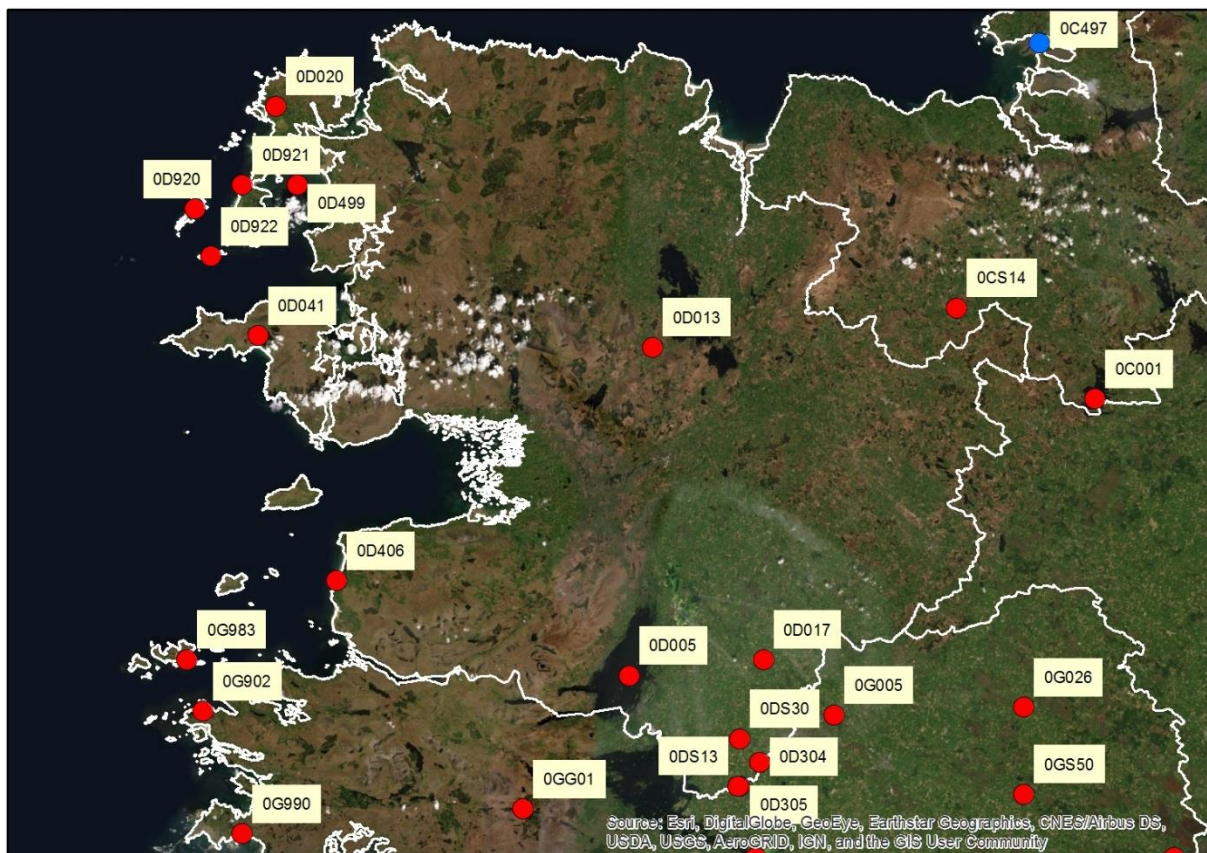


Figure 14. Sites in County Mayo where Grey Lag geese of feral (red) origin were recorded from 2017/18 to 2019/20.

The aforementioned **South Mayo Coast (0D406)** flock has increased substantially in recent years, from a peak of 20 birds in the early 2000's to counts of up to 160 individuals in January 2020. As before, Roonah Lough (0D078) continues to be the stronghold for the species in the area.

In the north-west of the county, recorded Grey Lag Goose numbers around the Mullet peninsula varied considerably over the three years considered here, due to the geese feeding in fields not covered by I-WeBS count areas. Low counts therefore are indicative of site and subsite usage at a given time, but not of the total flock size in the area. The peak count of 246 individuals spread across **Blacksod & Tullaghan Bays (0D499)** and **Termoncarragh & Annagh Marsh (0D020)** in January 2018 is indicative of the feral flock size in the area and shows the population in this region has grown considerably since the peak of 162 in the early 2000's (Boland & Crowe 2008). The geese now breed on all the offshore islands including the **Inishkea Islands (0D920)**, **Duvillaun Islands (0D922)**, Inishkeeragh, Inishglora, Eagle Island) and in the past couple of summers the first pairs have started to breed on the Mullet

itself (D. Suddaby pers. comm.). The most frequently used I-WeBS subsites on the Mullet include Termoncarragh Lake and surrounding area (0D020), Termoncarragh (BWI land) (0D601), Leam Lough (0D055), Blacksod/Cross Lough (0D009) and Annagh Marsh (0D800). A few records of small numbers of Greylags were also received for **Mullet West (0D921)** (peak 11 birds) and **Achill Island (0D041)** (1 bird).

In south Mayo, highest numbers of Greylags are regularly recorded at **Rostaff Lake (0D305)**, where a peak of 170 Greylags was recorded in November 2018. Boland & Crowe (2008) commented that the site had supported variable numbers up that point, with a peak of 90 individuals in 2005/06 and numbers generally higher in autumn than in winter. This was presumably due to dispersal to other nearby sites, and substantial numbers of Greylags were recorded at a number of other sites within 20km of Rostaff over the last three years, including **Black River (0DS13)** (63 individuals), **Shrule Turlough (0D304)** (peak 87), **Ballybackagh (0DS30)** (peak 87) and **Kilglassan Turlough/Greaghans (0D017)** (26 individuals). Birds from this area also move to and from North East Galway Lakes, as discussed above. Elsewhere in south Mayo a peak of 44 Greylags was recorded on **Lough Mask (0D005)**, and over 50 goslings with c.20 adults were recorded in June 2020 (E. McGreal pers. comm.). Numbers of feral Greylags have also increased considerably to around 40-50 birds in recent years on nearby **Lough Carra (0D098)** where the geese nest on the islands (E. McGreal pers. comm.), although no count data are available from the recent period.

A single Greylag Goose was recorded at **Lough Levally (0D013)** in central Mayo, c.40-50km from the nearest known flock, and was assumed to be of feral origin.

Sligo (Feral, Unknown)

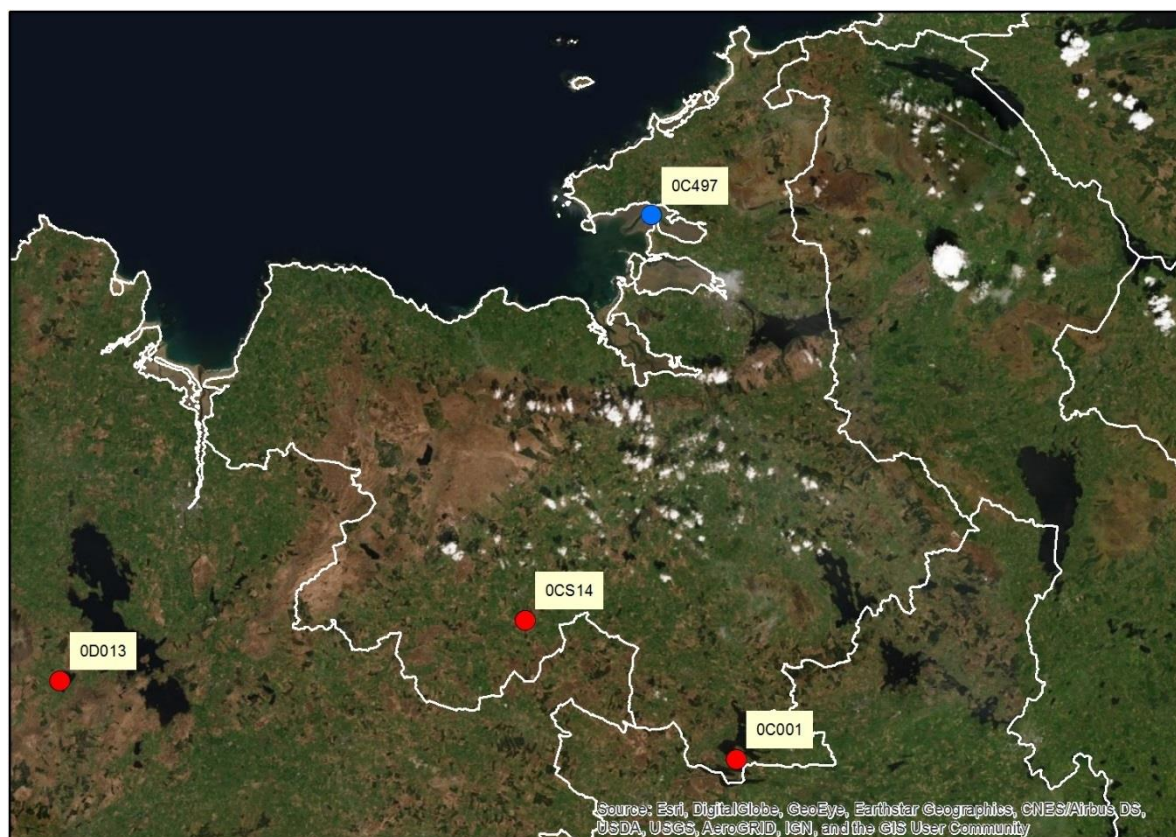


Figure 15. Sites in County Sligo where Greylag geese of feral (red) and unknown (blue) origin were recorded from 2017/18 to 2019/20.

