



Irish Wetland Bird Survey: Results of Waterbird Monitoring in Ireland in 2013/14

Dunlins and Oystercatchers. Picture by Colum Clarke



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Summary

- The Irish Wetland Bird Survey (I-WeBS) was initiated in the Republic of Ireland in the winter of 1994/ 95. It is the primary tool for monitoring the status of non-breeding wintering waterbirds and the importance of the wetland upon which they rely.
- This report aims to summarise the results of the survey in 2013/14 and provides an update on the status of wintering waterbirds and their key sites.
- I-WeBS uses the look-see method where counters record the number of individuals of each waterbird species on frequent visits to their pre-defined wetland sites. Waterbirds are counted at each wetland visited. Counts are undertaken once per month between September and March inclusive, and on or near pre-determined dates.
- In 2013/14, 252 sites comprising 743 subsites were covered, and this included the majority of the important sites. Some 71% of sites were covered in at least three months, and greatest coverage during the season was in January when 86% of sites were surveyed.
- Data were received for 89 out of 112 sites that are of notable importance for waterbirds, including 67 out of 90 Special Protection Areas that have been designated for waterbirds under the EU Birds Directive.
- A total of 100 waterbird species was recorded, including 76 which are regularly occurring. The maximum number recorded was in January, dominated by waders (56%). Wigeon *Anas Penelope* and Teal *A. acuta* were the most abundant wildfowl, and Golden Plover *Pluvialis apricaria* and Lapwing *Vanellus vanellus* were the most abundant waders.
- Totals of 47 internationally important and 86 nationally important sites were identified, representing an increase when compared with the last period (2008/09-2012/13). Dundalk Bay, Wexford Harbour & Slobs, Lough Swilly and Dublin Bay were once again among the top five most important sites.
- The trends of 41 species were measured and showed that eight species increased on average over the period between 1994/95 and 2013/14, while 11 species declined. Greatest increases were in Little Egret *Egretta garzetta*, (feral) Canada Goose *Branta Canadensis*, Barnacle Goose *Branta leucopsis*, Sanderling *Calidris alba* and Light-bellied Brent Goose while greatest declines were in Bewick's Swan *Cygnus columbianus bewickii* and Scaup *Anas marila*.
- The trends of all species showing a decline overall have shown positive trends in the short and/ or medium terms, while the reverse was shown for species showing long term increases.

Curlew. Photo by Oran O'Sullivan



Introduction

Ireland is situated on some of the major flyways for arctic-nesting species and is of significant importance for wintering waterbirds. Extensive areas of wetland and a relatively mild climate attract more than one million waterbirds each winter. Most species which occur in Ireland migrate from the north and northwest (principally Canada, Greenland and Iceland), or from the northeast (northern Europe, Scandinavia, Russia and Siberia), moving south to winter predominantly in west and northwest Europe and west Africa (Wetlands International 2012, Wernham *et al.* 2002).

As a member of the European Union, and as a signatory to a number of international conservation conventions, Ireland is required to identify and designate important wetlands for waterbirds. As a part of this process, Ireland is obliged to carry out regular monitoring of these sites.

Methods

Field methods

I-WeBS uses the well-established technique of counting the numbers of waterbirds at wetland sites by the 'look-see' method (Bibby *et al.* 1992). This involves counters recording the number of individuals of each waterbird species on frequent visits to their pre-defined wetland sites. Waterbirds are counted at each wetland visited. Counts are ideally undertaken once per month between September and March inclusive, and on or near pre-determined dates. It is recommended that counts of coastal sites be carried out at or near high tide, and therefore dates selected for survey are on mid-month weekends with high tides as close to midday as possible. Given differences in tidal cycle regimes around Ireland, counts for south and west coast sites are scheduled one week later than those of east coast and midland sites.

Large sites usually require a team of counters to ensure that counts are conducted over a relatively short period (within three hours), thus minimising duplicate counting of birds, particularly for those

The Irish Wetland Bird Survey (I-WeBS) was initiated in the Republic of Ireland in 1994/95. This survey is ongoing, and aims to continue to monitor wintering waterbird populations and importance of the wetlands upon which they rely. On the basis of the data collated through this survey, as well as previous wetland bird surveys, including the Winter Wetland Survey (1984/85-1986/87) and the Wetlands Enquiry (1971/72-1973/74), some 90 wetlands in Ireland have been at least partially designated as Special Protection Areas (SPAs) under the EU Birds Directive (2009/147/EC) for wintering waterbirds.

This report presents summarised results of data collated in 2013/14, and on the population status of wintering waterbirds and their key wetland sites in the Republic of Ireland.

species that move extensively. Participants are encouraged to try to coordinate counts of adjacent sites between which movements are likely to occur.

Analyses

Waterbird totals are compiled, and annual peaks evaluated. The mean of peaks over the most recent five-season period available is used to examine site importance. In order to generate species trends, the counts are modeled using a multiplicative log-linear index model with site, year and month factors (Underhill and Prys-Jones 1994). Full details on the methods and analyses used have been described in detail in Boland and Crowe (2012).

Additional data sources used in this report included data from the January 2010 International Swan Census (Boland *et al.* 2010) and the Baseline Waterbird Survey 2009 – 2012 (Cummins and Crowe 2010, 2011, 2012).

Results

Coverage

In total, 252 sites comprising 743 subsites were covered in 2013/14 (Fig. 1), with greatest coverage (seven or more counts) mostly at coastal sites, and fewer counts of two or less at inland wetlands.

Most of the counts were carried out in all months between September and March, and a small number of counts (five in total) in other months. Greatest coverage (86% of sites) was in January (Table 1), while coverage in other months was lower, and ranged between 41% and 71% of sites covered.

Table 1. Number of sites and subsites covered each month and overall in 2013/14.

	<i>Sites</i>	<i>Subsites</i>
Sep	99	234
Oct	132	330
Nov	174	464
Dec	141	377
Jan	209	612
Feb	148	401
Mar	140	360
Overall	253	743

Some 62 sites (26% of total) were covered in all seven months, while 47% of sites were covered in five or more months, and 71% of sites in three or more months. Some 48 sites (19% of total) were covered once only.

Data were received at the time of writing for 89 out of 112 sites that are of notable importance for waterbirds (i.e. sites that have supported internationally or nationally important numbers in the past five years). This includes 67 out of 90 Special Protection Areas that have been designated for waterbirds (Table 2). The SPAs that were not covered (or for which no data were available at the time of writing) include:

- Lough Fern
- Trawbreaga Bay
- Lough Foyle
- Lough Carra
- River Suck
- Lough Ree
- Shannon & Fergus Estuary
- Ballymacoda
- Shannon Callows
- Carlingford Lough (RoI)
- Lough Derg (Shannon)
- Castlemaine Harbour (outer sections)

