



# SKOKHOLM

BIRD OBSERVATORY



South and West Wales  
De a Gorllewin Cymru

## Seabird Report 2020



**A summary of the status of seabirds breeding on Skokholm in 2020.**

The lower limits given here, taken from the Skokholm Island Management Plan, have been established by the Wildlife Trust of South and West Wales and endorsed by the Seabird Subgroup of the Islands Conservation Advisory Committee. A green box is an attribute above its lower limit, a red box an attribute below the lower limit stipulated in the plan.

		Whole Island or Annual Plot Total (2019-2016 in parenthesis)	Productivity (2019-2016 in parenthesis)
<b>Great Black-backed Gull</b>		<b>Whole Island population:</b> not to drop below the 2015-2019 mean of 90	
Population	Productivity	<b>Productivity:</b> 3 in any 5 consecutive years with less than 1.10 chicks per breeding pair 83 nests (86, 93, 93, 93)	1.40 (1.43, 1.40, 1.54, 1.38)
<b>Herring Gull</b>		<b>Whole Island population:</b> not to drop below the 2015-2019 mean of 307	
Population	Productivity	<b>Productivity:</b> 3 in any 5 consecutive years with less than 0.70 chicks per breeding pair 301 nests (301, 320, 302, 322)	0.33 (0.69, 0.73, 0.70, 0.86)
<b>Lesser Black-backed Gull</b>		<b>Whole Island population:</b> 3 in any 5 consecutive years with less than 4600 pairs	
Population	Productivity	<b>Productivity:</b> 3 in any 5 consecutive years with less than 0.60 chicks per breeding pair 880 aia (1028, 1069, 1123, 1397)	0.12 (0.27, 0.63, 0.38, 0.23)
<b>Guillemot</b>		<b>Whole Island population:</b> not to drop below the 2015-2019 mean of 4112	
Population	Not set	<b>Productivity:</b> not monitored on Skokholm 5101 aol (4654, 4316, 4038, 3949)	- (0.55-0.61 in 2013)
<b>Razorbill</b>		<b>Whole Island population:</b> not to drop below the 2015-2019 mean of 2491	
Population	Productivity	<b>Productivity:</b> 3 in any 5 consecutive years with less than 0.80 chicks per breeding pair 3517 aol (2755, 2585, 2491, 2242)	0.56 (0.63, 0.69, 0.40, 0.39)
<b>Puffin</b>		<b>Whole Island population:</b> not to drop below the 2015-2019 mean of 7473	
Population	Productivity	<b>Productivity:</b> 3 in any 5 consecutive years with less than 0.74 chicks per breeding pair 8534 adults (7447, 8762, 7800, 6692)	0.78 (0.76, 0.75, 0.80, 0.73)
<b>Storm Petrel</b>		<b>Study plot population:</b> any measurable decrease in the population	
Population	Not set	<b>Productivity:</b> limit not yet set due to a lack of data No census (89, 83, 89, 76 transect responses)	0.45 (0.74, 0.55, 0.50, 0.58)
<b>Fulmar</b>		<b>Whole Island population:</b> not to drop below the 2015-2019 mean of 200	
Population	Productivity	<b>Productivity:</b> 3 in any 5 consecutive years with less than 0.50 chicks per breeding pair 207 aos (198, 217, 213, 194)	0.51 (0.62, 0.49, 0.45, 0.57)
<b>Manx Shearwater</b>		<b>Study plot population:</b> any measurable decrease in the population	
Population	Productivity	<b>Productivity:</b> 3 in any 5 consecutive years with less than 0.69 chicks per breeding pair 730 active sites in 8000m <sup>2</sup> (655, 739, 584, 588)	0.68 (0.72, 0.70, 0.80, 0.68)

**Great Black-backed Gull *Larus marinus***

**Gwylan Gefnddu Fwyaf**

**Fairly Common Breeder and Common Visitor**

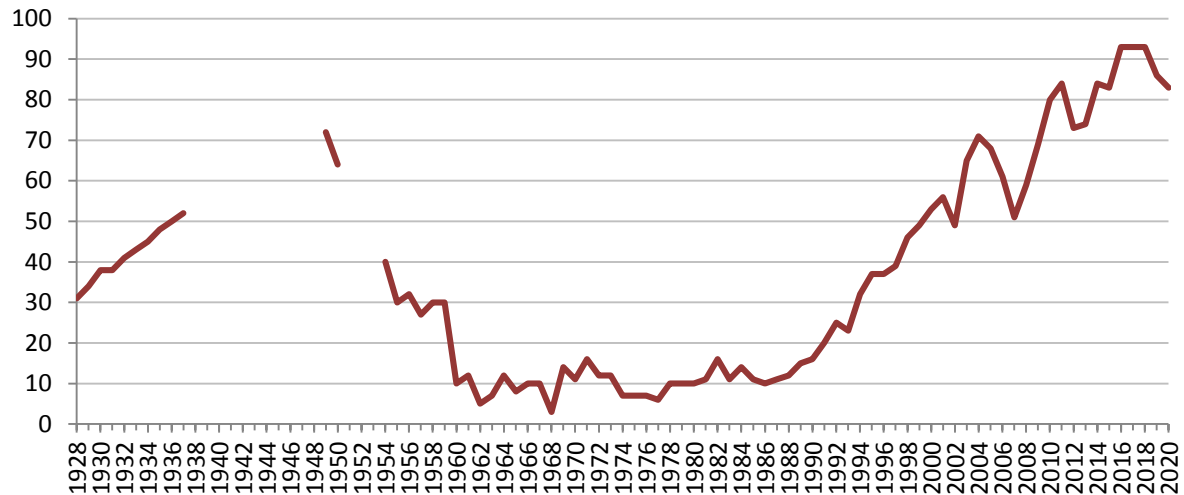
40 trapped (including 39 pulli), 54 resighted, 1 control

1936-1976: 219 trapped, 2013-2019: 404 trapped, 15 retrapped, 164 resighted, 5 controls

Many birds were absent in March, with counts during the last 16 days of the month peaking at 88 on the 17<sup>th</sup>; this was the lowest March high since the 68 of 2014. The majority of the birds present were on territory, with maximum roost counts of only 18 on the 17<sup>th</sup> and 20 on the 25<sup>th</sup> (the peak March roost between 2013 and 2019 averaged 40.3 birds, with highs of 48 in 2016 and 2017). Numbers again increased in April, with a maximum daycount of 150 logged on the 13<sup>th</sup> (which included 26 birds foraging around the potting vessel 'Our Hazel'). Communal roosts only formed occasionally and were typically of 20 birds or less, although there were highs of 48 on the 6<sup>th</sup>, 22 on the 13<sup>th</sup> and 29 on the 17<sup>th</sup>; the peak April roost between 2013 and 2019 averaged 76.3 birds, with a high of 213 on the 3<sup>rd</sup> in 2013 (the only peak down on that of this year was the 38 of 2019). A whole Island census between the 4<sup>th</sup> and 15<sup>th</sup> May located 83 apparently incubating birds (the only nests not visited to confirm the presence of eggs were adjacent to the Bog Lesser Black-backed Gull colony and on

offshore stacks); although the total was, equal with that of 2015, the seventh highest on record, it was down on the 86 mapped in 2019 and the 93 mapped in 2018, 2017 and 2016. Indeed this proved the second year in succession in which the total number of breeding pairs has fallen below the lower limit stipulated in the Skokholm Management Plan. A marked drop in adult survival is seemingly, at least in part, to blame for the decline in the size of the Skokholm breeding population (see below). A decline in the size of the spring roosts is perhaps indicative of a drop in the number of individuals available to recruit to the breeding population.