The only site regularly used by Greylag geese in County Sligo was **Lough Gara (OC001)**, where a peak of 284 birds was recorded across the site in February 2018. Numbers the following winter (2018/19) peaked at 95 birds and counts of small numbers have been received for the 2019/20 season thus far. Greylags were regularly recorded on the Upper Lough & Callows Lake (OC098) and the Lower Lough (OC099). Given the particularly high counts in recent years, it is noteworthy that Greylag geese were not recorded at Lough Gara nor anywhere else in Sligo for the 2007/08 survey (Boland & Crowe 2008). At least part of this flock are ‘farmyard’ geese and several birds with extensive white plumage have been seen (M. Bell pers. comm.).

Elsewhere, a flock of 7 Greylags was recorded at **Carrowreagh & Mylough (OCS14)** in January 2020, presumably from the nearby (c.20km) Lough Gara. Greylag geese were also recorded as ‘present’ at **Drumcliff Bay Estuary (OC497)** in March 2018, although no count was provided.

Roscommon, Longford, Westmeath, Cavan (Feral, Unknown)

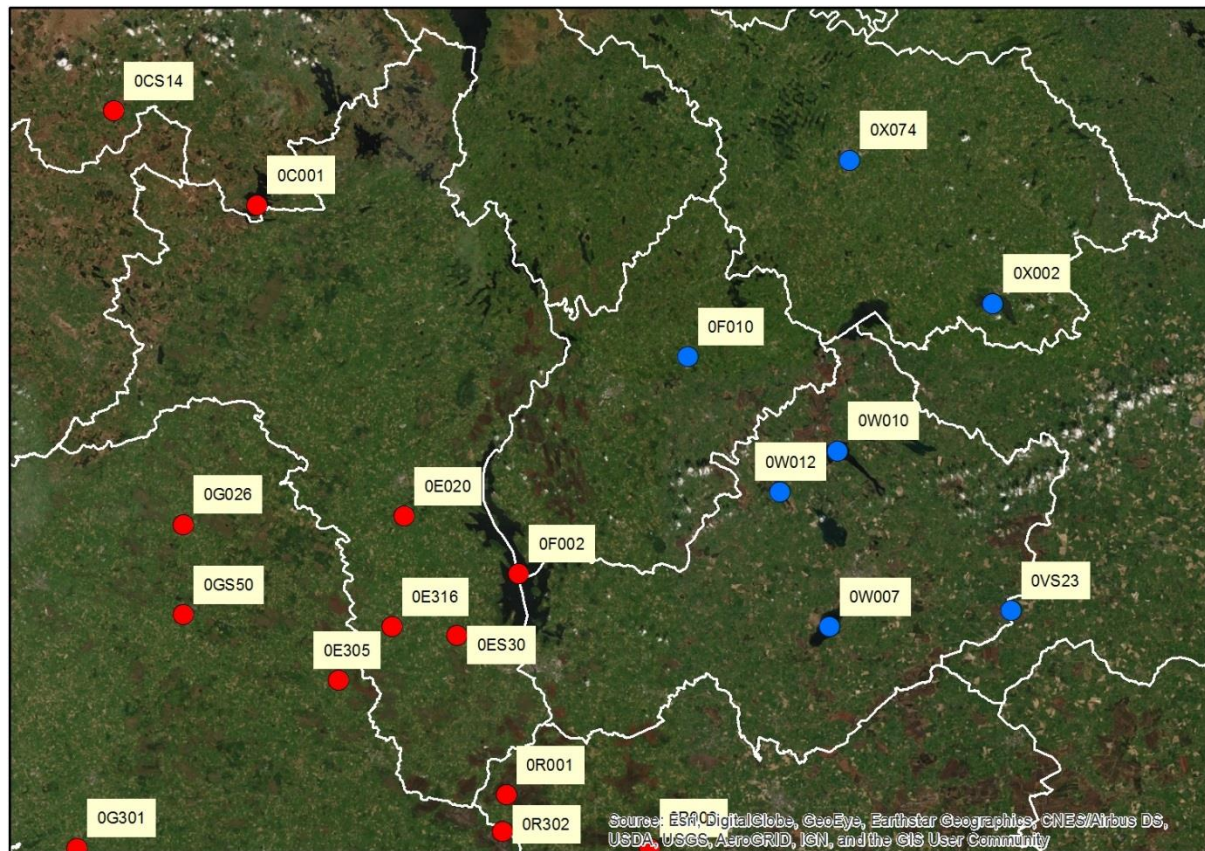


Figure 16.: Sites in Counties Roscommon, Longford, Westmeath and Cavan where Greylag geese of feral (red) and unknown (blue) origin were recorded from 2017/18 to 2019/20.

No Greylag geese were recorded in Roscommon during the 2007/08 survey (Boland & Crowe 2008), but breeding populations have since established on **Lough Ree (0F002)** and **Southern Roscommon Lakes (0E020)**. Greylags at the latter breed on Lough Funshinagh (0E303) and are most regularly recorded there, although small numbers occasionally move to Lough Croan (0E002), Cloonlaughnan Turlough (0E369) and neighbouring sites such as the **River Suck (0E305)**, **Thomas Street Turlough (0E316)** and **Brideswell (0ES30)**, often associating with Greenland White-fronted geese and Whooper Swans. Numbers on the Southern Roscommon Lakes peaked at 106 geese in January 2019. On Lough Ree, Greylags breed on the islands on the northern half of the lake (e.g. Inchenagh), most of which are on the Longford side. Numbers there currently stand at around 40 individuals. Elsewhere in Longford, ten Greylags of unknown origin were recorded on two occasions at **Gorteen Lake (0F010)** in January 2018.

As in Roscommon, no Greylag geese were recorded in Westmeath in 2007/08. A flock of unknown origin has been found at **Lough Iron (0W012)** (peak 15 birds) with some regularity in recent years,

ranging in dates from late November to mid-March. Flocks recorded at **Lough Ennell (0W007)** (one count of 18) and **Lough Derravaragh (0W010)** (one count of 1) are also of unknown origin.

One or two Greylags of unknown origin were present at **Lough Ramor (0X002)** in Cavan in 2019/20, associating with a Whooper Swan flock. Boland & Crowe (2009) reported a feral flock centred around **Lough Oughter Complex (0X001)**, sites on the **River Erne (0X588, 0X389, 0X388)** and sites in Fermanagh (Lower Lough Macnean, Upper & Lower Lough Erne) but Greylags were not recorded in these sites in Cavan during the current study period. A record of three birds at **Green Lough (0X074)** in March 2018 however, may be birds associated with that flock.

Donegal (Icelandic, Feral)