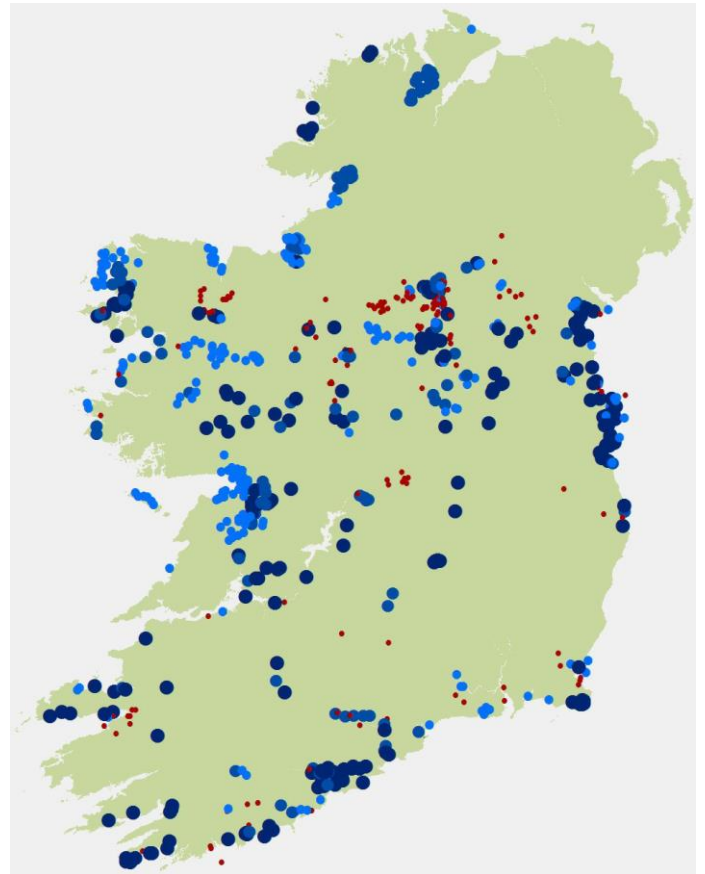


Figure 1. Subsite coverage in 2013/14, illustrating the extent of coverage, with largest and darkest blue circles representing subsites covered on 6 or more occasions through to subsites covered once only (small red circles).

Table 2. Coverage at SPAs in 2013/14, indicating the total number of counts achieved compared to the minimum required number of counts per site.

<i>SPA code</i>	<i>I-WeBS site</i>	<i>Number counts</i>	<i>Counts required</i>	<i>SPA code</i>	<i>I-WeBS site</i>	<i>Number counts</i>	<i>Counts required</i>
4009	Lady's Island Lake	6	2	4065	Lough Sheelin	3	-
4014	Rockabill	1	-	4069	Lambay Island	2	-
4015	Rogerstown Estuary	7	3	4075	Lough Swilly	5	4
4016	Baldoyle Bay	6	2	4076	River Slaney	1	-
4019	Wexford Bay	2	3	4076	Wexford Harbour & Slobs	6	4
4020	The Cull & Killag (Ballyteige)	3	3	4080	Boyne Estuary	6	3
4022	Ballycotton Shanagarry	7	2	4081	Clonakilty Bay	7	3
4024	Dublin Bay	8	4	4086	Little Brosna Callows	6	4
4025	Broadmeadow (Malahide) Estuary	7	3	4089	Rahasane Turlough	4	3
4026	Dundalk Bay	7	4	4090	Sheskinmore Lough	7	-
4027	Tramore Back Strand	3	2	4091	Braganstown	4	-
4028	Blackwater Estuary	7	3	4092	Tacumshin Lake	6	4
4029	Castlemaine Harbour & Rossbehy	6	3	4093	Termoncarragh & Annagh Marsh	3	-
4030	Cork Harbour	7	4	4094	Blackwater Callows	5	2
4031	Inner Galway Bay	3	3	4095	Kilcolman Marsh	7	-
4033	Bannow Bay	2	3	4097	River Suck	1	-
4035	Sligo Harbour	4	2	4107	Coole Lough - Newtown Turlough	7	-
4036	Killala Bay	3	2	4109	Inishcarra Reservoirs	3	3
4037	Blacksod & Tullaghan Bays	7	3	4122	Skerries Islands	3	-
4037	Broadhaven & Sruwadaccon Bays	3	3	4129	Ballysadare Bay	7	2
4041	Ballyallia Lake	7	-	4134	Lough Rea	6	2
4042	Lough Corrib	7	4	4140	Southern Roscommon Lakes	6	-
4043	Lough Derravaragh	4	2	4151	Donegal Bay	4	3
4044	Lough Ennell	6	2	4158	Nanny Estuary & shore	7	3
4045	Glen Lough	1	-	4182	Mid-Clare Coast (Mal Bay - Doonbeg Bay)	2	-
4046	Lough Iron	5	2	4184	Cashen River & Estuary	7	-
4047	Lough Owel	4	-	4186	North Wicklow Coastal Marshes	7	3
4048	Lough Gara	7	-	4188	Tralee Bay, Lough Gill & Akeragh Lough	7	4
4049	Lough Oughter Complex	6	2	4194	Dunfanaghy New Lake	7	-
4050	Lough Arrow	1	-	4219	Courtmacsherry Bay, Broadstrand Bay & Dunworley	7	3
4052	Carrowmore Lake	3	-	4220	Corofin Wetlands	3	2
4061	Lough Kinale & Derragh Lough	7	-	4228	Lough Cullin	6	-
4062	Lough Mask	3	-	4228	Lough Conn	1	-
4063	Poulaphouca Reservoir	1*	-	4234	Drumcliff Bay Estuary	4	2

* Supplementary count of a selection of species

Total waterbird numbers

A total of 100 species was recorded in 2013/14, including 13 swan & goose species, 26 duck, 17 wildfowl allies, 26 waders, 12 gulls and five tern species. The scientific names of all species are given in these tables or are otherwise mentioned in the text.

Overall, some 76 regularly occurring species were recorded (Table 3). Regularly occurring species are defined as those recorded during the priority I-WeBS period (Sep - Mar), in at least seven of the last 10 years and at more than 10 sites on average over that period. A further 21 species which are considered scarce (i.e. not meeting the criteria of 'regularly occurring' species; Table 4), and another three species that are from introduced or released origins including Black Swan *Cygnus atratus* (5 records), Canada Goose *Branta Canadensis* (44 records) and Mandarin Duck *Aix galericulata* (4

records) were also recorded. There were also several reported incidences of feral/ hybrid goose (13 records) and feral/ hybrid Mallard (20 records).

The maximum number of waterbirds was recorded in January at 393,935 birds (Table 3). As a group, waders were the most dominant in most months, and during the mid-winter period (November to February) comprised between 53% and 57% of the total number of waterbirds recorded. During this same period, wildfowl and their allies comprised between 33% and 38% of total waterbirds, while gulls and terns comprised between 7% and 14%.

Among the waders, Golden Plover, Lapwing, Dunlin and Oystercatcher were the most numerous (Table 3). Wigeon and Teal were the most abundant wildfowl species recorded and Black-headed Gull the most numerous of the gulls.

Tramore Backstrand, Photo by Olivia Crowe



Important sites

Totals of 47 internationally important and 86 nationally important sites were identified (Tables 5 & 6). This represents an increase of five internationally important and 14 nationally important sites when compared with the last five year period (2008/09 – 2012/13).

Of the internationally important sites, six supported in excess of 20,000 waterbirds (excluding gulls and terns). They were Dundalk Bay, Wexford Harbour & Slobs, Lough Swilly, Dublin Bay, Cork Harbour and Lough Corrib. The five year mean at the Little Brosna Callows dropped below this 20,000 threshold during the current period. Closer inspection of the data shows that waterbird numbers here have fluctuated throughout I-WeBS, and presumably numbers are affected by water levels which also fluctuate widely from one season to the next. The

lowest annual peak recorded at this site was 12,011, in 2012/13.