**The number of Great Black-backed Gull breeding pairs 1928-2020 (where data exists). Control of numbers started in 1949 (destruction of both nests and adults) and stopped in 1985.**



A colour ringing project, begun six years ago, is providing an insight into how adult return rates influence the number of breeding pairs. Of 23 adults wearing rings in 2014, 19 (82.6%) returned for the 2015 breeding season; the number of nesting pairs dropped from 84 in 2014 to 83 in 2015. There followed an apparent increase in adult survival, during which time the breeding population increased to, and then stabilised at, 93 pairs; of 21 adults wearing colour rings in 2015, 19 returned in 2016 (90.5%), whilst 32 of 33 adults returned in 2017 (97.0%) and 32 of 36 returned in 2018 (88.9%). Of 44 adults wearing rings in 2018, only 35 (79.6%) returned in 2019; the breeding



population dropped by seven pairs during the same period. This year saw 38 of 45 birds return (84.4%), whilst the breeding population declined by three pairs; this suggests that approximately 27 established adults did not return to breed in 2020 and that 21 new birds recruited in their place. Since this study began, the population has only increased or remained stable with adult survival of 88.9% or better. One potential issue is that the ringing of adults on the nest could deter them from returning to Skokholm, however if we exclude the data collected in the year after ringing (when any disturbance should take effect), the return rates remain at a very similar 89.5% in 2016, 100% in 2017, 90.6% in 2018, 75.0% in 2019 and 82.9% this year; it thus seems likely that disturbance at the nest is not responsible for the recent decline in return rates.

The 2018 and 2019 return rates were previously reported as being lower than listed above. However a chance close encounter with a metal only ringed bird this year revealed it to be an adult colour ringed in 2014 (which lost its colour mark between the 2017 and 2018 seasons). A close inspection of birds occupying territories from which colour ringed individuals had previously gone missing revealed a further darvic loss, this from another 2014 ringed adult (which had lost its ring between the 2018 and 2019 breeding seasons). Additionally W:142, ringed as an adult in 2016 and pictured below with a Puffin, lost its colour ring between the 5<sup>th</sup> and 6<sup>th</sup> June this year; fortuitously the dropped ring was found in the Puffin study plot, allowing the loss to be attributed to snapping rather than glue failure. Although the rate of ring loss is seemingly low, it will perhaps increase as the rings age; a careful check for metal rings is thus important, although reading the inscribed digits demands good views and significant patience. It would appear that Skokholm Great Black-backed Gulls rarely take a year away from the colony or go unseen; between 2016 and 2019, no missing colour ringed birds were found subsequently (with the exception of those which had lost their darvic). However this year saw the appearance of W:235 on North Plain in August (a bird which was later seen at the Gann); it had not been found since the end of the 2018 breeding season. Additionally W:239, also ringed in 2018 and which occupied its 2018 territory in 2019, was not seen until it appeared at the Gann in August and September; it was subsequently found in its 2018/19 Skokholm territory on 1<sup>st</sup> December, perhaps suggesting that it had been present this year but had departed early. A third bird, W:286 ringed in 2019, was not seen until September when it appeared on North Plain. There were thus three birds alive this autumn which were not found during the breeding season colour ring searches (but which are included in the survival figures listed above).



It is not clear what may have caused such seemingly high adult mortality since 2018, although interactions with the fishing industry and poisoning have been raised in recent Skokholm Seabird



Reports as areas for concern. Fewer injuries were noted this year; an adult with a broken and almost severed wing, present in the Bog between the 6<sup>th</sup> and 8<sup>th</sup> June, was found dead on the 9<sup>th</sup>, a lethargic adult on 28<sup>th</sup> June had a bleeding puncture wound in its flank, a juvenile on 12<sup>th</sup> August had a broken leg and a dead (but seemingly undamaged) adult was found on 20<sup>th</sup> August. Additionally a juvenile had a damaged wing from 21<sup>st</sup> August, although this was almost certainly the result of misadventure during its first storm. In August 2018 an unringed adult arrived to the Lighthouse with a bloody leg which was missing its foot, whilst five individuals were found with serious leg injuries between 16<sup>th</sup> April and 30<sup>th</sup> May last year (similar injuries were seen in Herring Gulls). Although birds can be injured during aggressive encounters with other gulls (as was perhaps the case with the broken winged adult this June), it seems likely that undamaged corpses are often caused by poisoning, perhaps botulism, and that many violent injuries are caused by interactions with fishing gear. Great Black-backed Gulls were again regularly observed behind fishing vessels this year, although clearly some boats were more attractive than others; peak counts were of 26 behind ‘Our Hazel’ on 13<sup>th</sup> April and of 32 behind ‘Boy’s Pride’ on 21<sup>st</sup> April. A ‘Boy’s Pride’ crew member was deliberately feeding fish remains to 11 birds on 25<sup>th</sup> June. An important step in understanding the Skokholm Great Black-backed Gull population will be to discover if such anthropogenic food sources are regularly exploited; additional food will increase survival, particularly during the winter or periods of low seabird and Rabbit numbers, however foraging around boats or mainland food sources also has the potential to seriously impact health.



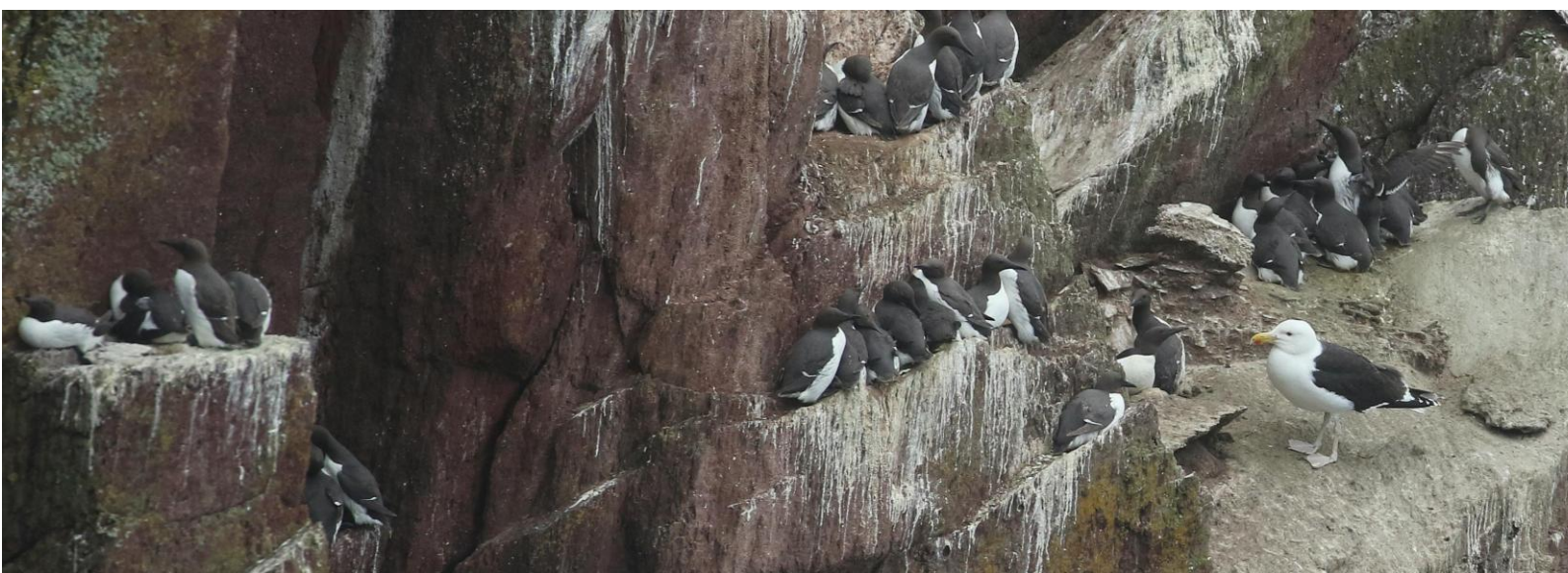
**Productivity estimates 2006-2020 (average number of fledglings per sample pair).**

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1.07	1.02	1.02	-	0.71	0.89	-	1.80	0.93	1.66	1.38	1.54	1.40	1.43	1.40

Checks of any accessible and seemingly complete nests from 10<sup>th</sup> April failed to find any eggs until the 16<sup>th</sup>; a search of the area to the south of North Pond on the latter date located a single complete nest which contained a full complement of three eggs. The first egg of last year was a single found on the 18<sup>th</sup>, whilst the 2013-2019 average is 16<sup>th</sup> April (with the earliest found on the 10<sup>th</sup> in 2014 (a single egg) and 2018 (a clutch of three) and the latest on the 25<sup>th</sup> in 2013). The first chicks to be seen in 2020 were found in Peter’s Bay on 17<sup>th</sup> May; the first of last year were found on the 16<sup>th</sup> and the first of 2018 on the 20<sup>th</sup>. Of 47 monitored nests, 15 pairs failed, nine pairs fledged a singleton, 12

pairs fledged two and 11 pairs fledged three. There were thus 66 young fledged and a productivity figure of 1.40 fledglings per monitored pair; productivity was 2.1% down on that of 2019 but 28.4% up on the 1989-2004 mean of 1.09 and 7.7% up on the 2010-2019 mean (1.30  $\pm$  se 0.12).