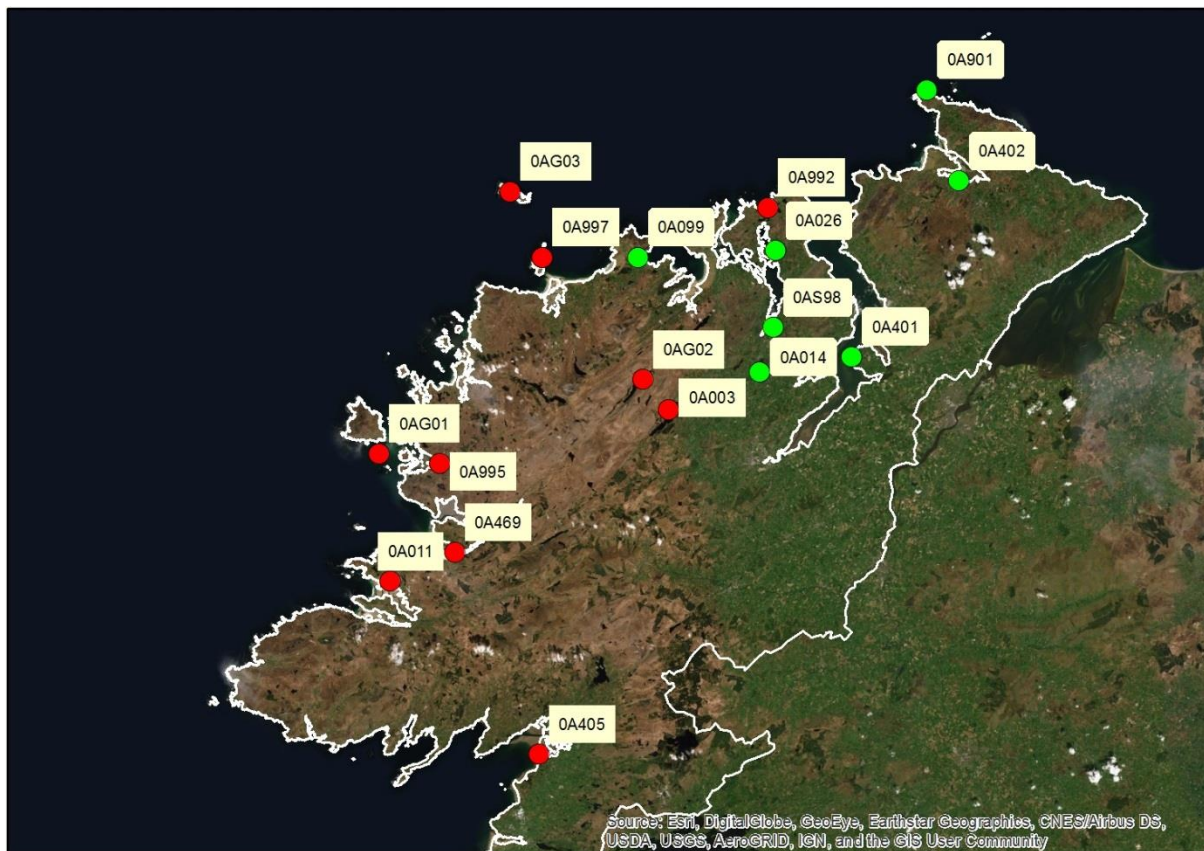


Figure 17. Sites in County Donegal where Greylag geese of feral (red) origin and flocks of both feral and Icelandic (green) origin were recorded from 2017/18 to 2019/20.

Donegal is still the only county in the Republic of Ireland where both the Icelandic and feral populations of Greylag geese are known to intermix during the winter. Given that it is not possible to separate the two populations in the field, several sites in north-east Donegal near **Lough Swilly (0A401)**, and including neighbouring sites such as Lough Foyle in Northern Ireland, have been deemed to host both populations. Sites further west and south, where there is evidence of a local breeding population, are deemed to be of feral origin although it is possible that small numbers of Icelandic birds might use these areas, however temporarily, over the course of a winter.

Lough Swilly supports the largest numbers of Greylag geese in the country, from both the Icelandic and feral populations. Counts in August and September, before Icelandic birds have arrived, have ranged from 870 to 1,165 and the resident population has clearly increased since 2007/08 (440 birds), although this represented a decrease from a peak of 800 birds previously (Boland & Crowe 2008). This feral population is composed of birds breeding at Lough Swilly, but also larger numbers that nest on **Lough Derg (Donegal, 0A097)** to the south (Boland & Crowe 2008). Numbers on Lough Swilly tend to

peak in November, and sometimes again in February, as birds congregate on arrival from Iceland and in advance of dispersing to midwinter sites elsewhere in Donegal, Ireland and Britain. Subtracting numbers of feral birds (August, September) from peak counts later in the winter results in annual peaks of 945 – 1,315 Icelandic Greylag geese at the site. The wider Icelandic flock is likely to be larger than these peak counts when neighbouring sites are taken into consideration, particularly Lough Foyle. At Lough Swilly, the subsites used to the greatest extent by Greylag geese are Blanket Nook (0A399), Inch Lough & Levels (0A499) and Big Isle (0A494). Birds from the Swilly flock also use **River Foyle (0A301)** and **Lough Foyle (0A408)**, although no records of Greylags were received for the Republic of Ireland parts of these sites between 2017/18 and 2019/20. **Lough Fern (0A014)**, which had peak counts of 159-190 in 2018/19 and 2019/20, is also known to be used by Greylags from the Swilly/Foyle flock.

Small numbers of Greylags were recorded at **Trawbreaga Bay (0A402)** (peak 6 individuals) and there was a single count of 150 Greylags on **Malin Head (0A901)** in October 2019. Given the proximity, these were deemed likely to be associated with the Swilly/Foyle flock. Similarly, on the other side of Lough Swilly, **Tawny Lough (Donegal) (0A026)** (64 individuals) and the **South end of Mulroy Bay (0AS98)** (peak 123) both hosted Greylags on occasion and are likely associated with the Swilly/Foyle flock. **Dunfanaghy New Lake (0A099)** was used by Greylags in each of the three years considered here, albeit in variable numbers. Boland & Crowe (2008) deemed it likely that these birds were associated with the Swilly/Foyle flock.

Some sites in north Donegal, east of the Swilly and associated sites, are known to be used by Greylag geese from the feral population, namely **Fanad North Coast (0A992)** (30 individuals), **Tory Island (0AG03)** (peak 85 individuals), **Tory Sounds Islands (0A997)** (peak 100) (Greylags breed on Tory, Inishdoeey, Inishbeg; D. Moloney pers. comm.), **Glenveagh Lakes (0AG02)** (peak 8), and **Loughs Akibbon & Nacally (0A003)** (peak 6).

Further south, Greylag geese breed on Umphin and Inishsirrerr islands (D. Moloney pers. comm.), and islands west of **Dunglow Bay (0A995)** including Inishkeeragh and likely off **Gweebarra Bay (0A469)**. Largest numbers have been recorded in Gweebarra Bay, with a peak count of 182 individuals in September 2019. No Greylag geese were recorded in this part of Donegal for the 2007/08 survey (Boland & Crowe 2008), although the presence of a feral flock near Lettermacaward was acknowledged. Small numbers were also recorded in Dunglow Bay (1 individual), **Dungloe Bay Islands & Arranmore (0AG01)** (8 individuals) and at **Sheskinmore Lough (0A011)** (9 individuals) in recent years. Small numbers (5+) have bred on Roaninish island off the coast of this part of Donegal in the

recent past (D. Moloney pers. comm.). Counts of one and two birds were recorded at **Donegal Bay (0A405)** each winter, which may be from the feral breeding population on Lough Erne (Fermanagh).

Pink-footed Goose

Pink-footed geese were recorded in 45 sites in the Republic of Ireland between July 2017 and June 2020 (i.e. winter periods 2017/18 to 2019/20). Of those sites, Pink-feet were recorded in five sites in all three seasons considered here, in ten sites in two of the three years, and in one of the last three years in the remaining 30 sites (Figure 18).

Pink-footed Goose flock numbers during the November IGC in recent years are outlined in Table 4 below. Note that some IGC totals may differ from other numbers presented here due to additional count data subsequently being collated.

Table 4. Numbers of Icelandic Pink-footed geese in Ireland during flyway censuses in November 2018 and 2019. Other sites were used by Pink-feet later in the winter, outside of the survey window.

Site	Nov-18	Nov-19
OZ401 - Dundalk Bay	350	150
OA401 - Lough Swilly	172	67
OG004 - Lough Corrib	60	-
OA901 - Malin Head	10	-
OU407 - Rogerstown Estuary	-	2
OT401 - North Wicklow Coastal Marshes	-	1
OO402 - Lady's Island Lake	-	4
OG301 - Rahasane Turlough	1	1
Myroe Levels (Northern Ireland)	36	-
Ireland Total	629	225

Regularly-used sites (3 of 3 seasons)

The largest numbers of Pink-footed geese in the Republic of Ireland during the study period were at **Lough Swilly (OA401)** (October 2019 - 926 individuals). Numbers in 2017/18 peaked at 42 individuals (January), with 183-293 geese recorded between November and March 2018/19. By comparison, the mean annual peak for this site (2011/12 to 2015/16) was 25 individuals, with a peak of 46 birds in 2011/12 (Lewis *et al.* 2019). Numbers at Lough Swilly tend to peak early or late in the winter due to birds stopping immediately after or before migration to Iceland. The count of 926 in October is likely to include birds briefly stopping