Improvements in numbers at eight sites resulted in elevation to international importance at Rahasane Turlough (Black-tailed Godwit), Nanny Estuary & shore (Light-bellied Brent Goose), Lough Gara (Whooper Swan), Lough Oughter Complex (Mute Swan), Lough Kinale & Derragh Lough (Mute Swan), Dunfanaghy New Lake (Mute Swan & Barnacle Goose), Lough Aderry (Black-tailed Godwit) and River Foyle (Whooper Swan). Two sites, The Cull & Killag and Corofin Wetlands, dropped to national importance.

Improvements at 17 sites (Table 6) resulted in an elevation in status to national importance, while some two sites, Bracklagh Lough and Fortwilliam Turlough are no longer of importance during this period.

Table 3. Total numbers counted of regularly occurring waterbirds between September 2013 and March 2014.

Species		Sep	Oct	Nov	Dec	Jan	Feb	Mar
Mute Swan	<i>Cygnus olor</i>	1,424	2,440	3,023	2,279	3,408	1,581	1,387
Whooper Swan	<i>Cygnus cygnus</i>	2	754	2,617	2,345	3,458	1,799	1,597
Pink-footed Goose	<i>Anser brachyrhyncus</i>		6	46	90	31	14	88
Greenland White-fronted Goose	<i>Anser albifrons flavirostris</i>	1	4,915	8,571	7,742	10,272	9,636	8,954
Greylag Goose	<i>Anser anser</i>	169	424	2,385	1,342	1,255	2,501	1,611
Barnacle Goose	<i>Branta leucopsis</i>		137	1,407	618	783	3,467	341
Light-bellied Brent Goose	<i>Branta bernicla hrota</i>	177	4,047	14,024	14,781	11,996	11,730	10,696
Shelduck	<i>Tadorna tadorna</i>	338	1,023	2,838	3,932	5,782	4,859	3,224
Wigeon	<i>Anas penelope</i>	1,141	15,783	29,673	22,405	34,298	19,083	7,126
Gadwall	<i>Anas strepera</i>	176	165	266	310	294	158	106
Teal	<i>Anas crecca</i>	2,222	5,690	12,463	12,494	20,484	10,962	6,122
Mallard	<i>Anas platyrhynchos</i>	4,606	5,944	6,871	5,679	6,987	3,707	1,706
Pintail	<i>Anas acuta</i>	12	150	540	600	756	354	55
Shoveler	<i>Anas clypeata</i>	75	574	981	942	1,550	642	306
Pochard	<i>Aythya ferina</i>	84	71	186	85	1,820	930	302
Tufted Duck	<i>Aythya fuligula</i>	440	1,456	4,152	3,236	8,482	3,267	3,238
Scaup	<i>Aythya marila</i>	1	215	164	94	131	21	22
Long-tailed Duck	<i>Clangula hyemalis</i>		1	16	6	23	28	5
Common Scoter	<i>Melanitta nigra</i>		3,128	3,449	187	6,139	5,280	3,805
Goldeneye	<i>Bucephala clangula</i>		17	376	426	719	439	286
Red-breasted Merganser	<i>Mergus serrator</i>	22	460	673	392	979	769	439
Red-throated Diver	<i>Gavia stellata</i>	6	70	75	89	290	375	147
Great Northern Diver	<i>Gavia immer</i>	2	116	441	227	670	512	257
Little Grebe	<i>Tachybaptus ruficollis</i>	572	559	963	470	916	414	231
Great Crested Grebe	<i>Podiceps cristatus</i>	152	379	606	553	1,662	631	606
Cormorant	<i>Phalacrocorax carbo</i>	1,189	1,709	1,759	1,858	2,927	1,372	733
Shag	<i>Phalacrocorax aristotelis</i>	130	601	620	644	944	506	134
Little Egret	<i>Egretta garzetta</i>	489	476	411	222	264	139	230
Grey Heron	<i>Ardea cinerea</i>	449	549	637	330	526	228	187
Water Rail	<i>Rallus aquaticus</i>	3	14	14	9	16	4	6
Moorhen	<i>Gallinula chloropus</i>	238	268	262	212	242	164	160
Coot	<i>Fulica atra</i>	2,007	3,001	7,519	1,648	5,500	3,408	854
Total wildfowl and their allies*		16,140	55,312	108,224	86,469	134,219	89,359	55,176
Oystercatcher	<i>Haematopus ostralegus</i>	17,799	20,640	21,508	17,326	21,088	16,359	8,706
Ringed Plover	<i>Charadrius hiaticula</i>	1,848	2,768	3,019	1,615	2,861	1,858	280
Golden Plover	<i>Pluvialis apricaria</i>	702	16,420	44,151	33,064	63,212	37,021	4,001
Grey Plover	<i>Pluvialis squatarola</i>	308	535	1,035	766	2,666	895	590
Lapwing	<i>Vanellus vanellus</i>	611	3,589	20,145	27,551	41,002	15,354	299
Knot	<i>Calidris canutus</i>	716	1,857	4,078	10,278	10,049	10,033	3,721
Sanderling	<i>Calidris alba</i>	972	2,521	1,740	1,498	1,876	1,339	1,699
Purple Sandpiper	<i>Calidris maritima</i>	2	1	6	5	30	19	56
Dunlin	<i>Calidris alpina</i>	4,190	6,311	15,401	20,958	28,672	19,451	8,903
Ruff	<i>Philomachus pugnax</i>	14	11	14	15	6	9	4
Snipe	<i>Gallinago gallinago</i>	36	160	198	307	330	144	72
Black-tailed Godwit	<i>Limosa limosa</i>	8,097	9,991	11,030	10,486	11,558	8,767	10,070
Bar-tailed Godwit	<i>Limosa lapponica</i>	1,522	2,902	8,132	6,229	7,600	8,066	3,554
Whimbrel	<i>Numenius phaeopus</i>	25	4	2	10	7	14	1
Curlew	<i>Numenius arquata</i>	6,335	7,794	8,722	9,898	15,706	11,824	4,653
Common Sandpiper	<i>Actitis hypoleucos</i>	4	1	1	2		2	
Greenshank	<i>Tringa nebularia</i>	466	471	570	400	556	328	331
Redshank	<i>Tringa totanus</i>	7,507	8,493	11,299	8,726	11,242	8,667	7,109
Turnstone	<i>Arenaria interpres</i>	647	1,941	1,618	1,241	2,028	1,622	799
Total waders*		51,821	86,422	152,680	150,385	220,498	141,775	55,009

Table continued on next page.

Table 3 continued.