The Great Black-backed Gulls are spectacular apex predators and an exciting component of the Skokholm seabird assemblage, however it is important we monitor the impact of higher breeding numbers on the Manx Shearwater population. Dead shearwaters were counted for a seventh consecutive year, the vast majority of which had been eaten by Great Black-backed Gulls (see the Manx Shearwater section for further details); a total of 3978 depredated corpses, comprising 3008 adults and 970 youngsters, were marked this year. The number of adults marked was the highest on record, up on a peak of 2931 recorded in 2014 and a 2014-2019 mean of 2308.2, whilst the number of youngsters marked was the lowest to date, down on a 2014-2019 mean of 1218.7 (a high of 1398 was recorded in 2016 and a low of 971 in 2018). The total number of marked corpses was the third highest to date, down on the 4218 of 2014 and the 4026 of 2015 but up on a 2014-2019 mean of 3526.8. For a second year, ad hoc observations suggested an increase in the number of shearwaters being dug out from their burrows; this form of hunting has the potential to impact more than just the eaten individual, as it reduces the suitability of nest sites and the stability of the colony. Accessing nest chambers increases the likelihood that Great Black-backed Gulls are taking small chicks, birds which would probably not be represented in the corpse counting survey as they are typically swallowed whole. Indeed there are many factors influencing the number of corpses found; observer effort has been rather consistent, but possible or certain differences between years have included the number of Great Black-backed Gulls present (which may include differences in the number of shearwater specialists (Westerberg *et al.*, 2018)), the number of shearwaters available (including differences in the number of prospecting individuals likely to spend longer on the surface), the prevalence of suitable hunting conditions (governed primarily by the moon cycle and weather), the size of the Rabbit population (which may provide an alternative food source) and the prevalence of puffinosis (which may make young birds easier to catch). Although the number of dead birds currently being found represents a relatively small proportion of the Skokholm shearwater population, it seems likely that any growth in the Great Black-backed Gull population will impact the shearwaters. Ultimately more data is required to understand these relationships in greater detail.



The colour ringing project initiated in 2014 is also providing information on juvenile survival and recruitment. Of 43 fledglings ringed in 2014, 31 (72.09%) have been resighted subsequently, including four which have been found dead. At least 19 birds (44.19%) definitely survived their first full year, 14 (32.56%) survived two years, 12 (27.91%) survived three years, 11 (25.58%) survived



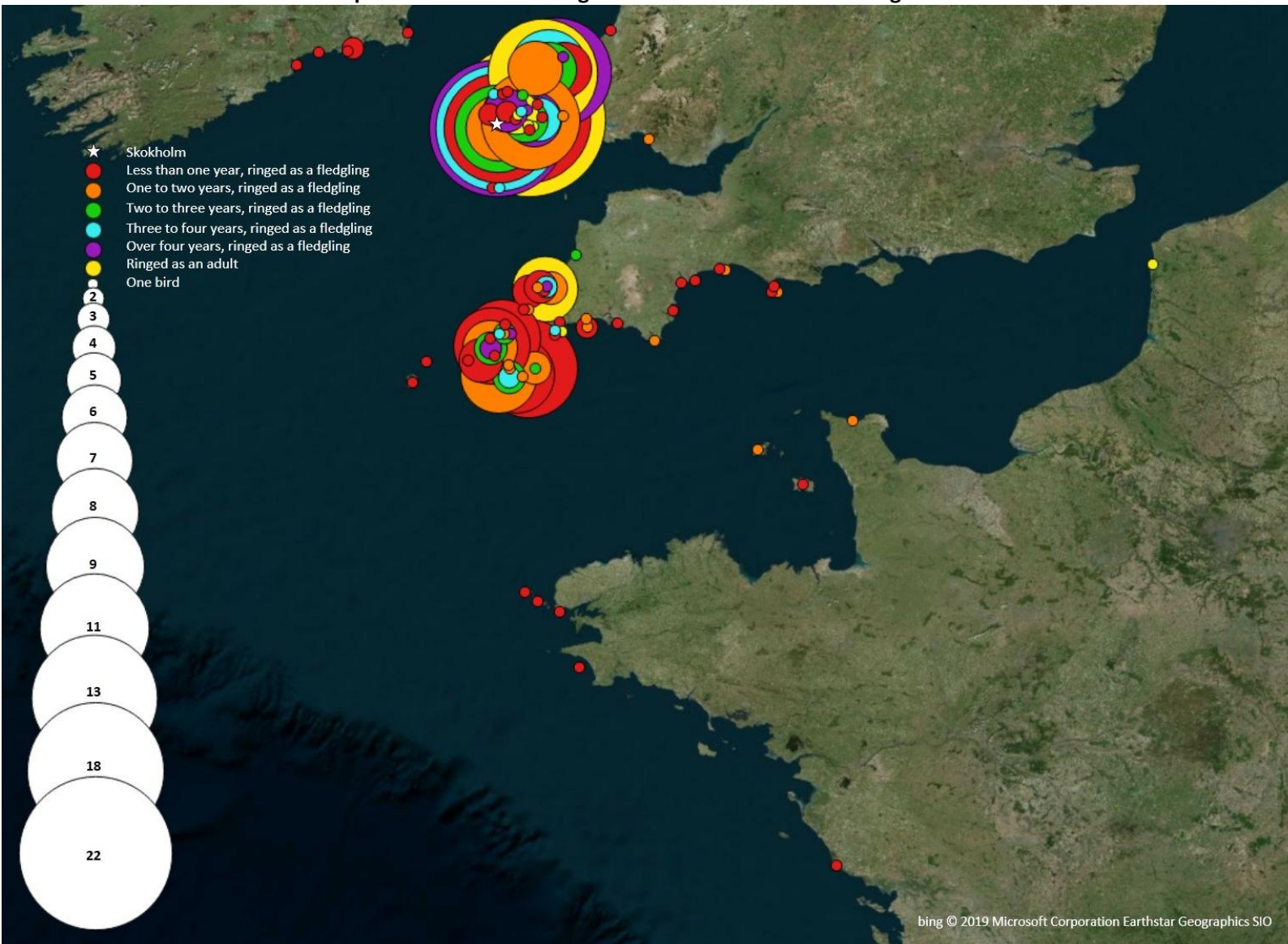
four years, six (13.95%) survived five years and four (9.30%) have survived at least six years (one of which was seen on Skokholm (but was not paired), two of which were breeding on Skomer and one of which was seen regularly at the Nevern Estuary, Newport, Pembrokeshire). The birds ringed as fledglings in 2015 have provided similar results; of 52 ringed, 27 (51.92%) have been resighted subsequently, 18 (34.62%) survived their first full year, 15 (28.85%) survived two years, 13 (25.00%) survived three years, 12 (23.08%) survived four years and seven (13.46%) survived their fifth years. Of the 32 2016 ringed fledglings, 14 have been seen subsequently, whilst 11 of the 39 2017 fledglings, 21 of the 38 2018 fledglings and 31 of the 44 2019 ringed fledglings have been seen again. Although these figures do not give an exact measure of juvenile survival, the birds ringed longer ago (of which more have returned to Skokholm and for which there has been longer for them to be encountered on the mainland), suggest that nearly 25% of fledglings are surviving to four years of age. Only time will tell whether this study provides a sound estimate of recruitment to the breeding population, something which may well be dependent on how many birds establish territories on Skokholm or Skomer (where they should be seen) as opposed to other less studied breeding sites. Of 31 youngsters which have so far returned to Skokholm at some point, eight were first back as first-summers, four as second-summers, 11 as third-summers, six as fourth-summers, one as a fifth-summer and one as a sixth-summer (none of these have bred on the Island); it would appear that birds are most likely to first return in their third summer (with a mean of 2.8 in each year between 2017 and 2020).