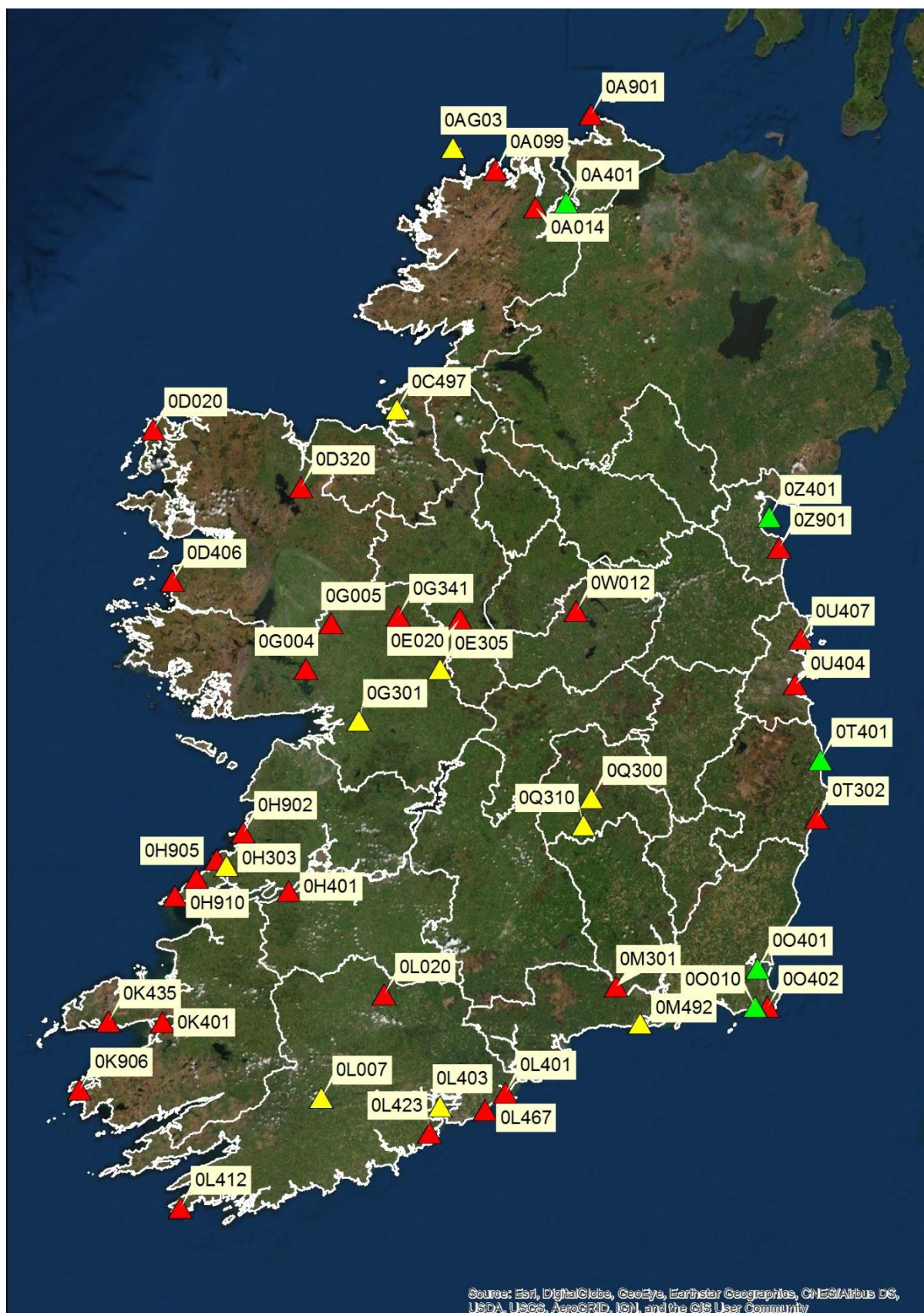


Figure 18. Pink-footed Goose distribution from 2017/18 to 2019/20. Sites are coloured based on the number of seasons Pink-footed geese were recorded; red (1 of 3), yellow (2 of 3), green (3 of 3).

in the area before moving elsewhere in Ireland or Britain for the winter. As with the Greylag geese, Inch Lough & Levels (0A499) is the preferred subsite, and large numbers also use both Blanket Book (0A399) and Big Isle (0A494).

Dundalk Bay (0Z401) had annual peaks of 360 and 350 Pink-footed geese in winters 2017/18 and 2018/19 and continued to host large numbers in most other months through the winter. Records are still being compiled for winter 2019/20, but 220-230 geese were present in the area from November to January. This site therefore supports similar numbers to Lough Swilly, again with a large increase compared to the 2011/12-15/16 period (mean annual peak 74, peak 127; Lewis *et al.* 2019). Pink-footed geese in Dundalk are most often recorded on Lurgangreen Fields (0ZS03) and sometimes at either Lurgangreen North (0Z497) or Lurgangreen South (0Z472).

Further south, Pink-footed geese have been recorded at **North Wicklow Coastal Marshes (0T401)** in each of the three seasons considered here, albeit in much smaller numbers and with much less regularity. With the exception of a count of 14 geese in January 2020, all other counts have been of 1-3 birds and have been present for between one and four months of the winter. In Wexford, one or two birds have been found on occasion at **Tacumshin Lake (0O010)**, but **Wexford Harbour & Slobbs (0O401)** has been more regularly used. Pink-feet have only been recorded on the North Slob (0O401) in this site and have been present for between 3 and 5 months each winter, with annual peaks of 14 and 17 in 2017/18 and 2018/19, but an increase to 46-61 birds on site from December to February 2019/20.

Irregularly-used sites (2 of 3 seasons)

Pink-footed geese were recorded at a further ten sites in two of the three winters from 2017/18 to 2019/20. The pattern of use at these sites was for low numbers, often just single individuals, and present for only part of the winter, often for one month only. No geese were close to the regularly-used sites described above. Taking this all into account, these sites seem unlikely to become regularly-used by increasing numbers in the future, but rather their recent usage has been a result of a certain amount of chance and possible site fidelity by single individuals associating with flocks of other goose species.

The highest count of sites in this category was at **Tullagher Bog (0H303)** in Clare where 12 birds were recorded in January 2019, although only one bird was present the previous winter. All other records from sites in this category were of five or fewer geese. **Drumcliff Bay Estuary (0C497)** had five Pink-feet in October and February 2019 and two were recorded the following winter (December 2019).

River Suck (0E305) had five Pink-feet associating with a Greenland White-fronted Goose flock in December 2018, having only recorded a single bird the winter before. **Inishcarra Reservoirs (0L007)** in Cork had a peak count of four birds, and **Tory Island (0AG03)** in Donegal and **Outer Tramore Bay (0M492)** in Waterford had peaks of three birds each. All three of these sites had only a single Pink-foot in another year. Finally, **Rahasane Turlough (0G301)** in Galway, **River Nore (0Q310)** and **Durrow Curragh (River Erkina) (0Q310)** in Laois each had a single Pink-footed Goose in two of the three years considered here, while **Cork Harbour (0L403)** had one in 2018/19 and two in 2019/20.

Occasionally-used sites (1 of 3 seasons)

A total of 30 sites were used by Pink-footed geese in one of the seasons from 2017/18 to 2019/20. Pink-feet were recorded in a single month at 23 of these sites, in two months at five sites, in three months at one site and in four months at one site, indicating that for the most part these were likely to be birds only temporarily using the site before moving elsewhere.

A particularly high count of 60 Pink-feet was recorded at Lough Corrib (0G004) in mid-November 2018, presumably birds that had only just returned from Iceland. Flocks of 10-13 individuals were recorded at **North Central Galway Lakes (0G005)**, **Farrihy Lough (0H007)** in Clare, **Malin Head (0A901)** in Donegal and **Lough Iron (0W012)** in Westmeath, from 2017/18 to 2019/20. Out of these, only Malin Head could be deemed close to a regularly used Pink-foot site (i.e. Lough Swilly). The remaining 25 sites (Table A7, Appendix 2) had fewer than 10 Pink-footed geese present during the recent study period. Many of these sites host flocks of other goose species including Icelandic Greylag geese (e.g. River Suir Lower 0M301), feral Greylag geese (e.g. Kilcolman Marsh 0L020, Lady's Island Lake 0O402) and Greenland White-fronted geese (e.g. Glenamaddy Turlough 0G341). The presence of an existing and established flock of geese may encourage Pink-feet to temporarily stop in certain areas, as well as the obviously suitable habitat.

Discussion

Icelandic Greylag Goose

Based on numbers during autumn censuses each year, and peak annual site numbers, the number of Icelandic Greylag geese in the Republic of Ireland has declined since the last comprehensive survey which took place in 2007/08 (Boland & Crowe 2008). Removing counts from Northern Irish sites from the 2007/08 totals leaves a final count of around 3,717 Icelandic Greylags in the Republic of Ireland that year, compared to a peak of 2,176 in November 2019, a c. 42% decline. This corresponds with a c. 45% decline in the flyway population over the same period (Mitchell 2008, Brides *et al.* 2019), suggesting it is indeed a population decline and not due to different migratory movements. Despite bearing the brunt of these declines, the Swilly/Foyle flock continues to be the largest site for Icelandic Greylags in the Republic of Ireland. Counts at Dundalk Bay vary considerably between month and year, occasionally amounting to >500 birds in recent years, and movement of birds between Louth, Dublin and Wicklow has been suggested in the past (Hutchinson 1989). In north Dublin, the flock around Rogerstown, Skerries and Lambay has rarely exceeded 20 birds in recent years, continuing a long-term decreasing trend since the 1980's when Lambay Island itself had seemingly reached carrying capacity with >1,000 Greylags present during the winter months. The combined Wicklow flocks have declined, although to a relatively modest extent, to fewer than 200 birds. And lastly, the flock on the Lower River Suir has retained similar numbers (c. 225) to those in 2007/08. Each of these sites therefore support numbers of national importance on an annual basis, and the Lough/Swilly Foyle flock supports internationally important numbers (Lewis *et al.* 2019).