Species		Sep	Oct	Nov	Dec	Jan	Feb	Mar
Mediterranean Gull	<i>Larus melanocephalus</i>	49	43	54	96	33	52	17
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	10,364	10,630	12,229	11,514	20,350	18,424	13,744
Common Gull	<i>Larus canus</i>	2,421	4,581	3,799	7,173	7,907	9,666	3,025
Lesser Black-backed Gull	<i>Larus fuscus</i>	1,982	1,784	605	1,977	4,092	1,329	1,655
Herring Gull	<i>Larus argentatus</i>	2,733	2,822	2,897	3,895	5,189	5,531	2,068
Iceland Gull	<i>Larus glaucooides</i>					5	14	2
Glaucous Gull	<i>Larus hyperboreus</i>			3		6	28	3
Great Black-backed Gull	<i>Larus marinus</i>	1,674	1,060	1,185	1,689	1,630	1,339	619
Sandwich Tern	<i>Sterna sandvicensis</i>	597	35	1				6
Total gulls and terns*		19,932	20,994	20,791	26,345	39,218	36,461	21,139
Kingfisher	<i>Alcedo atthis</i>	9	2	5	8	10	6	8
Total waterbirds*		87,893	162,728	281,695	263,199	393,935	267,595	131,324

* Totals include records of other waterbirds, including vagrant species listed in Table 4, feral or naturalised geese and ducks, as well as others that were not identified to species level (e.g. those submitted as unidentified waders).

Barnacle Geese. Photo by Dick Coombes



Table 4. Peak monthly counts of scarce waterbirds between September 2013 and March 2014.

Species		Total	Species		Total
Bewick's Swan	<i>Cygnus columbianus</i>	14	Glossy Ibis	<i>Plegadis falcinellus</i>	3
European White-fronted Goose	<i>Anser albifrons albifrons</i>	1	Spoonbill	<i>Platalea leucorodia</i>	1
Snow Goose	<i>Anser caerulescens</i>	1	Crane	<i>Grus grus</i>	1
Dark-Bellied Brent Goose	<i>Branta bernicla bernicla</i>	2	Little Stint	<i>Calidris minuta</i>	4
Ruddy Shelduck	<i>Tadorna ferruginea</i>	3	Curlew Sandpiper	<i>Calidris ferruginea</i>	6
American Wigeon	<i>Anas americana</i>	3	Jack Snipe	<i>Lymnocyptes minimus</i>	6
Green-winged Teal	<i>Anas carolinensis</i>	3	Woodcock	<i>Scolopax rusticola</i>	2
Garganey	<i>Anas querquedula</i>	3	Green Sandpiper	<i>Tringa ochropus</i>	27
Blue-winged Teal	<i>Anas discors</i>	1	Spotted Redshank	<i>Tringa erythropus</i>	5
Ring-necked Duck	<i>Aythya collaris</i>	7	Wood Sandpiper	<i>Tringa glareola</i>	1
Lesser Scaup	<i>Aythya affinis</i>	1	Little Gull	<i>Larus minutus</i>	71
Eider	<i>Somateria mollissima</i>	58	Ring-billed Gull	<i>Larus delawarensis</i>	5
Surf Scoter	<i>Melanitta perspicillata</i>	5	Yellow-legged Gull	<i>Larus michahellis</i>	3
Smew	<i>Mergellus albellus</i>	3	Ivory Gull	<i>Pagophila eburnea</i>	1
Goosander	<i>Mergus merganser</i>	46	Roseate Tern	<i>Sterna dougallii</i>	27
Black-throated Diver	<i>Gavia arctica</i>	31	Common Tern	<i>Sterna hirundo</i>	62
Pied-billed Grebe	<i>Podilymbus podiceps</i>	1	Arctic Tern	<i>Sterna paradisaea</i>	2
Red-necked Grebe	<i>Podiceps grisegena</i>	4	Little Tern	<i>Sterna albifrons</i>	16
Slavonian Grebe	<i>Podiceps auritus</i>	31			

Table 5. Internationally important sites based on counts between 2009/10 and 2013/14, indicating the species that occur in internationally important numbers (upper case) and nationally important numbers (lower case). Species codes and national and international importance thresholds are defined in the Appendix. An asterisk indicates poor quality count, and was not included in the calculation of the mean.