Although resighting records away from Skokholm will be somewhat biased by a preponderance of birders at the main roost sites in Cornwall, it seems likely that there is a genuine southerly bias to the movements of young Skokholm Great Black-backed Gulls (see map below). Birds then gravitate back towards Pembrokeshire as they get closer to breeding age (see both the table and map below). All of the records below were received since a similar table was published in the 2019 Seabird Report. There were 15 birds ringed as breeding adults and found 7.5km away on the Gann Estuary, a site which also saw 2020 visits from a sixth-winter, two fourth-winters, a third-winter, two second-summers, four second-winters, a first-summer and three first-winters (all in addition to those listed in the table below). Also in addition to the table below were sightings on Skokholm of two returning fifth-summers, two returning fourth-summers, a returning fourth-winter, a returning third-summer, a returning second-summer and a returning first-summer.

Darvic	Ring	Location	County	Age	Date
W:004	MA37971	Polzeath Beach	Cornwall	First-summer	04/06/20
W:004	MA37971	Hayle Estuary	Cornwall	First-summer	16/09/20
W:004	MA37971	Gwithian	Cornwall	Second-winter	04/11/20
W:007	MA37974	Nevern Estuary	Pembrokeshire	First-summer	19/06/20, 11/07/20
W:007	MA37974	Gann Estuary	Pembrokeshire	Second-winter	24/10/20, 08/11/20
W:055	HT94917	Nevern Estuary	Pembrokeshire	Sixth-summer	25/07/20, 09/09/20
W:060	HT94921	Skomer Island	Pembrokeshire	Sixth-summer	11/04/20 (breeding)
W:060	HT94921	Hayle Estuary	Cornwall	Seventh-winter	27/11/20
W:064	HT94925	Skomer Island	Pembrokeshire	Sixth-summer	06/05/20 (breeding)
W:064	HT94925	Gann Estuary	Pembrokeshire	Sixth-summer	28/09/20
W:077	HT94934	Skokholm	Pembrokeshire	Sixth-summer	29/05/20
W:077	HT94934	Nevern Estuary	Pembrokeshire	Sixth-summer	23/08/20, 24/08/20
W:079	HT94936	Nevern Estuary	Pembrokeshire	Adult	23/02/20
W:083	HT94940	Skokholm	Pembrokeshire	Fifth-summer	02/05/20
W:083	HT94940	Gann Estuary	Pembrokeshire	Fifth-summer	25/09/20
W:114	HT94943	Skomer Island	Pembrokeshire	Fifth-summer	25/05/20
W:116	HT94976	Camel Estuary	Cornwall	Fourth-winter	11/01/20
W:116	HT94976	Nevern Estuary	Pembrokeshire	Fourth-winter	10/03/20

<b>W:119</b>	HT94979	Skokholm	Pembrokeshire	Fifth-summer	30/05/20, 23/08/20
<b>W:119</b>	HT94979	Gann Estuary	Pembrokeshire	Fifth-summer	28/09/20
<b>W:124</b>	HT94955	Skokholm	Pembrokeshire	Fifth-summer	11/09/20
<b>W:124</b>	HT94955	Gann Estuary	Pembrokeshire	Sixth-winter	28/10/20
<b>W:124</b>	HT94955	Hayle Estuary	Cornwall	Sixth-winter	11/12/20
<b>W:162</b>	MA37820	Skomer Island	Pembrokeshire	Fourth-summer	18/05/20 (breeding)
<b>W:195</b>	MA37862	Skokholm	Pembrokeshire	Third-summer	24/04/20, 30/08/20
<b>W:195</b>	MA37862	Bristol Channel Approaches	Pembrokeshire	Third-summer	17/07/20
<b>W:195</b>	MA37862	Gann Estuary	Pembrokeshire	Fourth-winter	13/09/20, 24/10/20
<b>W:195</b>	MA37862	Gwithian	Cornwall	Fourth-winter	13/11/20
<b>W:222</b>	MA37887	Copperhouse Creek, Hayle	Cornwall	Third-winter	06/03/20
<b>W:222</b>	MA37887	Gann Estuary	Pembrokeshire	Third-summer	28/09/20
<b>W:242</b>	MA37911	Hayle Estuary	Cornwall	Third-winter	05/12/20
<b>W:253</b>	MA37900	Newgale Beach	Pembrokeshire	Third-winter	26/11/20 (dead)
<b>W:254</b>	MA37919	Nevern Estuary	Pembrokeshire	Second-summer	03/04/20, 26/09/20
<b>W:260</b>	MA37905	Hayle Estuary	Cornwall	Second-winter	28/02/20

The movements of Skokholm ringed Great Black-backed Gulls 2014-2020. The different colours represent the different ages at which the birds were resighted.





Darvic	Ring	Location	County	Age	Date
W:260	MA37905	Southerly Point, The Lizard	Cornwall	Second-summer	21/06/20, 29/07/20
W:271	MA37928	Southerly Point, The Lizard	Cornwall	Second-summer	15/07/20, 28/08/20
W:282	MA37951	Bassin de la Liane, Calais	FRANCE	Adult	04/12/20
W:288	MA37957	Camel Estuary	Cornwall	Adult	08/12/20
W:291	MA37960	Hayle Estuary	Cornwall	First-winter	22/02/20
W:292	MA37959	Dunmore East, Waterford	IRELAND	First-winter	06/03/20
W:299	MA37968	Hayle Estuary	Cornwall	First-winter	26/01/20
W:299	MA37968	Halzephron Cliff	Cornwall	First-summer	14/06/20
W:300	MA37969	RSPB Ryan's Field, Hayle	Cornwall	First-winter	14/02/20
W:306	MA37981	Camel Estuary	Cornwall	First-winter	05/01/20
W:315	MA37989	Skokholm	Pembrokeshire	First-summer	01/06/20
W:315	MA37989	Hayle Estuary	Cornwall	Second-winter	04/12/20
W:322	MA37996	Gwithian	Cornwall	First-winter	31/01/20
W:322	MA37996	Hayle Estuary	Cornwall	Second-winter	04/02/20, 27/11/20
W:322	MA37996	Gann Estuary	Pembrokeshire	Second-winter	01/11/20
W:324	MA37998	Gann Estuary	Pembrokeshire	First-winter	01/02/20
W:324	MA37998	Skokholm	Pembrokeshire	First-summer	17/04/20
W:331	MA46912	Skomer Island	Pembrokeshire	Juvenile	19/09/20, 20/09/20
W:333	MA46914	Llanon Beach, Aberaeron	Ceredigion	Juvenile	18/08/20
W:346	MA46927	Gwithian	Cornwall	First-winter	13/11/20
W:347	MA46928	Newlyn Harbour	Cornwall	Juvenile	19/09/20
W:350	MA46934	Marloes Sands	Pembrokeshire	Juvenile	20/09/20 (dead)

A roost of up to 44 birds (although on all but five occasions less than 30), regularly formed in the Bog during the breeding season; the smallest post-2012 breeding season roosts have occurred in the last three years. The first three fledglings were recorded on 1<sup>st</sup> July, one day later than the first of last year but two days earlier than the post-2013 mean. It was not until mid-August that the larger post-breeding roosts began to develop, with counts of between 44 and 64 increasing to highs of 97 on the 27<sup>th</sup>, 98 on the 29<sup>th</sup> and 96 on the 30<sup>th</sup>. The first fledgling to be seen away from the Island was found on Llanon Beach, north of Aberaeron, Ceredigion on 18<sup>th</sup> August; this is perhaps surprisingly the farthest north that a Skokholm ringed Great Black-backed Gull has been seen. A fledgling had reached Newlyn Harbour, Cornwall by 19<sup>th</sup> September; this was 40 days later than the first southwest resighting of 2019 (a bird at Newquay Harbour, Cornwall on 10<sup>th</sup> August which remains our earliest southwest resighting), but matched the mean 2014-2019 first southwest arrival date. Although up on a 2019 high of 113, September roost counts were lower than in most recent years; peaks of 128 on the 4<sup>th</sup>, 130 on the 5<sup>th</sup> and 129 on the 6<sup>th</sup> were down on highs of 135 in 2018, 183 in 2017, 247 in 2016 (when there were six daycounts of more than 200), 249 in 2015 and 355 in 2013 (the September 2014 maximum was only 52). For the first time in ten years, there were no three-figure October daycounts; following counts of 91 on the 3<sup>rd</sup>, 5<sup>th</sup> and 6<sup>th</sup>, only nine October tallies exceeded 30 (with a high of 60 on the 13<sup>th</sup>). The only November daycounts in excess of 30 were of 66 on the 1<sup>st</sup>, 117 on the 2<sup>nd</sup>, 45 on the 16<sup>th</sup> and 52 on the 17<sup>th</sup>, however a bird-days total of 574 was the highest since the 947 of 2013; the peak November daycount was likewise the highest since 2013 (when numbers peaked at 270 on the 3<sup>rd</sup> and 243 on the 5<sup>th</sup>). The 34 birds counted on the 1<sup>st</sup> was a new December record, up on the 30 logged by Lockley on Christmas Day 1928.