Despite these population declines, the distribution of Icelandic Greylag geese has remained stable in the Republic of Ireland over the last 10-12 years. Their distribution is still largely confined to the eastern half of the country, with the largest flock (Swilly/Foyle) using sites on the north coast with proximity to both Iceland and the Scottish wintering grounds. Birds from this population have been seen away from traditional sites in the past (e.g. North Slob in Wexford, Boland & Crowe 2008, A. Walsh pers. comm.), although there is currently no evidence that any sites or regions have been newly-occupied by Icelandic Greylags on a regular basis. Five of the six Icelandic Greylag Goose flocks in the Republic of Ireland regularly use Special Protection Areas (SPAs), the only exception being the Lower River Suir flock. Although the hunting of Greylag geese in Ireland is restricted to the period from the 1st September to 15th October, thus essentially protecting the Icelandic migrants that arrive thereafter, those same five flocks likely benefit from the absence of shooting disturbance at statutory Wildfowl Sanctuaries within their range also.

The often significant variation in counts at sites within-winter underscores the importance of having a network of suitable habitat in different locations (sites and/or subsites) within the range of a given flock. Although data in this report have been mostly presented at site level per month and year, there are obvious ‘absences’ of geese across the range of most flocks during some months. Fluctuation in counts early (Oct, Nov) and late (Feb, Mar) in winter are to be expected as birds arrive from, and depart for Iceland on different dates, and likely stopover in certain areas (e.g. Lough Swilly, Dundalk Bay). Mid-winter variation in counts however, particularly at well-monitored sites such as Dundalk Bay, suggest the use of unknown or undocumented feeding sites outside the boundary of current I-WeBS count areas.

Feral Greylag Goose

In contrast to the decreased numbers and stable distribution of the Icelandic population, feral Greylag geese have significantly increased in both numbers and range in the Republic of Ireland since the 2007/08 assessment. The population has increased by c. 1,868-2,507 individuals (109-147%, based on peak year 2019/20 and peak flock count 2017/18-19/20 respectively) since 2007/08 and 13 new flocks have established, six of which number ≥ 100 birds. Much of this range expansion has occurred west of the Shannon, likely stemming from existing flocks along the River Shannon and in Mayo/Galway. During the time of the 1986 census, only two flocks of feral birds were documented on the island of Ireland, 527 feral Greylags at Strangford Lough (Down, Northern Ireland) and seven at Annamoe in Wicklow (not linked to any current site), with some uncertainty around 22 birds at Tacumshin in Wexford. By the time of the 1988-91 breeding bird atlas (Gibbons *et al.* 1993) there were additional breeding birds in north Cork and further south at Inishcarra near Cork City, and the most recent atlas (Balmer *et al.* 2013) showed a breeding distribution similar to that described here.

The Open Seasons Order allows for the hunting of Greylag geese throughout the state from the 1st September to the 15th October each year, with those dates designed to exclude birds from the Icelandic population being shot. This was introduced in 1996 and there were some concerns “that the opening of a season may lead to individuals attempting deliberate propagation of these species” (MacConnell 1996). Although no reliable bag numbers exist for the number of Greylag geese hunted in Ireland, anecdotally many counters reported low levels of wildfowling in their areas. Additional causes of mortality for Greylag geese are therefore low across much of the country. The open season for Greylag geese at Lady’s Island Lake in Wexford and the Gearagh area of Cork extends from the 16th October to the 31st January; despite this, both of these flocks (South Wexford and North Cork) have increased since 2007/08 and now number 292 and 150 birds respectively (peak counts). This is

perhaps particularly surprising for the South Wexford flock given that nesting attempts are destroyed under license on some islands at Lady's Island Lake each year. At certain sites, nesting Greylag geese may benefit from predator control and habitat management for breeding species of conservation concern or of game shooting interest. Ultimately though, Greylag geese are seemingly filling an available ecological niche in Ireland in areas with abundant nesting and feeding opportunities, likely aided by relatively mild summers and winters and low levels of hunting pressure. Ireland is not unique in this respect, and rapid population growth of feral/naturalised/re-established populations of Greylag geese has been documented in the UK (Austin *et al.* 2007) and elsewhere in Europe.

Potential impacts of increased numbers of resident Greylag geese on biodiversity of conservation concern include competition, disease transmission and habitat destruction, in addition to human impacts such as agricultural damage which may result in conflict and negative perceptions. There is a risk these negative perceptions could subsequently be applied to migratory swan and goose species with which the feral Greylags share wintering sites (Kampe-Persson 2010). The desirability of an increasingly large and widespread feral Greylag Goose population in Ireland should be considered while it may still be feasible to control their increase and spread. A key part of this question is whether Greylag geese are a native breeding species in Ireland. Mitchell *et al.* (2012) thought they were likely native to Ireland, given their wide distribution elsewhere in north-west Europe. The history of Greylag geese being released by gun clubs is well-known in certain parts of Ireland (e.g. Lough Swilly, South Wexford), but poorly known or documented elsewhere and the genetic integrity of flocks is completely unknown. Some of the newer breeding flocks, particularly those in the west of Ireland, could conceivably have emanated from the expanding native population in north-west Scotland, and so could be considered a new coloniser regardless of former breeding status here – but this has not been sufficiently investigated to date

Pink-footed Goose

The East Greenland and Iceland-breeding flyway population of Pink-footed geese has been increasing since the early 1980's to a peak of 530,961 individuals in October 2015 (Mitchell 2016), with a total of 440,891 in October 2018 (Bridges *et al.* 2019). Almost all of the population winters at sites in Scotland and England. Up to the late 1980's the only sites in Ireland used by Pink-foots on an annual basis were the Wexford Slobs, Loughs Swilly and Foyle, and Stabannon/Braganstown in Louth, and flocks generally amounted to single figures (Sheppard 1993). By the end of the 1990's the national peak count was still only 47 birds, in February 1999 (Crowe 2005), and those same few sites were the only ones used with regularity. Even as recently as 2004/05-2008/09 the highest numbers in any one year

was 86 individuals (Boland & Crowe 2012), rising to a maximum of 184 between 2009/10 and 2015/16 (Lewis *et al.* 2019). This increase has continued and the peak monthly count across sites in the last three years was 946 in October 2019/20, with a peak of 605 in November the previous year. Their distribution has changed very little over the last 30 years, with Lough Swilly, Dundalk Bay (Louth) and Wexford Harbour & Slobbs the three sites with highest numbers in recent years, and together with Tacumshin Lake and North Wicklow Coastal Marshes, are the only sites to have been used every year during the recent study period.

Pink-feet were recorded at 26 sites between 2009/10 and 2015/16 (Lewis *et al.* 2019) and at 45 sites during the recent study period 2017/18 to 2019/20. Most of those sites were only used occasionally however, i.e. for brief periods during the winter and not on an annual basis. GPS-tracking of some British-wintering birds by the WWT has shown some Pink-foots stopping over at other sites in the Republic of Ireland on migration, sometimes for a matter of hours (K. Brides pers. comm.). It remains to be seen if the number of annually used sites increases, or if numbers simply increase at those few regularly used sites. Ten sites were used in two of the three years considered here, but most sites had fewer than five birds and only one of those ten sites had Pink-feet present during more than two months in any given winter. Sites that hold the largest numbers of Pink-feet are also important sites for Greenland White-fronted geese, Light-bellied Brent geese and Icelandic Greylag geese and the presence of large goose numbers may attract them, in addition to the suitable feeding and roosting habitat.

Recommendations for future monitoring

This report has provided an updated overview of the numbers and distribution of Icelandic and feral Greylag geese, and Pink-footed geese, in the Republic of Ireland in recent years. Below are a number of recommendations to further our knowledge of these species in the coming years:

- Coordinated counts of sites where feral Greylag geese are known to occur should be organised every summer (July) and additional records from 'new' areas should be sought from I-WeBS counters, NPWS staff and other data sources including eBird and Birdtrack on an annual basis.
- Counts for the IGC should continue to focus on known sites for Greylag geese, and on the sites identified as regularly used for Pink-footed geese.
- Supplementary within-winter counts of both Greylag geese and Pink-footed geese should be encouraged and sought from other data sources.