Site ¹	2009/10	2010/11	2011/12	2012/13	2013/14	Mean	Species occurring in significant concentrations ²
Sites supporting in excess of 20,000 waterbirds							
Dundalk Bay	62,518	50,527	50,642	46,921	49,477	52,017	gj, PB, su, wn, t., ma, pt, cx, rm, rh, nd, ca, et, h., OC, rp, gp, gv, l., KN, ss, dn, BW, BA, cu, rk, tt
Wexford Harbour & Slobs	30738*	24449*	47,245	27,112	37,041	37,133	MS, WS, NW, PB, su, wn, ga, t., ma, pt, rm, gg, ca, et, gp, gv, l., kn, ss, dn, BW, ba, cu, rk
Lough Swilly	30,147	30,351	33,677	28,175	28,507	30,171	MS, WS, NW, GJ, PB, su, wn, t., ma, sv, tu, gn, rm, rh, nd, lg, gg, ca, h., co, oc, rp, gp, l., kn, dn, BW, ba, cu, gk, rk
Dublin Bay	33,624	27,924	26,802	27,443	31,427	29,444	PB, su, wn, t., pt, sv, rm, gg, ca, et, h., oc, rp, gv, kn, ss, dn, BW, BA, cu, gk, rk, tt
Cork Harbour	18972*	24516*	27,088	28,611	20,050	25,250	su, wn, t., ma, rm, lg, gg, ca, et, h., oc, gp, gv, l., dn, BW, ba, cu, gk, rk, tt
Lough Corrib	33,571	38,147	11012*	8,101	12,481	23,075	MS, ga, PO, tu, gn, lg, co, gp, l.
Other internationally important sites							
Tralee Bay, Lough Gill & Akeragh Lough	17,015	18,547	21,029	23,898	8,866	17,871	MS, PB, wn, ma, pt, sv, sp, cx, oc, rp, gp, gv, l., ss, ps, dn, BW, ba, cu, rk, tt
Little Brosna Callows			20,962	12,011	15,613	16,195	MS, ws, nw, wn, t., pt, sv, gp, gv, l., BW [Aerial: MS, nw, wn, gp, BW]
Rogerstown Estuary	16,878	8,667	16,784	21,768	11,786	15,177	gj, PB, su, wn, t., sv, rm, et, oc, rp, gv, l., ss, ps, dn, bw, cu, gk, rk, tt
Tacumshin Lake	23569	10282	19499	11827	10170	15,069	MS, su, wn, ga, t., pt, sv, lg, co, rp, gp, l., dn, BW
Dungarvan Harbour	23,354		8,880	12,444		14,893	PB, su, rm, gg, et, h., oc, gp, gv, l., kn, dn, BW, ba, cu, rk, tt
Bannow Bay	22,355		9,204		12,618	14,726	PB, su, et, oc, gp, gv, l., dn, BW, ba, cu, gk, rk
Inner Galway Bay	12,859	12,009	18,710	11,663	14,305	13,909	MS, PB, wn, t., sv, rm, ND, lg, gg, ca, et, h., oc, rp, gv, l., dn, bw, ba, cu, gk, rk, tt
Ballymacoda	2276*	3268*	17,675	8,987		13,331	PB, t., et, rp, gp, gv, l., ss, dn, BW, ba, cu, tt
Boyne Estuary	11,188	8,928	23,045	15,159	8,179	13,300	PB, su, t., oc, gp, gv, l., kn, ss, dn, bw, rk
Castlemaine Harbour & Rossbehy	6747*	12,084	11,648	10,735	9,968	11,109	PB, su, wn, ma, pt, cx, et, oc, rp, gv, ss, dn, ba, cu, rk
Rahasane Turlough (+1)	8,928	9,169	14,150	5,798	16,254	10,860	wn, t., ma, pt, sv, et, gp, l., BW
Shannon & Fergus Estuary Aerial	7,860	10,560	12,172	12,759		10,838	ws, su, wn, t., gp, l., ss, dn, BW, cu [Ground: MS, ga, sv, lg, BW]
Shannon Callows (Aerial)	6,284	8,355	20,652	7,591		10,721	MS, ws, wn, t., gp, l., bw [Ground: wn, BW]
Blacksod & Tullaghan Bays	8,377	5439*	9,739	10,646	12,840	10,401	by, PB, cx, rm, rh, ND, rp, gp, gv, ss, dn, ba, cu, gk, tt
Inishcarra Reservoirs	10,868	2,519	3,275	13,942	9,636	8,048	MS, wn, t., ma, sv, gp, gv, l.
River Suck (Aerial)	11,020	6,439	6,026	7,118		7,651	MS, ws, nw, wn, t., gp, l., bw
Broadmeadow (Malahide) Estuary	7,296	10,745	3,466	9,488	5,369	7,273	PB, su, ga, pt, cx, gn, rm, gg, h., oc, gv, kn, bw, ba, gk, tt
Donegal Bay	7,012	7,110	5,607	6,647	5,764	6,428	MS, ws, PB, ga, cx, rm, rh, ND, lg, h., oc, ss, cu, gk, tt
Clonakilty Bay	9,170	6,148	6,220	4,064	5,962	6,313	rp, kn, dn, BW, cu, gk, rk
Baldoyle Bay	5,884				6,459	6,172	PB, su, gg, et, rp, gp, gv, kn, bw
Lough Derg (Shannon)		6,020				6,020	MS, ma, tu, gn, lg, gg, ca, co [Aerial: MS, ga, pt, tu, gn, co]
North Wicklow Coastal Marshes	6,778	6,536	5,275	3123*	4,846	5,859	gj, PB, wn, t., sv, rh, lg, et, l., bw
Lady's Island Lake	7,952	4,667	4,324	8,443	3,604	5,798	MS, wn, ga, sv, et, co, ps, bw
Drumcliff Bay Estuary	7,974	6,276	6,614	4,260	3,557	5,736	BY, rm, oc, gv, kn, ss, ba
Courtmacsherry Bay, Broadstrand Bay & Dunworley	5,089	6,320	6,025	5,520	5,487	5,688	su, wn, t., nd, et, dn, BW, cu
Tramore Back Strand	1306*	5,025	3,120	6,024	7,444	5,403	PB, ga, gv, bw, ba, cu
Killala Bay	1,535	4,855	4,634	8,496	4,788	4,862	PB, gv, kn, dn, ba
Nanny Estuary & shore (+1)	9,165	4,031	3,881	3,407	3,167	4,730	PB, cx, rp, kn, ss
Sligo Harbour	5,315	3,611	2,795	6,673	4,303	4,539	PB, cx, rm, oc, rp, kn, ss, ba, cu, tt
Lough Rea	3,765	3,256	3,125	3,456	3,679	3,456	SV, lg, co
Lough Ennell	2,524	2,553	3,891	1,964	4,838	3,154	MS, po, tu, lg, co, gv
Hick's Tower & Robswall	3,226	3,001	2,977			3,068	PB, oc, gv, ba
Lough Derravaragh	3,082	3,653	1,916	3,284	2,983	2,984	MS, po, tu, lg, co
Lough Iron	1,925	1,762	3,428	1,690	1,898	2,141	NW, sv
Lough Gara (+1)	1,952	2,600	1901*	1,831	1,821	2,051	WS, tu
Lough Oughter Complex (+2)	176*	1156*	1870	2081*	2075	1,973	MS, ws, tu
Lough Kinale & Derragh Lough (+2)	810*				1611	1,611	MS, tu, lg, co
Dunfanaghy New Lake (+2)	430*	291			1615	953	MS, BY
Lough Aderry (+1)	862	180*	255	430	472	505	ga, BW
River Foyle (+2)		987*				*	WS

¹ Sites which have changed status when compared with the last period (2008/09 – 2012/13) are indicated with +1 which represents an improvement in status from national to international importance and +2 indicates sites that were not important during the former period etc.

² For sites covered by air and from the ground, the method which achieved highest counts (mean) is listed together with species of importance. The species of importance by the other method are also listed in square brackets.

Table 6. Nationally important sites based on counts between 2009/10 and 2013/14, indicating the species that occur in nationally important numbers. Species codes are defined in the Appendix. An asterisk indicates poor quality count, and was not included in the calculation of the mean. Sites with less than 1,000 birds are listed at the bottom of the table.

Site ¹	2009/10	2010/11	2011/12	2012/13	2013/14	Mean	Species occurring in significant concentrations
Southern Roscommon Lakes	9,963	2,315	14,157	8,244	9,446	8,825	nw, wn, t., pt, sv, gp, l.
Cashen River & Estuary			6,542		2837*	6,542	ws, gp, l.
Blackwater Estuary	4,638	3802*	5,248	4,973	5,632	5,123	su, t., et, bw, cu, gk, rk
Lough Owel	6,676	5,711	3,572	4,469	4,284	4,942	sv, po, tu, co
Kiltullagh Lough	4,749	9,072		3,964	1,056	4,710	gp, l.
Lough Ree		4,663				4,663	wn, tu, co, l.
Ballycotton Shanagarry	3,541	1912*	3,654	5,263	6,158	4,654	t., gp, gv, ss, cu
The Cull & Killag (Ballyteige) (-1)	5,464	2,732	3,939	4,391	6,569	4,619	gv, l., ba, rk
Clew Bay	4,024	4,636	4,295	5,027	3,174	4,231	by, rm, nd, lg, ca, h., rp, ss, cu, gk, rk, tt
Ballysadare Bay	3,770	4,171	4,694	3,575	4,715	4,185	rm, rp, ss, dn, ba, cu, gk
Rosscarbery	1,338	4,851	4,712	3,196	5,405	3,900	gp
Dunany Point - Clogher Head	2,819	4,901	4,053	2,994	1128*	3,692	gj, rm, oc, kn, ss
Glenamaddy Turlough	2,060	4,014		195	7,716	3,496	sv, gp
River Deel				3,092		3,092	l.
Trawbreaga Bay	4,155	2,007	1421*	1316*		3,081	by, rm, rp, cu, gk
Brandon Bay - Inner Brandon Bay			4,129	2,542	1,833	2,835	cx, ss
Wexford Bay	8,417	460	1,176	997	1,903	2,591	cx, rh
Skerries Islands					2,295	2,295	rh, ca, cu, tt
North Central Galway Lakes	2,727	1,795	2,332	2,977	1,567	2,280	ws, wn, sv
River Slaney	589*			2,216	825*	2,216	t.
Ballyallia Lake	2,209	1,835	1,978	2,013	2,402	2,087	wn, ga, t., pt, sv, lg, co
Delvin River - Hampton Cove				2,084		2,084	cx, ps, bw, tt
South Mayo Coast	2,395	2,990	2,035	1,593	1,331	2,069	rp, ss
Blackwater Callows	3,771		1,394	670	1,766	1,900	ws, bw
Dundalk Bay Outer (North: Ballagan Point - Giles Quay)	1,811	550*	1,475	2,671	1,402	1,840	ca
Lough Cullin	1,659	1,342	2,666	1,846	1,640	1,831	tu
L. Coy - Blackrock - Bullaunagh - Ballylee	1,894	1,414	1,795	2,123	1,392	1,724	ws
Lough Sheelin	2,385	2,368	1,551	1,326	982	1,722	po, tu, lg
Skerries Coast	1028*	1,075	1,777	1,931	1,350	1,533	rp, ss, tt
River Shannon (Lower) Aerial	1,673	1,451	854	1,851		1,457	po, tu, gn, co
Kilglassan Turlough/ Greaghans	1,800	2,095	1,465	814	948	1,424	ws, nw
Bandon Estuary (+1)					1419	1,419	et, h., bw, gk
Poulaphouca Reservoir	659		2,126	1,333		1,373	gj, t., ma
Cabragh Wetlands	1,245	1,277	2,296	1,325	695	1,368	t.
Lough Conn	1,717	1,624	2,313	810	242	1,341	gv
Kilcolman Marsh	2,156	702	1,183	921	1,732	1,339	t., sv
Corofin Wetlands (-1)	2,462	1,525	201	312	2,142	1,328	ga, pt, lg
Kiltiernan Turlough (+1)	207	397	422	1965	3356	1,269	bw
Rostaff Lake	1,007	1,987	1,667	706	871	1,248	ga, sv
Castlemaine Outer: Inch offshore		1,577	1,807	330		1,238	cx, rh, ss
Mid-Clare Coast (Mal Bay - Doonbeg Bay)	1,199	1,073	922	1,753	569*	1,237	by, ss, ps, tt
Lough Gowna (+1)		180		1471	2006	1,219	lg
Lough Mask (+1)	1406	1111		536*	1056	1,191	tu
Broadhaven & Sruwadaccon Bays	1,404	866	1,370	981	977	1,120	rm, nd, rp, ss
North East Galway Lakes	1,227	773	1,678	1,372	384	1,087	sv
Waterford Harbour	903		1,280		1,049	1,077	gg
Stick Estuary (Oysterhaven)	806	885	1,033	1,524	1,118	1,073	bw
South East Clare Lakes	591*	1,382	726	984	1,133	1,056	ga, lg
Dromore Lakes (Clare) (+1)	1284		828			1,056	sv
The Cull & Killag (Ballyteige) (-1)	850	1,122	1,141			1,038	ga, gn, lg
Clew Bay	1,023					1,023	rp, tt
Ballysadare Bay	1,124	1,074	385	1,471	7*	1,014	sv
Rosscarbery	855	743	979	1,693	745	1,003	ga, sv