**Ringling recovery** MA24967 (green darvic with white B:158)

**Originally ringed** as a chick, YNYS GWYLAN-FAWR, GWYNEDD 19<sup>th</sup> June 2019

**Recovered** as a first-summer, SOUTH COAST, SKOKHOLM 28<sup>th</sup> August 2020

**Recovered** as a first-summer, NORTH PLAIN ROOST, SKOKHOLM 11<sup>th</sup> September 2020

**Finding condition** Colour ring read in field

**Distance travelled** 127km at 199 degrees (SSW)

**Days since ringed** 437 and 451

Given that the majority of Skokholm ringed youngsters disperse to the south and west, it is perhaps unsurprising that birds ringed in north Wales are following a similar pattern.

**Herring Gull** *Larus argentatus*

**Gwylan y Penwaig**

**Common Breeder** Abundant Breeder in the 1970s

14 resighted

1936-1976: 13,164 trapped, 2013-2019: 134 trapped, 24 retrapped, 28 resighted, 1 control

March counts again fluctuated widely, with lows of 61 on the 24<sup>th</sup>, 56 on the 28<sup>th</sup> and 55 on the 29<sup>th</sup> when birds fed and roosted away from Skokholm, but highs of 251 on the 17<sup>th</sup> and 196 on the 19<sup>th</sup>; the only lower post-2012 March high was the 176 logged in 2017 (peaks during the same period were of 439 in 2018 and 444 in 2015). In contrast with observations made of Lesser Black-backed Gulls during the same period, Herring Gull roosts again included reasonable numbers of subadult birds. The first lone egg was found in Crab Bay on 22<sup>nd</sup> April, four days later than the first of last year and the mean 2013-2019 first egg date (see table below); the only later first eggs were found on the 25<sup>th</sup> in 2015. Whole Island counts between the 17<sup>th</sup> and 19<sup>th</sup> May located 301 active nests, the same number as last year and a total fractionally up on the 2010-2019 mean (294.0 ±sd 22.8) but 4.6% down on the 1984-2019 mean (315.6 ±sd 46.7); this was thus the second consecutive year in which the total has been below the lower limit set in the Skokholm Management Plan. The number of breeding pairs has apparently stabilised at a level close to that seen in the 1930s (the 1928-1937 mean was 269.70 ±sd 17.47), counts well down on the artificial peak of the 1970s.

**When the first egg was located in each year 2013-2020, along with the 2013-2019 first egg mean.**

2013	2014	2015	2016	2017	2018	2019	2020	Mean
18 <sup>th</sup> April	14 <sup>th</sup> April	25 <sup>th</sup> April	17 <sup>th</sup> April	18 <sup>th</sup> April	19 <sup>th</sup> April	18 <sup>th</sup> April	22 <sup>nd</sup> April	18 <sup>th</sup> April

**The number of breeding pairs 1928-2020 (where data exists). The 1970s peak was attributed to the exploitation of local fish waste and the decline to botulism (Thompson, 2007).**



**The number of breeding pairs and productivity estimates (average number of fledglings per sample pair) 2006-2020.**

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
265	320	287	353	312	257	274	263	300	289	322	302	320	301	301
0.47	0.61	-	-	0.82	0.67	1.15	0.72	0.70	0.66	0.86	0.70	0.73	0.69	0.33



The monitoring of adult survival in Herring Gulls has been undertaken on Skomer for many years, however recent struggles with trapping sufficient adult birds to produce a reliable estimate led to the Islands Conservation Advisory Committee recommending that a project be established on Skokholm in 2017. There were 13 nesting adults trapped in 2017, 15 in 2018 and nine in 2019, although COVID-19 dictated staffing shortages meant that there were no adults trapped this year; each bird was ringed with a red darvic inscribed W:9\*\* in white, the latter two digits identifying the individual. Of the 13 birds marked in 2017, 11 returned to breed in the same areas in 2018 (84.62%). Of 26 birds with rings in 2018, 16 (61.54%) were still alive during the 2019 breeding season (although one of these was not seen until 2020, two were seemingly not breeding and two had changed nest site (one moved 370m from South Haven to Green Rocks and one moved 837m from South Haven to Purple Cove)). Of 25 with rings in 2019, 15 (60.00%) were alive this year (although four of these were not seen on the Island). There is clearly the potential for an underestimate of survival if birds are breeding away from their ringing territories or skipping breeding seasons (behaviours which are apparently not occurring in Great Black-backed Gulls). The return rates are marginally higher if they are calculated from a year after ringing (allowing time for any ringing related disturbance to take effect); seven of 11 (63.63%) such birds were alive in 2019 and ten of 16 (62.50%) were alive this year (although this increases to seven of nine (77.78%) if only the 2018 ringed birds are used). Four of the birds colour ringed in 2018 were trapped in the Home Meadow Gull Trap before their nests were located; all four of these returned to the same nest sites in 2019 and three returned this year. Although the sample size is too small to draw any firm conclusions, these observations suggest that trapping on the nest may be increasing the likelihood that birds will not be found in the same area the following year (which is not the case with Great Black-backed Gulls); with this in mind, adults will not be trapped on the nest until further off-nest Gull Trap work is conducted and analysed.



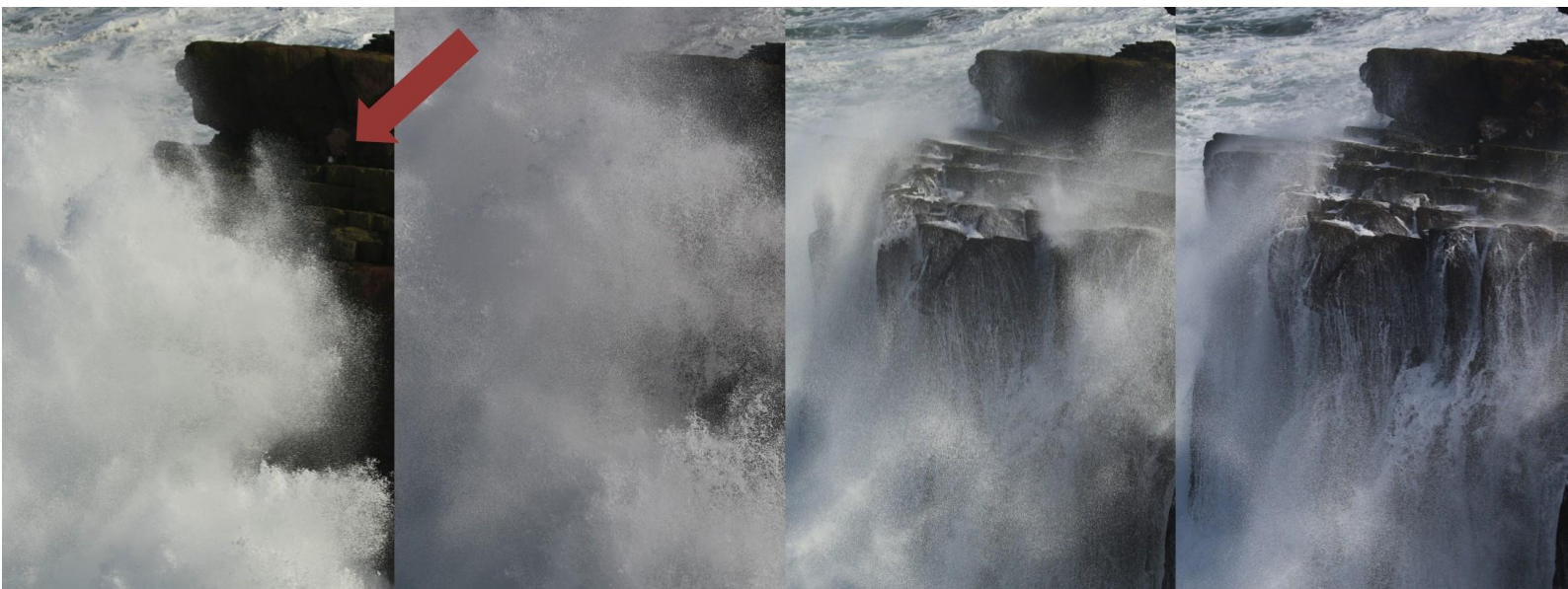
Two of the colour ringed birds have been found dead, both on Skokholm and with no apparent cause of death (including one on 20<sup>th</sup> March this year). Additionally unringed dead adults were found in the Bog on 19<sup>th</sup> May and near South Pond on 6<sup>th</sup> July. Various injuries were again recorded this season; a bird in Crab Bay had a badly broken leg on 12<sup>th</sup> May, an adult at North Pond on 14<sup>th</sup> May had a bloody hole in its flank but could fly (see the Great Black-backed Gull section for a report of a similar injury) and a bird on 22<sup>nd</sup> June was missing a foot (three serious leg injuries were noted last year). Following four affected birds in 2019, there were no incidences of oiling recorded this year.