- Ringing data from the Swilly/Foyle and Wicklow flocks of Greylag geese should be analysed, together with resighting data of birds ringed elsewhere and subsequently seen in Ireland.
- Further ringing efforts should target feral flocks at a diversity of locations to better account for Greylag Goose seasonal movements and determine if they do move significant distances outside their home area. The flock centred around the Shannon would be a prime target for this as the flock there is thought to use a large number of sites in Limerick, Clare, Tipperary, Offaly and possibly Galway. Other flocks where catching geese may be relatively straightforward to organise should also be targeted.
- The status of Irish-breeding Greylag geese should be researched in terms of their historical (i.e. likely native or not) and recently introduced status. The possibility of some flocks being derived from expanding native populations elsewhere (i.e. north-west Scotland, Iceland) should be examined.
- The feasibility of a genetic study to better-determine the origins of Irish-breeding Greylag geese should be examined, and the I-WeBS counter network asked to collect samples if appropriate.
- Hunting bag data would be helpful to better-inform population dynamics and management of Greylag geese and should be encouraged. Spatial hunting data on its own would be useful, although more detailed bag data (i.e. numbers shot) would be preferable.
- In light of further discussion and research into the origins of Irish-breeding Greylag geese, changes to the Open Seasons Order may be required/possible.

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Appendix 1

Table A1. Peak monthly counts at sites used by Icelandic Greylag Geese only (i.e. site not known to support feral birds) in the Republic of Ireland from 2017/18 to 2019/20. Annual peak counts in bold. -1 Indicates birds were present but not counted. See main text for caveats.

Flock	Site	Winter	J	A	S	O	N	D	J	F	M	A	M	J
Dundalk	OZ401 - Dundalk Bay	2017/18					111	347	100	50	100	100		
Dundalk	OZ401 - Dundalk Bay	2018/19				73	517		300	500	265			
Dundalk	OZ401 - Dundalk Bay	2019/20				71	399	100	340		100		4	
Rogerstown	OU407 - Rogerstown	2017/18							10					
Rogerstown	OU407 - Rogerstown	2018/19				2	12	11						
Rogerstown	OU407 - Rogerstown	2019/20							30					
Wicklow Icelandic	OU910 - Mountseskin/Gortlum	2019/20							20					
Wicklow Icelandic	OT198 - Poulaphouca Reservoir	2017/18					16		96		64			
Wicklow Icelandic	OT198 - Poulaphouca Reservoir	2018/19				73	64		2	3				
Wicklow Icelandic	OT198 - Poulaphouca Reservoir	2019/20					8							
Wicklow Icelandic	OT401 - North Wicklow Coastal Marshes	2017/18					128	150	216	210	140	15		
Wicklow Icelandic	OT401 - North Wicklow Coastal Marshes	2018/19					141	204	161	202	171		4	2
Wicklow Icelandic	OT401 - North Wicklow Coastal Marshes	2019/20				28	120	123	170	136	130			
River Suir	OM301 - River Suir Lower	2017/18					43		216					
River Suir	OM301 - River Suir Lower	2018/19					113	21		228	50			
River Suir	OM301 - River Suir Lower	2019/20					124	21	238	130	130			

Table A2. Peak monthly counts at sites where both Icelandic and feral Greylag Geese occur in the Republic of Ireland, from 2017/18 to 2019/20. Annual peak counts in bold. -1 Indicates birds were present but not counted. See main text for caveats.

Flock	Site	Winter	J	A	S	O	N	D	J	F	M	A	M	J
Swilly/Foyle	OA014 - Lough Fern	2018/19				190		118	137	126	66			
Swilly/Foyle	OA014 - Lough Fern	2019/20				38	159	155						
Swilly/Foyle	OA026 - Tawny Lough (Donegal)	2018/19				64								
Swilly/Foyle	OA099 - Dunfanaghy New Lake	2017/18			10	6	12							
Swilly/Foyle	OA099 - Dunfanaghy New Lake	2018/19					36							
Swilly/Foyle	OA099 - Dunfanaghy New Lake	2019/20			7		6				12			
Swilly/Foyle	OA401 - Lough Swilly	2017/18	9		870	320	1815		1404	1080	968			
Swilly/Foyle	OA401 - Lough Swilly	2018/19		936	651	1,018	2,162	1,938	1,565	2,195	1,741		2	7
Swilly/Foyle	OA401 - Lough Swilly	2019/20	28	827	1,165	926	2,480		-1	5	58			
Swilly/Foyle	OA402 - Trawbreaga Bay	2017/18									1			
Swilly/Foyle	OA402 - Trawbreaga Bay	2018/19					6							
Swilly/Foyle	OA402 - Trawbreaga Bay	2019/20					5		4					
Swilly/Foyle	OA901 - Malin Head	2019/20				150								
Swilly/Foyle	OAS98 - South end of Mulroy bay	2018/19				123	123							
Swilly/Foyle	OAS98 - South end of Mulroy bay	2019/20					97							

Table A3. Peak monthly counts at sites used by feral Greylag Geese only (i.e. site not known to support Icelandic birds) in the Republic of Ireland, from 2017/18 to 2019/20. Annual peak counts in bold. Count in brackets is estimated count and month. -1 Indicates birds were present but not counted. Figures in brackets are estimates. See main text for caveats.

Flock	Site	Winter	J	A	S	O	N	D	J	F	M	A	M	J
Arklow	OT002 - Arklow Ponds	2017/18				30	27	28	27	22	18		10	
Arklow	OT002 - Arklow Ponds	2018/19				23	19	20	17					
Arklow	OT002 - Arklow Ponds	2019/20			20		20							
Arklow	OT399 - Avoca River/Arklow	2017/18				2	4	13	8	9	11			
Arklow	OT399 - Avoca River/Arklow	2018/19				4	4	4	8					
Arklow	OT399 - Avoca River/Arklow	2019/20					3	-1						
Arklow	OT912 - Arklow Harbour	2017/18								35				
Druids Glen	OTG01 - Druids Glen	2017/18							3				3	
Druids Glen	OTG01 - Druids Glen	2018/19								3				6
Druids Glen	OTG01 - Druids Glen	2019/20								6				
Boora	OR001 - Blackwater Railway Lake	2018/19					6							
Boora	OR006 - Boora Lakes - Back Lakes Finnamores	2017/18										6		
Boora	OR006 - Boora Lakes - Back Lakes Finnamores	2018/19				15				35			3	
Boora	OR006 - Boora Lakes - Back Lakes Finnamores	2019/20			90	32	43	47	19	4				
River Shannon	OR301 - Little Brosna Callows	2017/18						23	19					
River Shannon	OR301 - Little Brosna Callows	2018/19							(250)	3				
River Shannon	OR301 - Little Brosna Callows	2019/20				15	39	55	18	12				
River Shannon	OR302 - Shannon Callows (Aerial)	2017/18									-1			
River Shannon	OR302 - Shannon Callows (Aerial)	2018/19							13					
River Shannon	OR302 - Shannon Callows (Aerial)	2019/20			75				19					
North Wexford	OO803 - Cahore Marshes	2017/18								-1		12	2	
North Wexford	OO803 - Cahore Marshes	2018/19				60		18	80		-1	8	11	26

North Wexford	00803 - Cahore Marshes	2019/20				50					100			
South Wexford	00010 - Tacumshin	2017/18						26	16	35	7	2	3	
South Wexford	00010 - Tacumshin	2018/19		1	55	30	67	60	48	30		2		2
South Wexford	00010 - Tacumshin	2019/20			4	10	70	66	50	1				
South Wexford	00401 - Wexford harbour & Slobs	2017/18	16		-1		6	1	1	9	12	2		4
South Wexford	00402 - Lady's Island Lake	2017/18		85	134	146	122	92		120	13	7	15	
South Wexford	00402 - Lady's Island Lake	2018/19	40	54	86	90	25		1	-1		28	50	10
South Wexford	00402 - Lady's Island Lake	2019/20		130	133	-1			-1					
South Wexford	00401 - Wexford harbour & Slobs	2018/19				12	1	5	6	2	20		1	
South Wexford	00401 - Wexford harbour & Slobs	2019/20				2	17	4	14					
South Wexford	00904 - Saltee Islands	2017/18										2		
Cork City	0L004 - The Lough Cork	2017/18	12			28			5			-1	6	
Cork City	0L004 - The Lough Cork	2018/19								20				
Cork City	0L403 - Cork Harbour	2019/20						1						
Inishcarra	0L007 - Inishcarra Reservoirs	2017/18			100		43	120		78				
Inishcarra	0L007 - Inishcarra Reservoirs	2018/19	15		25	60	168	77	120	8				3
Inishcarra	0L007 - Inishcarra Reservoirs	2019/20	4			70	70							
Inishcarra	0LS06 - Toon River Callows, Parkanillane	2019/20			163									
North Cork	0L020 - Kilcolman Marsh	2017/18					22	70		100				
North Cork	0L020 - Kilcolman Marsh	2018/19						90	100	70				
North Cork	0L020 - Kilcolman Marsh	2019/20						60	100		100			
North Cork	0L321 - Awbeg River	2018/19						60						
North Cork	0LS03 - Buttevant	2018/19						60						
North Cork	0LS05 - Scart Bridge	2018/19						65						
North Cork	0LS05 - Scart Bridge	2019/20						100						
Other (Cork)	0L401 - Balllymacoda	2019/20								1				
Other (Cork)	0L467 - Ballycotton Shanagarry	2017/18			2	2	2							
Other (Cork)	0L467 - Ballycotton Shanagarry	2018/19			2	2		2	1					