Other nationally important sites (together with five-year mean and species of importance): River Suir Lower 953 (gj), River Shannon (Lower) 944 (tu, lg), Mullet West 934 (by, nd, ss), Ireland's Eye (+1) 884 (ca, ss), Achill Island (+1) 881 (gv), Lambay Island (+1) 867 (ca), Inishmore, Aran Islands 785 (ss), Ventry Harbour (+1) 730 (rp), Charleville Lagoons 678 (sv), Annaghmore Lakes 631 (sv), Omey Strand 630 (rp, ss), Termon Turloughs 578 (sv, lg), Ballyconneely Bay 555 (rp), Lough Fern (+1) 544 (tu), Pat Reddan's Lake 513 (ga, sv), Lough Eorna 512 (sv, lg), Mannin Bay 484 (rm, nd, rp, ss), Marfield Lake 465 (ga, lg), An Trá Beg 454 (gk), Lough Arrow 426 (lg), Skerries, Baldongan 395 (gj), Knock Lake (+1) 333 (lg), Braganstown (+1) 330 (ws), Dunfanaghy Estuary (+1) 311 (rp, ss), Whiting Bay (+1) 303 (ss), Buckrone Fen (+1) 289 (ga), Carrowmore Beach 218 (ss), Lough Gloire 215 (lg), Dublin Zoo Ponds 208 (h.), Kilkeran Lake 135 (lg), Knockaderry Reservoir (+1) 124 (lg), Ballyhonock Lough (+1) 63 (ga), Garrarus & Kilfarrassy (+1) 46 (rh).

¹ Sites which have changed status when compared with the last period (2008/09 – 2012/13) are indicated with brackets, a '+' represents an elevation in status, while a '-' represents a decline in status, and the number represents the number of positions: e.g. +1 indicates sites that were not important during the former period etc.).

Waterbird trends

The trends of 41 species were measured for the period 1994/95 to 2013/14 (Table 7). Overall mean annual increases of 2% or more per year on average were recorded in eight species, with greatest increases seen in Little Egret, Barnacle Goose, Canada Goose, Light-bellied Brent Goose and Sanderling. Declines of 2% or more per year were recorded in 11 species, and rates of decline were particularly high in Bewick's Swan and Scaup, and were also highest in Pochard, Lapwing and Dunlin. The trends of the remaining 22 species were broadly stable.

The trends of all species showing a decline overall have shown positive trends in the short-term (Fig.

2, top graph), with the exception of Grey Plover where the short-term change was slightly negative. However, for most of these species the medium-term trend has been shown to decline.

In contrast, species that have been showing increase overall (Fig. 2, bottom graph) seem to have fared more poorly in recent years, with short-term declining trends in all species other than Barnacle Goose.

These patterns of change are illustrated for a small selection of species (Fig. 3).