**For a third successive year, the only colour ring resightings away from Skokholm came from mainland Pembrokeshire.**

Darvic	Ring	Location	County	Age	Date
W:999	GV22351	Haverfordwest	Pembrokeshire	Adult	28/06/20
W:998	GV22352	Gann Estuary	Pembrokeshire	Adult	06/02/20, 04/11/20, 20/11/20

<b>W:984</b>	GV22423	Gann Estuary	Pembrokeshire	Adult	23/10/20, 04/11/20
<b>W:983</b>	GV22390	Gann Estuary	Pembrokeshire	Adult	27/10/20
<b>W:978</b>	GV22428	Gann Estuary	Pembrokeshire	Adult	30/01/20, 28/09/20, 14/12/20
<b>W:977</b>	GR98293	Gann Estuary	Pembrokeshire	Adult	05/02/20*, 05/11/20
<b>W:974</b>	GV22432	Johnston	Pembrokeshire	Adult	23/05/20
<b>W:972</b>	GR87973	Gann Estuary	Pembrokeshire	Adult	05/02/20*
<b>W:971</b>	GV22440	Gann Estuary	Pembrokeshire	Adult	27/10/20, 04/11/20
<b>W:970</b>	GV22457	Gann Estuary	Pembrokeshire	Adult	28/09/20, 01/11/20, 08/11/20
<b>W:969</b>	GV83059	St Ishmaels	Pembrokeshire	Adult	09-12/06/20, 21/06/20, 25/06/20
<b>W:969</b>	GV83059	Gann Estuary	Pembrokeshire	Adult	21/10/20, 08/11/20, 25/11/20
<b>W:965</b>	GV83063	Dale Beach	Pembrokeshire	Adult	08/05/20
<b>W:965</b>	GV83063	Gann Estuary	Pembrokeshire	Adult	14/09/20, 16/10/20, 08/11/20
<b>W:964</b>	GV83064	Gann Estuary	Pembrokeshire	Adult	05/09/20, 14/10/20, 08/11/20
<b>W:961</b>	GV83058	Gann Estuary	Pembrokeshire	Adult	16/10/20, 01/11/20, 16/12/20

\* on 5<sup>th</sup> February, W:977 was roosting near to (but not associating with) its partner W:972 at the Gann (7.5km from Skokholm). The 2019 Skokholm Seabird Report gave details of a Great Black-backed Gull pair seen together at the Nevern Estuary during the winter (46.5km from Skokholm).



The first chicks were seen at Dumbell Bay and the Little Neck on 17<sup>th</sup> May, one day later than the first of 2019 and one day earlier than the first of 2018. The first flying fledgling was seen at the Top Tank on 1<sup>st</sup> July, three days earlier than the firsts of 2019 and 2018; the mean 2013-2019 first fledgling date is 4<sup>th</sup> July, with the earliest logged on 30<sup>th</sup> June 2016 and the latest on 10<sup>th</sup> July 2015. Checks of the Neck productivity plot during July, where 129 pairs had established nests (three fewer than last year), located a maximum of 42 fledging-sized young (along with four small chicks and four incubating adults, although none of these late attempts were believed to result in fledged young). The resulting 2020 productivity figure of 0.33 fledged young per pair was 52.2% down on the 0.69 of last year, 57.1% down on the 2010-2019 mean (0.77 ±se 0.05) and the lowest since the 0.18 of 2004. One possible reason for such poor productivity is the impact of rough weather on the 22<sup>nd</sup> and 23<sup>rd</sup> May; although the wind reached little more than gale force, the remote monitoring station based on the Mid Channel Rock Lighthouse Beacon off St Ann's Head registered multiple, very unseasonable, 11m waves. White water was breaking over several north coast nests, although at least one was incubated so well that the eggs went on to hatch (above photographs). A check of the Neck productivity plot on the 27<sup>th</sup> concluded that several nests on the low cliffs of the Little Neck were missing entirely and that several more were seemingly deserted. The timing of the gales was



particularly unfortunate as they struck during a period when many eggs were hatching. A climate change related increase in breeding season rough weather events will clearly impact a species which, on Skokholm, regularly nests close to the level of mean high water springs.

On 23<sup>rd</sup> May Herring Gull W:974 was seen 19.5km inland, feeding on fruitcake left on a lawn in Johnston. During June W:999 was watched eating wholemeal bread in Haverfordwest (22.5km inland) and W:969 found a reliable source of food in a St Ishmaels garden (9.5km inland) where it was seen on six dates between the 9<sup>th</sup> and 25<sup>th</sup>; the latter bird was feeding chicks at the Little Neck on 27<sup>th</sup> May and 13<sup>th</sup> June, although these did not fledge. It is unclear whether such inland feeding is the norm for Skokholm birds (as the colour ringing project here is in its infancy). It is plausible that there may have been a reduction in the availability of anthropogenic marine food due to COVID-19 restrictions impacting recreational, and at times some commercial, fishing activities. Birds were still observed foraging behind fishing vessels, with 30 behind 'Boy's Pride' on 21<sup>st</sup> April the highest count. Additionally small feeding flocks regularly gathered offshore during the breeding season, with peak counts of 75 off Little Bay on 10<sup>th</sup> May and of 52 off the Lighthouse on 1<sup>st</sup> June. On 22<sup>nd</sup> July one drank a pool of blood left where a Peregrine had eaten a Puffin.



There was the customary post-breeding departure of both adults and fledglings during July and August, with the mean August daycount dropping to 53 (the lowest of the last eight years, down on the 69 of 2019 and a 2013-2019 mean of 76); lows of between four and six were logged on each date between the 25<sup>th</sup> and 27<sup>th</sup> August. August daycounts peaked at 176 on the 31<sup>st</sup> when 151 birds roosted on the sea to the south of the Island; this was the lowest August high of the last eight years, well down on ant swarm enticed highs of 295 in 2018, 348 and 409 in 2017 and 296 in 2014 (in 2020 the number of birds feeding on swarming ants peaked at 55 adults on 30<sup>th</sup> July and 41 adults with eight juveniles on 13<sup>th</sup> August). As is typically the case, few Herring Gulls visited Skokholm in September; there were 20 single-figure daycounts and the only totals in excess of 19 were of 59 on the 1<sup>st</sup> and 6<sup>th</sup>, 54 on the 13<sup>th</sup> and 82 on the 14<sup>th</sup> when ants were again being collected. A fledging-sized chick with a broken wing, which was still being fed by a parent in South Haven until at least 23<sup>rd</sup> September, walked to Sugar's Delight on 4<sup>th</sup> October and the Dip on the 5<sup>th</sup> before it was eaten in Crab Bay on the 6<sup>th</sup>. Although up on last year, October counts were down on the 2013-2019 mean; only five daycounts exceeded 40, including highs of 83 on the 15<sup>th</sup> and 151 on the 30<sup>th</sup> (a striking leucistic first-winter was along the north coast cliffs on the latter date). Numbers again increased in November, with a low of 41 on the 27<sup>th</sup> but a mean daycount of 143 and highs of between 248 and

260 noted on five dates between the 8<sup>th</sup> and 17<sup>th</sup>; although up on a peak 2019 daycount of 215, the 2020 high was down on the 339 of 2018, the November record of 612 logged in 2017, the 588 of 2016 and the 585 of 2015. The lower November counts recorded in the last two years reflects a substantial drop in the number of Herring Gulls feeding in Broad Sound. Daycounts during the first seven days of December averaged 92, with a high of 177 on the 1<sup>st</sup>.