Other (Cork)	0L477 - Glandore Harbour/Union Hall	2018/19													2
Other (Cork)	0L950 - Ballybranagan	2019/20				7									
Ring of Kerry	0K410 – Ballinskelligs Bay	2019/20				4									
Kerry Unknown	0K403 - Tralee Bay, Lough Gill & Akeragh Lough	2019/20						2							
River Shannon	0J006 - Lough Eorna	2019/20			250										
River Shannon	0J011 - Lough Derg (Shannon) Aerial	2017/18							4	2					
River Shannon	0I001 - Lough Gur	2017/18					8	25	39						
River Shannon	0I001 - Lough Gur	2018/19					12								
River Shannon	0I001 - Lough Gur	2019/20			2			6	5						
River Shannon	0I330 - Mungret	2019/20	20												
River Shannon	0H301 - River Shannon (Lower)	2017/18	15				10			4		6	2	8	
River Shannon	0H301 - River Shannon (Lower)	2018/19	10	8		30		44			2	4	5		
River Shannon	0H301 - River Shannon (Lower)	2019/20				18	2								
River Shannon	0H401 - Shannon & Fergus Estuary	2017/18	70							4	3				
River Shannon	0H401 - Shannon & Fergus Estuary	2018/19		1		42	8	218		15	9	5	3		
River Shannon	0H401 - Shannon & Fergus Estuary	2019/20	10	58	72				1	97					
River Shannon	0J008 - Lough Derg (Shannon)	2017/18											2		
River Shannon	0J008 - Lough Derg (Shannon)	2019/20							20						
River Shannon	0H001 - Ballyallia Lake	2018/19								4					
River Shannon	0H001 - Ballyallia Lake	2019/20				82									
River Shannon	0H003 - Corofin Wetlands	2017/18						67	7		41				
River Shannon	0H003 - Corofin Wetlands	2018/19							32			20			
River Shannon	0H003 - Corofin Wetlands	2019/20			154		141								
River Shannon	0H023 - Lough Graney	2018/19													5
River Shannon	0H050 - South East Clare Lakes	2017/18					88	25	59	40	28				
River Shannon	0H050 - South East Clare Lakes	2018/19			16	30		58					10		

River Shannon	OH050 - South East Clare Lakes	2019/20		30	36	28								
River Shannon	OH075 - Wetlands NE of Ennis	2017/18							5		5			
River Shannon	OH085 - Ballycar Lough	2017/18									12			
River Shannon	OH085 - Ballycar Lough	2018/19						38						
Connemara	OG025 - Loughaunavneen/Loch Tanaí (Camus)	2018/19												100
Connemara	OG421 - Clynagh Bay	2019/20				5								
Connemara	OGG01 - Maam Cross Lakes	2017/18										4		
Connemara	OGG01 - Maam Cross Lakes	2019/20	16	6										
Connemara	OGS27 - Loch na Créibhinne	2018/19											1	
East Galway	OG026 - Kiltullagh Lough	2019/20	6	6		7								5
East Galway	OGS50 - Mullaghmore	2017/18							19					
East Galway	OGS50 - Mullaghmore	2018/19									24			
Lough Corrib	OG004 - Lough Corrib	2017/18							160	8		3	6	
Lough Corrib	OG004 - Lough Corrib	2018/19	50	20	3	49	60			60	8	57	13	173
Lough Corrib	OG004 - Lough Corrib	2019/20	296	14				20	50	21				
Lough Corrib	OG302 - River Clare	2017/18						4					4	
Lough Corrib	OG302 - River Clare	2018/19								2			3	
Lough Corrib	OG302 - Waterdale (floodplain NW of Claregalway)	2018/19					3							
Lough Corrib	OGS20 - Lower Lough Corrib (swans)	2017/18				21			10				5	2
Lough Corrib	OGS20 - Lower Lough Corrib (swans)	2018/19			40	137		38		4	7	10		
Lough Corrib	OGS20 - Lower Lough Corrib (swans)	2019/20		33			50	19						
Lough Corrib	OGS35 - Waterdale (floodplain NW of Claregalway)	2018/19					3							
South Galway	OG007 - Lough Cutra - Ballynakill L.	2017/18									4			
South Galway	OG007 - Lough Cutra - Ballynakill L.	2018/19									2			

South Galway	OG301 - Rahasane Turlough	2017/18				34								
South Galway	OG301 - Rahasane Turlough	2018/19			70	9								
South Galway	OG301 - Rahasane Turlough	2019/20		26			50	68	54					
South Galway	OG308 - L. Coy - Blackrock - Bullaunagh - Ballylee	2018/19					30	65						
South Galway	OG320 - Kiltiernan Turlough	2019/20				3								
South Galway	OG321 - Caranavoodaun Turlough	2018/19				52								
South Galway	OG347 - Termon Turloughs	2017/18					72			37	2			
South Galway	OG347 - Termon Turloughs	2018/19				7		11		46				
South Galway	OG347 - Termon Turloughs	2019/20			123	17		9			8			
South Mayo/North Galway	OG005 - North Central Galway Lakes	2018/19							2					
South Mayo/North Galway	OG005 - North Central Galway Lakes	2019/20				30		37	8	365				
South Mayo/West Galway	OG902 - Rossadillisk	2018/19											3	
South Mayo/West Galway	OG983 - Inishbofin	2018/19									10	6	4	
South Mayo/West Galway	OG983 - Inishbofin	2019/20				2								
South Mayo/West Galway	OG990 - Ballyconneely Bay	2018/19										2		
Lough Ree	OF002 - Lough Ree	2018/19					1		20					
Lough Ree	OF002 - Lough Ree	2019/20							40					
Lough Funshinagh	OE020 - Southern Roscommon Lakes	2017/18			42				26	4				
Lough Funshinagh	OE020 - Southern Roscommon Lakes	2018/19			58		32		106					
Lough Funshinagh	OE020 - Southern Roscommon Lakes	2019/20	12	15	6				18					
Lough Funshinagh	OE316 - Thomas Street Turlough	2017/18							1					

Lough Funshinagh	0E316 - Thomas Street Turlough	2019/20				3								
Lough Funshinagh	0ES30 - Brideswell	2019/20							1					
Mullet Peninsula	0D020 - Termoncarragh & Annagh Marsh	2017/18					83	20	20		9			
Mullet Peninsula	0D020 - Termoncarragh & Annagh Marsh	2018/19									5			
Mullet Peninsula	0D020 - Termoncarragh & Annagh Marsh	2019/20					118	15	76		107			
Mullet Peninsula	0D041 - Achill Island	2017/18							1	1		1		
Mullet Peninsula	0D499 - Blacksod & Tullaghan Bays	2017/18					85		226		125			
Mullet Peninsula	0D499 - Blacksod & Tullaghan Bays	2019/20			-1		88	17	68		73			
Mullet Peninsula	0D920 - Inishkea Islands	2017/18										20		
Mullet Peninsula	0D920 - Inishkea Islands	2018/19												2
Mullet Peninsula	0D921 - Mullet West	2019/20							11		9			
Mullet Peninsula	0D922 - Duvillaun Islands	2019/20		6										
Other (Mayo)	0D013 - Lough Levally	2017/18									1			
Loughs Mask & Carra	0D005 - Lough Mask	2017/18		13	3				3	5	3			
Loughs Mask & Carra	0D005 - Lough Mask	2018/19				31				34				
Loughs Mask & Carra	0D005 - Lough Mask	2019/20			44	27	38	25	1	2				(50)
South Mayo/North Galway	0D017 - Kilglassan Turlough/ Greaghans	2019/20				6				26				
South Mayo/North Galway	0D304 - Shrule Turlough	2018/19						87		13	2			
South Mayo/North Galway	0D304 - Shrule Turlough	2019/20						7						
South Mayo/North Galway	0D305 - Rostaff Lake	2017/18				2								
South Mayo/North Galway	0D305 - Rostaff Lake	2018/19			40	153	170		23	23				
South Mayo/North Galway	0D305 - Rostaff Lake	2019/20				47								

South Mayo/North Galway	0DS13 - Black River	2019/20						63						
South Mayo/North Galway	0DS30 - Ballybackagh	2018/19						87		13				
South Mayo/North Galway	0DS30 - Ballybackagh	2019/20						37						
South Mayo/West Galway	0D406 - South Mayo Coast	2017/18		-1			119	2	14	16	70	-1		
South Mayo/West Galway	0D406 - South Mayo Coast	2018/19		117	57	16	136	70	15	103	14	20		
South Mayo/West Galway	0D406 - South Mayo Coast	2019/20		110	82	137	157	15	160	97				
Lough Gara	0C001 - Lough Gara	2017/18						101		284	20	14		
Lough Gara	0C001 - Lough Gara	2018/19					95	59	8				4	
Lough Gara	0C001 - Lough Gara	2019/20						17	7					
Lough Gara	0CS14 - Carrowreagh & Mylough	2019/20							7					
Donegal Bay	0A405 - Donegal Bay	2017/18							1					
Donegal Bay	0A405 - Donegal Bay	2018/19						2						
Donegal Bay	0A405 – Donegal Bay	2019/20						2	2					
Dungloe & Gweebarra Bays	0A011 - Sheskinmore Lough	2019/20			9					2				
Dungloe & Gweebarra Bays	0A469 - Gweebarra Bay	2017/18					84			120				
Dungloe & Gweebarra Bays	0A469 - Gweebarra Bay	2018/19					171		100					100
Dungloe & Gweebarra Bays	0A469 - Gweebarra Bay	2019/20			182									
Dungloe & Gweebarra Bays	0A995 - Dunglow Bay	2019/20	1											
Dungloe & Gweebarra Bays	0AG01 - Dungloe Bay Islands & Arranmore	2017/18									8			