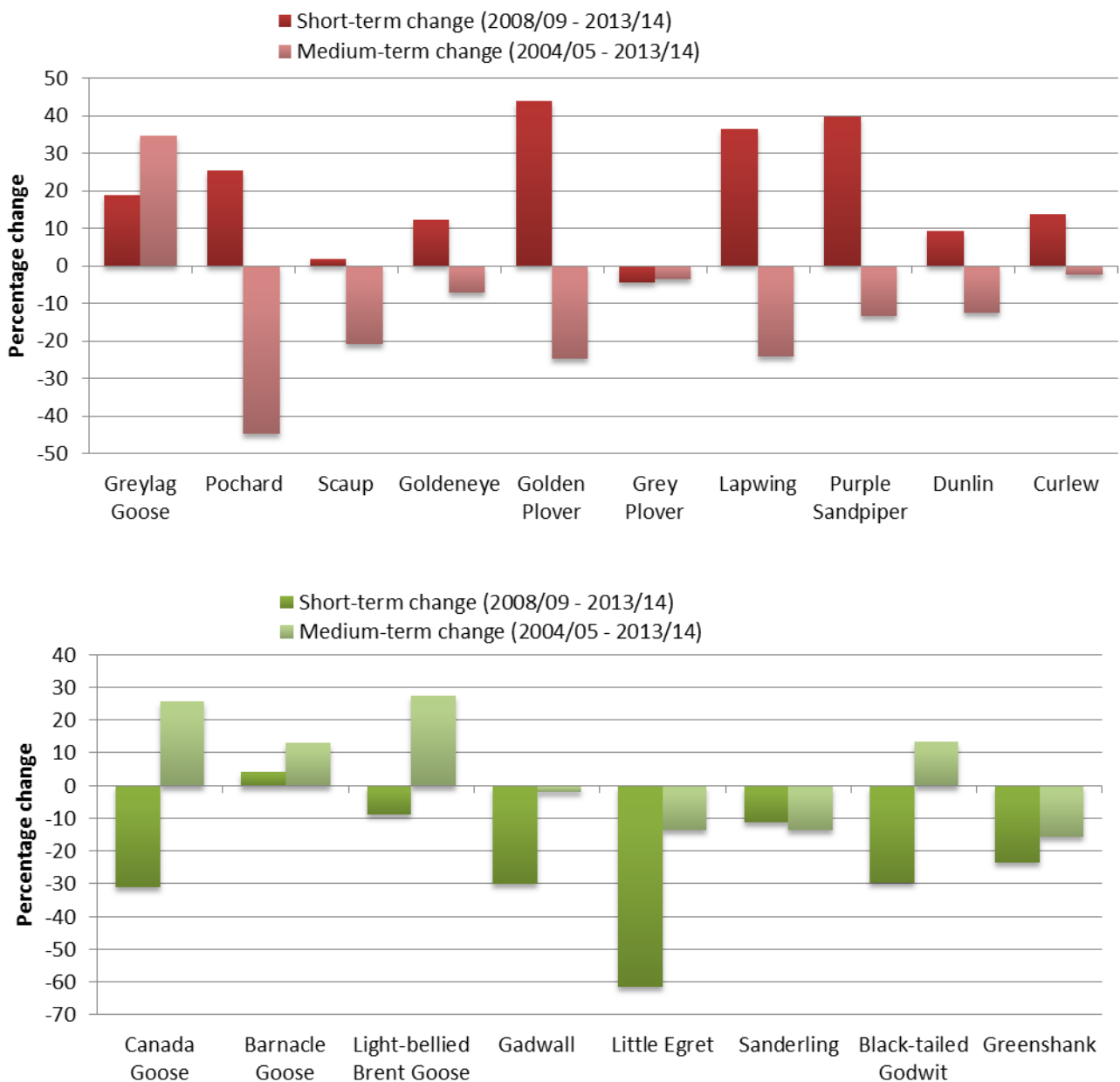


Figure 2. Short (5-year) and medium (10-year) term trends in species showing declining trends (top graph, red bars) and increasing trends (bottom graph, green bars) overall.

Table 7. Waterbird trends, indicating the mean annual change for the entire period (1994/95 – 2013/14), as well as for a recent short-term (2008/09 - 2013/14) and medium-term (2004/05 - 2013/14) periods. Short and medium-term changes are based on GAM analyses – refer to Boland and Crowe (2012) for full analytical details.

Species	Mean Annual Change Overall (1994/95 – 2013/14)	Trend result overall	Short-term change (2008/09 - 2013/14)	Medium-term change (2004/05 - 2013/14)
Mute Swan	0.5	Stable	-19.7	-14.83
Bewick's Swan	-14.6	Decline	*	*
Whooper Swan	1.3	Stable	-16.55	-11.83
Greenland White-fronted Goose	-0.8	Stable	-1.32	13.59
Greylag Goose	-3.2	Decline	18.8	34.71
Canada Goose	6.9	Increase	-30.84	25.79
Barnacle Goose	5.5	Increase	4.25	13.06
Light-bellied Brent Goose	5	Increase	-8.72	27.52
Shelduck	-1.2	Stable	-9.56	-17.79
Wigeon	-1.7	Stable	-10.28	-18.54
Gadwall	3.5	Increase	-29.97	-1.9
Teal	0.2	Stable	-5.93	-2.01
Mallard	-1	Stable	-12.38	-13.41
Pintail	-0.2	Stable	-13.07	-12.76
Shoveler	0.6	Stable	-25.78	2.2
Pochard	-4.7	Decline	25.3	-44.69
Tufted Duck	1.8	Stable	-46.89	-38.28
Scaup	-10.1	Decline	1.73	-20.92
Goldeneye	-3	Decline	12.34	-7.13
Red-breasted Merganser	-0.6	Stable	-8.46	-1.07
Little Grebe	1.9	Stable	-42.92	-23.37
Great Crested Grebe	0.2	Stable	-17.96	16.37
Cormorant	0.5	Stable	-12.35	-34.25
Little Egret	29.4	Increase	-61.32	-13.64
Grey Heron	0.9	Stable	-25.77	-29.34
Coot	1.1	Stable	-42.39	-44.35
Oystercatcher	1.8	Stable	-16.49	-17.94
Ringed Plover	0.9	Stable	-6.67	-14.69
Golden Plover	-2.8	Decline	44.03	-24.66
Grey Plover	-2.3	Decline	-4.56	-3.63
Lapwing	-4.4	Decline	36.49	-24.06
Knot	1	Stable	-38.69	-10.74
Sanderling	4.7	Increase	-10.96	-13.68
Purple Sandpiper	-3.7	Decline	39.68	-13.31
Dunlin	-4.1	Decline	9.4	-12.54
Black-tailed Godwit	3.4	Increase	-29.42	13.63
Bar-tailed Godwit	0.9	Stable	-8.06	-4.78
Curlew	-2.7	Decline	13.81	-2.23
Greenshank	3.1	Increase	-23.5	-15.59
Redshank	1.3	Stable	-11.99	-14.12
Turnstone	1.7	Stable	-10.39	-9.77

* Generating short and medium-term trends for Bewick's Swan based on these analyses was not possible because of the small sample of sites that the species is currently present at.