**Lesser Black-backed Gull *Larus fuscus***

**Gwylan Gefnddu Leiaf**

**Abundant Breeder** previously a Very Abundant Breeder

6 resighted

1936-1976: 12,085 trapped, 2013-2019: 579 trapped, 26 retrapped, 99 resighted, 16 controls

A mean March daycount of 476 matched that of last year as the lowest yet recorded, down on the 568 of 2018, the 494 of 2017 and the 823 of 2016. The number of birds within the colonies again fluctuated considerably during the day; for example morning counts of the colonies near the Pedestal, Middle Heath and to the west of the Bog on the 21<sup>st</sup> produced a total of 144, whereas a check of the same areas that afternoon produced a total of 380. The larger communal roosts recorded in previous years were again generally absent; the majority of March counts were of birds on territory, although there were roosts of 44 at North Pond on the 18<sup>th</sup> and 122 to the south of North Pond on the 21<sup>st</sup>. A more detailed description of how the gulls prepare for the breeding season was available in 2015 and 2016 due to the GPS trackers fitted by the British Trust for Ornithology in 2014 (funded by the Department of Energy and Climate Change) which gave some idea as to when birds first returned to Skokholm (see the relevant Skokholm Seabird Reports for details of return dates and the range of over-wintering strategies used); the last of the functioning trackers and the base station were removed in 2017. Although up on the 2019 high of 759, peak April daycounts were otherwise the lowest of the last nine years; there were April highs of 747 on the 20<sup>th</sup>, 676 on the 24<sup>th</sup> and 798 on the 30<sup>th</sup>, whilst the largest roost away from the colonies contained only 24 birds on the 30<sup>th</sup> (April roosts peaked at 34 in 2019, 200 in 2018 and 260 in 2017). A check of the nests near the Top Tank on 25<sup>th</sup> April located a single egg; the first egg was three days earlier than both the first of last year and the 2013-2019 mean.

**When the first egg was located in each year 2013-2020, along with the 2013-2019 first egg mean.**

2013	2014	2015	2016	2017	2018	2019	2020	Mean
3 <sup>rd</sup> May	24 <sup>th</sup> April	4 <sup>th</sup> May	25 <sup>th</sup> April	1 <sup>st</sup> May	26 <sup>th</sup> April	28 <sup>th</sup> April	25 <sup>th</sup> April	28 <sup>th</sup> April

Vantage point counts of all the inland breeding subcolonies and a full census of the coast nesting pairs were made between the 17<sup>th</sup> and 21<sup>st</sup> May, during which 795 apparently incubating adults were located; this was the lowest total in over 50 years, 16.4% down on the 951 of last year and 12.0% down on a low of 903 counted in 2017. A COVID-19 dictated lack of volunteers meant that walkthrough surveys, which have been used to check the accuracy of the point counts, were not logistically feasible this year. The number of apparently incubating adults and the number of nests containing eggs located during walkthrough surveys invariably differs, primarily due to incubating birds being hidden by vegetation (particularly in areas where there are no raised vantage points). Between 2013 and 2019 there were on average 12.83% more nests containing eggs than apparently incubating adults (although this was as low as 0.82% in a year with a particularly short breeding season sward height and as high as 27.32% when vegetation was taller (see table below)). The walkthrough surveys also reveal a variable number of empty nests; over the period 1991-2002 the count of empty nests varied from 11-44% of the total number of nests (with a mean of 22.7% (Thompson, 2007)), although between 2013 and 2019 this dropped to between 4.98% and 17.62% (with a mean of 14.03%). It is unclear whether empty nests are second nests made by the pairs present, nests robbed of eggs or nests where adults are yet to lay. The breeding season is certainly a protracted one, with the first 2020 chick located on 22<sup>nd</sup> May (on the 22<sup>nd</sup> last year, the 23<sup>rd</sup> in 2018 and the 24<sup>th</sup> in 2017), but a nest near Crab Bay containing three warm eggs on 1<sup>st</sup> July, one day after



the first fledgling was seen near East Bog (the first fledgling was noted on 6<sup>th</sup> July in 2019, 5<sup>th</sup> July in 2018 and 7<sup>th</sup> July in 2017). It would thus seem likely that some (but given their extremely close proximity to each other, not all), empty nests belong to additional pairs. Between 2013 and 2019 the total number of nests (including empty nests) was between 20.68% and 43.45% higher than the vantage point total (with a mean of 31.36%).

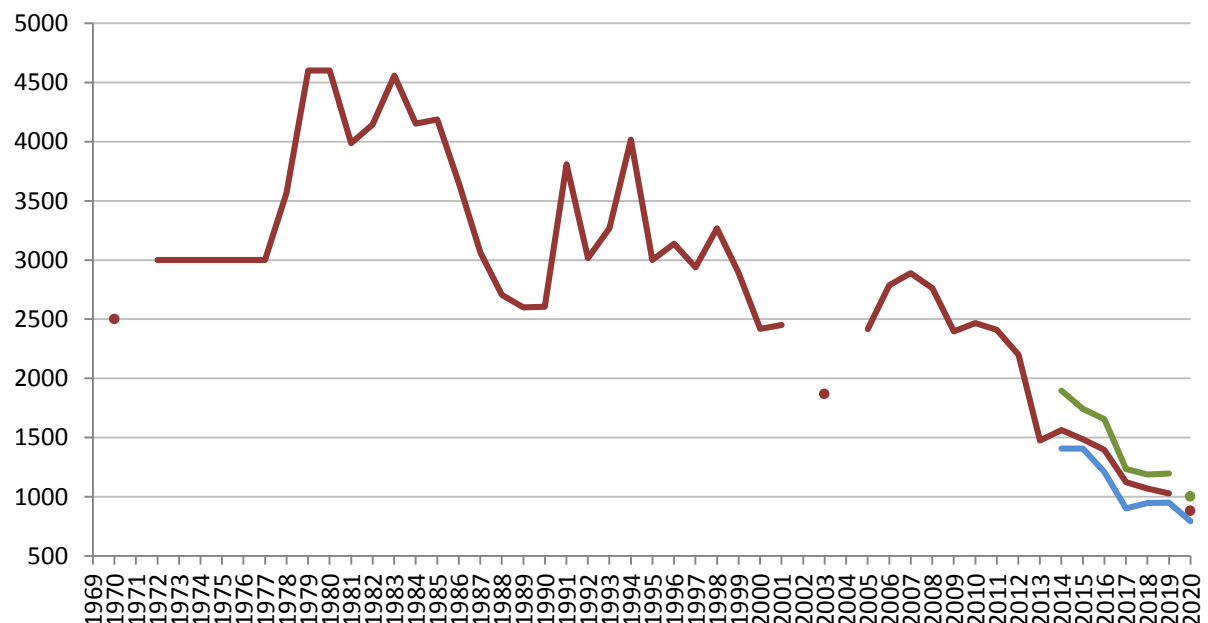
**A comparison of vantage point counts (of apparently incubating adults) and the number of nests (both empty and with eggs) located during walkthrough surveys of the same areas. The difference each year provided a correction factor to predict the number of nests (both empty and with eggs) which were actually present. The 2013-2019 means may be useful in years when walkthrough surveys are not possible/desirable.**

Year	Vantage point count	Walk through count	Empty/ With egg(s)	Percentage of empty nests	Difference between counts (%)*	Correction (no empty nests)	Difference between counts (%)**	Correction (including empty nests)
2019	194aia	251	39 212	15.54	9.28	1.09	29.38	1.29
2018	266aia	321	16 305	4.98	14.66	1.15	20.68	1.21
2017	366aia	517	51 466	9.86	27.32	1.27	41.26	1.41
2016	550aia	789	139 650	17.62	18.18	1.18	43.45	1.43
2015	493aia	636	110 526	17.30	6.69	1.07	29.01	1.29
2014	613aia	827	135 692	16.32	12.89	1.13	34.91	1.35
2013	245aia	296	49 247	16.55	0.82	1.01	20.82	1.21
<b>Mean</b>				<b>14.03</b>	<b>12.83</b>	<b>1.13</b>	<b>31.36</b>	<b>1.31</b>

\* How many more nests (containing eggs) were present than the number of apparently incubating birds seen (as a percentage).