Fanad	0A992 - Fanad North Coast	2018/19												30
Glenveagh	0A003 - Loughs Akibbon & Nacally	2019/20												6
Glenveagh	0AG02 - Glenveagh Lakes	2017/18										2		
Glenveagh	0AG02 - Glenveagh Lakes	2018/19		2										8
Glenveagh	0AG02 - Glenveagh Lakes	2019/20	1	8										
Tory Island	0A997 - Tory Sound Islands	2019/20				100								
Tory Island	0AG03 - Tory Island	2017/18					17		27			8	7	2
Tory Island	0AG03 - Tory Island	2018/19	-1		6		2						16	
Tory Island	0AG03 - Tory Island	2019/20			4	85		7						

Table A4. Peak monthly counts at sites used by Greylag Geese of **unknown origin** in the Republic of Ireland, from 2017/18 to 2019/20. Annual peak counts in bold. -1 Indicates birds were present but not counted. See main text for caveats.

Site	Winter	J	A	S	O	N	D	J	F	M	A	M	J
0W007 - Lough Ennell	2018/19							18					
0W010 - Lough Derravaragh	2017/18								1				
0W012 - Lough Iron	2017/18						15						
0W012 - Lough Iron	2018/19					8	7	3	7	2			
0W012 - Lough Iron	2019/20					8	14						
0V401 - Nanny Estuary & shore	2019/20						12						
0VS23 - Croboy Lough & fields	2017/18							73					
0VS23 - Croboy Lough & fields	2018/19							1					
0T302 - Buckroney Fen	2018/19							2			1		
0T302 - Buckroney Fen	2019/20									1			
0T908 - Brittas Bay & Mizen Head	2018/19				73								
0S301 - River Barrow (Monasterevin-Portarlinton)	2019/20						4						
0Q310 - Durrow Curragh (River Erkina)	2018/19					-1	2			1			
0M404 – Blackwater Estuary	2019/20							1		1			
0M305 - River Barrow (Cheekpoint-New Ross)	2018/19					6							
0L925 - Croagh Bay	2017/18									1			
0L497 - Clonakilty Bay	2017/18			1									
0L013 – Ballynacarriga Lake	2019/20							1					
0K009 - Lough Leane & Killarney Valley	2017/18			2									
0K026 - Reask Lagoon	2019/20					1							
0K410 - Ballinskelligs Bay	2019/20				4								
0K423 - Cashen River & Estuary	2017/18						15		15	16			
0K423 - Cashen River & Estuary	2019/20							6					
0K430 - Dingle Harbour	2018/19						1						
0K432 - Smerwick Harbour	2017/18									2			

OK432 - Smerwick Harbour	2018/19						4						
OJ307 – Cabragh Wetlands	2019/20							20					
OJ390 - Clover River	2019/20							2					
OF010 - Gorteen Lake	2017/18							10					
OC497 - Drumcliff Bay Estuary	2017/18									-1			
OX002 - Lough Ramor	2019/20					2	2	1					
OX074 - Green Lough	2017/18									3			

Appendix 2

Table A5. Peak monthly counts at sites in the Republic of Ireland where Pink-footed Geese were recorded in each of the three seasons from 2017/18 to 2019/20. Annual peak counts in bold. -1 Indicates birds were present but not counted. See main text for caveats.

Site	Winter	A	S	O	N	D	J	F	M	A	M
0Z401 - Dundalk Bay	2017/18					115	6		50		
0Z401 - Dundalk Bay	2018/19			250	350	-1	243	60	237		
0Z401 - Dundalk Bay	2019/20			2	200		360		4	30	
0T401 - North Wicklow Coastal Marshes	2017/18				1		3	3	2		
0T401 - North Wicklow Coastal Marshes	2018/19										1
0T401 - North Wicklow Coastal Marshes	2019/20			1	1		14				
0O010 - Tacumshin Lake	2017/18							2			
0O010 - Tacumshin Lake	2018/19		1								1
0O010 - Tacumshin Lake	2019/20			1							
0O401 - Wexford Harbour & Slobs	2017/18				10	10	14				
0O401 - Wexford Harbour & Slobs	2018/19			6			16	17	2	1	4
0O401 - Wexford Harbour & Slobs	2019/20			6	23	46	56	61			
0A401 - Lough Swilly	2017/18			30	33	3	42	40	3		
0A401 - Lough Swilly	2018/19		35	56	183	183	208	250	293	5	
0A401 - Lough Swilly	2019/20	1	17	926	107	12		1			

Table A6. Peak monthly counts at sites in the Republic of Ireland where Pink-footed Geese were recorded in two of the three seasons from 2017/18 to 2019/20. Annual peak counts in bold. -1 Indicates birds were present but not counted. See main text for caveats.

Site	Winter	A	S	O	N	D	J	F	M	A	M
0Q300 - River Nore	2017/18						-1				
0Q300 - River Nore	2018/19								1		
0Q310 - Durrow Curragh (River Erkina)	2017/18					1					
0Q310 - Durrow Curragh (River Erkina)	2018/19						1	1			
0M492 - Outer Tramore Bay	2018/19			-1							3
0M492 - Outer Tramore Bay	2019/20			-1							
0L007 - Inishcarra Reservoirs	2017/18						1				
0L007 - Inishcarra Reservoirs	2019/20					4	4	4			
0L403 - Cork Harbour	2018/19								1		
0L403 - Cork Harbour	2019/20			2	1						
0H303 - Tullagher Bog	2018/19					1					
0H303 - Tullagher Bog	2019/20						12				
0G301 - Rahasane Turlough	2018/19			1	1						
0G301 - Rahasane Turlough	2019/20				1	1					
0E305 - River Suck	2017/18						1				
0E305 - River Suck	2018/19					5					
0C497 - Drumcliff Bay Estuary	2018/19			2		2		5			
0C497 - Drumcliff Bay Estuary	2019/20					2					
0AG03 - Tory Island	2018/19		1								
0AG03 - Tory Island	2019/20			3							

Table A7. Peak monthly counts at sites in the Republic of Ireland where Pink-footed Geese were recorded in one of the three seasons from 2017/18 to 2019/20. Annual peak counts in bold. -1 Indicates birds were present but not counted. See main text for caveats.

Site	Winter	A	S	O	N	D	J	F	M	A	M
0Z901 - Dunany Point - Clogher Head	2018/19			1							
0W012 - Lough Iron	2017/18					2	10				
0U404 - Dublin Bay	2018/19			1			1	1			
0U407 - Rogerstown Estuary	2019/20			1	2	4	2				
0T302 - Buckroney Fen	2018/19									7	
0O402 - Lady's Island Lake	2019/20				4						
0M301 - River Suir Lower	2017/18						3				
0L020 - Kilcolman Marsh	2018/19						5				
0L401 - Ballymacoda	2018/19				1						
0L412 - Lissagriffin Lake	2018/19			1							
0L423 - Ringabella Creek	2018/19					1	1				
0L467 - Ballycotton Shanagarry	2019/20				1						
0K401 - Castlemaine Harbour & Rossbehy	2019/20				1						
0K906 - Portmagee Channel	2019/20						1				
0K435 – An Trá Beg	2019/20			2							
0H007 - Farrihy Lough	2019/20						12	12			
0H401 - Shannon & Fergus Estuary	2018/19								1		
0H902 - Mid-Clare Coast (Mal Bay - Doonbeg Bay)	2018/19							1			
0H905 - Illaunonearaun Isl.	2017/18									1	
0H910 - Loop Head Coast	2019/20			5							
0G004 - Lough Corrib	2018/19			6	60						
0G005 - North Central Galway Lakes	2017/18							13			
0G341 - Glenamaddy Turlough	2018/19						5				
0E020 - Southern Roscommon Lakes	2018/19					5					
0D320 - River Moy	2018/19							2	2		

0D020 - Termoncarragh & Annagh Marsh	2019/20						2				
0D406 - South Mayo Coast	2017/18			1							
0A099 - Dunfanaghy New Lake	2019/20		2								
0A014 - Lough Fern	2018/19							2			
0A901 - Malin Head	2018/19				10						