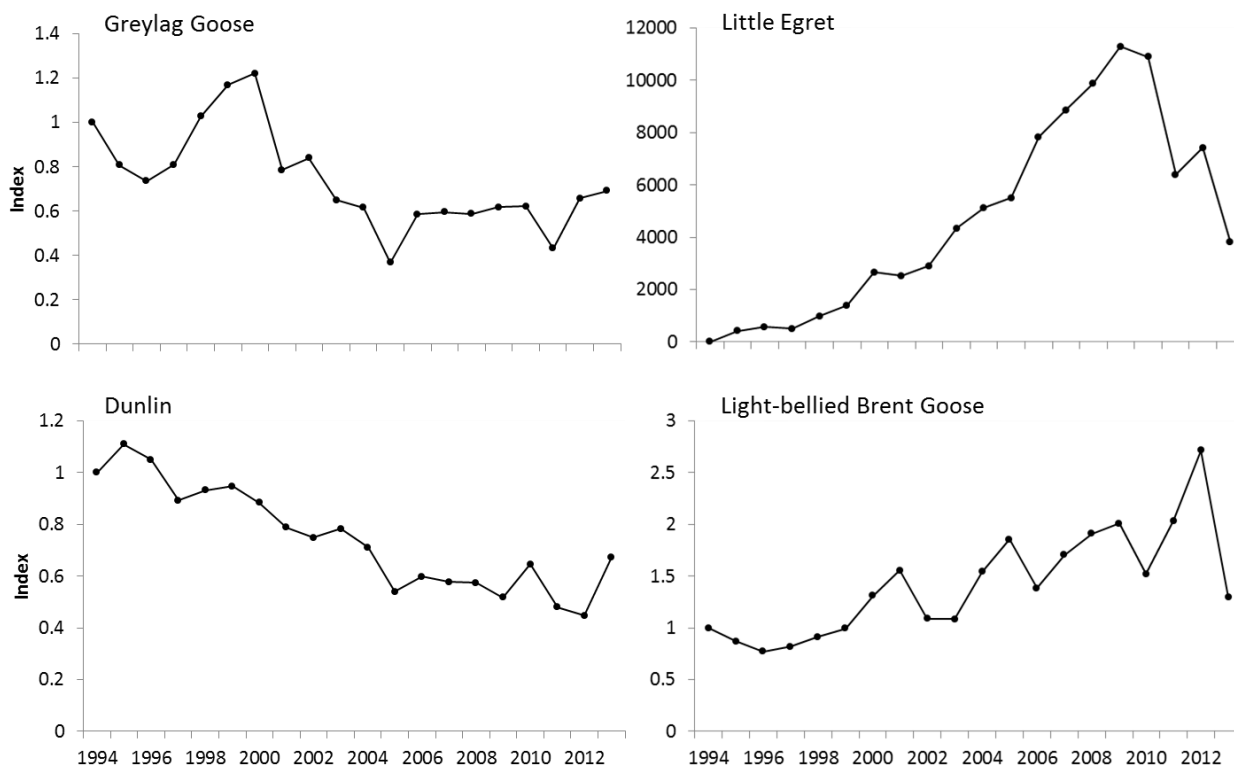


Figure 3. Trends in a selection of species, illustrating the recent increases in species that have been showing long-term declines (Greylag Goose and Dunlin) and recent declines in species that have been showing increasing trends (Little Egret and Light-bellied Brent Goose).

Discussion

The extent of I-WeBS coverage during the winter of 2013/14 was good, with the majority of key sites covered in three or more months. Coverage levels continue to be comparable with other recent winters. The weather during this season was relatively mild, wet and windy (Met Éireann 2014) with temperatures above average in most places throughout the season.

The mild conditions in 2013/14 were similar to 2012/13, but on balance waterbird numbers seem to have been higher. Waterbird totals recorded overall were higher and there were more sites of international and national importance listed. Boland *et al.* (2014) reported that lowest totals had been recorded in 2012/13, while higher totals were recorded for most of these sites this season. It is expected for Ireland that lower numbers of many species will be recorded during milder winters, with higher proportions of wintering birds remaining elsewhere in Europe.

The trends show that for many species there have been substantial fluctuations. The general pattern of increasing trends in the recent short and medium-terms for species that have been showing longer term declines is welcome. However, caution is urged in the interpretation of this result, as these increases for most species may well be natural fluctuations that are part of the ongoing longer-term declines.

But this rationale does not explain the recent downward trends shown for species with longer term increasing trends and undoubtedly other factors are playing a role in driving these trends. It is known that Light-bellied Brent Goose has suffered a number of poor breeding seasons since 2011/12; an average of 2.0% young recorded for the period 2012–2014 followed a high productivity of 25.0% in 2011, when the flyway population count exceeded an all-time peak of 48,000 individuals (Colhoun *et al.* 2015).



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Appendix

Scientific names of all species mentioned in the text, together with national (all-Ireland) and international thresholds.

Species		1% National ¹	1% International ²
Mute Swan	<i>Cygnus olor</i>		90
Bewick's Swan	<i>Cygnus columbianus</i>	20	220
Whooper Swan	<i>Cygnus cygnus</i>	150	270
Pink-footed Goose	<i>Anser brachyrhynchus</i>		3500
Greenland White-fronted Goose	<i>Anser albifrons flavirostris</i>	110	240
Greylag Goose	<i>Anser anser</i>	50	980
Barnacle Goose	<i>Branta leucopsis</i>	150	710
Light-bellied Brent Goose	<i>Branta bernicla hrota</i>		400
Shelduck	<i>Tadorna tadorna</i>	120	3000
Wigeon	<i>Anas penelope</i>	630	15000
Gadwall	<i>Anas strepera</i>	20	600
Teal	<i>Anas crecca</i>	340	5000
Mallard	<i>Anas platyrhynchos</i>	290	20000
Pintail	<i>Anas acuta</i>	20	600
Shoveler	<i>Anas clypeata</i>	30	400
Pochard	<i>Aythya ferina</i>	160	3000
Tufted Duck	<i>Aythya fuligula</i>	310	12000
Scaup	<i>Aythya marila</i>	65	3100
Long-tailed Duck	<i>Clangula hyemalis</i>		17250
Eider	<i>Somateria mollissima</i>	35	14840
Common Scoter	<i>Melanitta nigra</i>	140	5500
Goldeneye	<i>Bucephala clangula</i>	60	11500
Smew	<i>Mergellus albellus</i>		400
Red-breasted Merganser	<i>Mergus serrator</i>	20	1700
Red-throated Diver	<i>Gavia stellata</i>	20	3000
Black-throated Diver	<i>Gavia arctica</i>		3750
Great Northern Diver	<i>Gavia immer</i>	20	50
Little Grebe	<i>Tachybaptus ruficollis</i>	20	4000
Great Crested Grebe	<i>Podiceps cristatus</i>	40	3500
Slavonian Grebe	<i>Podiceps auritus</i>		55
Cormorant	<i>Phalacrocorax carbo</i>	120	1200
Shag	<i>Phalacrocorax aristotelis</i>		2000
Little Egret	<i>Egretta garzetta</i>	20	1300
Grey Heron	<i>Ardea cinerea</i>	25	2700
Moorhen	<i>Gallinula chloropus</i>		20000
Coot	<i>Fulica atra</i>	220	17500
Oystercatcher	<i>Haematopus ostralegus</i>	690	8200
Ringed Plover	<i>Charadrius hiaticula</i>	100	730
Golden Plover	<i>Pluvialis apricaria</i>	1200	9300
Grey Plover	<i>Pluvialis squatarola</i>	30	2500
Lapwing	<i>Vanellus vanellus</i>	1100	20000
Knot	<i>Calidris canutus</i>	280	4500
Sanderling	<i>Calidris alba</i>	60	1200
Little Stint	<i>Calidris minuta</i>		3000
Curlew Sandpiper	<i>Calidris ferruginea</i>		10000
Purple Sandpiper	<i>Calidris maritima</i>	20	710
Dunlin	<i>Calidris alpina</i>	570	13300
Ruff	<i>Philomachus pugnax</i>		12200
Jack Snipe	<i>Lymnocyptes minimus</i>		20000
Snipe	<i>Gallinago gallinago</i>		20000
Black-tailed Godwit	<i>Limosa limosa</i>	190	610
Bar-tailed Godwit	<i>Limosa lapponica</i>	150	1200
Whimbrel	<i>Numenius phaeopus</i>		6700
Curlew	<i>Numenius arquata</i>	350	8400
Green Sandpiper	<i>Tringa ochropus</i>		15500
Spotted Redshank	<i>Tringa erythropus</i>		900
Greenshank	<i>Tringa nebularia</i>	20	2300
Redshank	<i>Tringa totanus</i>	300	3900
Turnstone	<i>Arenaria interpres</i>	95	1400
Mediterranean Gull	<i>Larus melanocephalus</i>		770
Black-headed Gull	<i>Chroicocephalus ridibundus</i>		20000
Common Gull	<i>Larus canus</i>		16400
Lesser Black-backed Gull	<i>Larus fuscus</i>		5500
Herring Gull	<i>Larus argentatus</i>		10200
Great Black-backed Gull	<i>Larus marinus</i>		4200

¹ Crowe and Holt. 2013

² Wetlands International 2012