\*\* How many more nests (including empty nests) were present than the number of apparently incubating birds seen (as a percentage).

**The total number of Lesser Black-backed Gull breeding pairs 1970-2020. Control measures started in 1984 (destruction of nests) and stopped in 1998. The green line is the population estimate if all empty nests are assumed to belong to additional pairs. The maroon line is the population estimate based on a comparison of vantage point counts and the number of nests which contained eggs. The blue line is the uncorrected vantage point count total (of apparently incubating adults). A lack of walkthrough surveys means that the corrected 2020 totals are based on 2013-2019 means.**



Of the 795 apparently incubating adults counted this year, 131 were nesting in open (primarily coastal) areas where it was apparent that additional pairs were not present. A mean 2013-2019 correction factor of 1.13 (see table above) would suggest that the remaining 664 incubating birds actually represented a total of 749 nests with eggs (giving a 2020 breeding population estimate of 880); this is both the lowest and first three-figure estimate of the post-War era, down on a low of 1028 logged last year. A mean 2013-2019 correction factor of 1.31 would suggest that the remaining 664 incubating birds actually represented a total of 872 nests (including empty nests); this gives a 2020 breeding population estimate of 1003, a total 16.3% down on that of last year. The actual number of breeding pairs no doubt lies somewhere between the two estimates (880-1003). Given that the walkthrough surveys inevitably cause some, albeit brief, disturbance to the colony, it would seem acceptable for the 2013-2019 mean correction factors to be used in the future (thus removing the need to enter the colonies).

Lesser Black-backed Gull productivity is typically assessed by entering various colonies to ring as many near-fledglings as possible, the BTO rings becoming marks for a mark/recapture population estimate. However it has lately proven difficult to resight sufficient ringed fledglings in the field to allow for a meaningful evaluation. In an attempt to increase the number of resightings, recent years have seen staff and volunteers re-enter the colonies (rather than observing fledglings at a distance with a telescope). A simple calculation, '(number of fledglings ringed x number checked for rings on second visit)/ number of birds found to have rings on second visit', predicts the number of fledglings within an area. Due to COVID-19 restrictions, only two staff were present during July, an insufficient number to corral and ring enough fledglings in a timely fashion; there is thus no comparable productivity estimate for this year.

Although fledglings at North Pond could potentially have come from anywhere on Skokholm (and possibly elsewhere), a maximum of 28 on 31<sup>st</sup> July was down on the 59 of 28<sup>th</sup> July 2019, the 65 of 27<sup>th</sup> July 2018, the 133 of 1<sup>st</sup> August 2017 and was the lowest peak total from this site during the last seven years (it should be remembered that the breeding population has fallen considerably during the same period). The coastal slope to the east of Purple Cove was investigated for a fourth year as this discreet subcolony, with very short sward or rocky substrate, is seemingly suitable for an accurate fledgling count using only a telescope; here 22 pairs produced a minimum of 12 fledglings, giving a productivity figure of 0.55 fledglings per pair (15 pairs fledged 0.67 in 2019, 14 pairs fledged 1.21 in 2018 and 18 pairs fledged 1.11 in 2017). That productivity is consistently higher in a smaller, coastal subcolony fits ad hoc observations made in recent years and perhaps supports the theory that birds in larger colonies are struggling in part due to intraspecific depredation; cannibalism was observed regularly at the Top Tank colony, particularly during May when the chicks were small. Productivity around the Neck was seemingly poor (although see the Herring Gull section for details of potentially damaging rough weather); fledgling counts during the Herring Gull productivity surveys peaked at only three (along with two chicks which were not thought to fledge), this in an area containing 43 apparently incubating birds (which equates to 0.07 fledglings per pair). Regular telescope checks of the discreet colony near the Pedestal, where over 60 pairs nested, located just one fledgling. Combining data from Purple Cove, the Neck and the Pedestal suggests that 129 pairs fledged 16 young, which equates to just 0.12 fledglings per pair (it should be noted that this estimate has been derived in a different way to that of recent years and that the sample includes a higher proportion of coastal nesting pairs than the whole Island count).

**Lesser Black-backed Gull productivity estimates 2004-2020 (where data exists).**

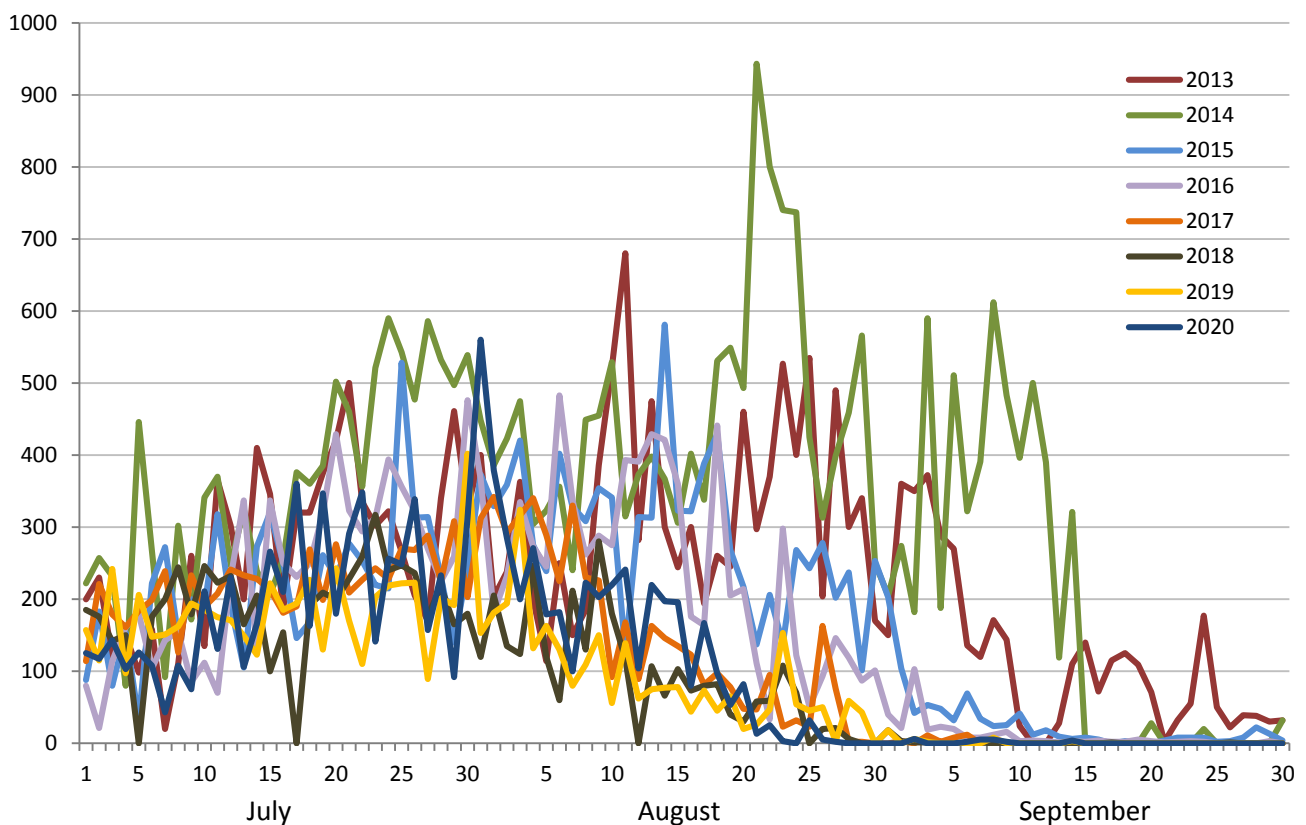
2004	2005	2008	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
0.07	0.27	0.27	0.03	0.16	0.16	0.30	0.15	0.23	0.38	0.63	0.27	0.12

Although poor productivity is seemingly the driving force behind the declining breeding population on Skokholm, it has also been suggested that sickness may be taking its toll in some years. There



were 21 dead adults found between 4<sup>th</sup> March and 1<sup>st</sup> August 2016 which were thought to be diseased or poisoned, with the period before death characterised by very lethargic behaviour, fine shaking and an eventual loss of limb control. There were three dead adults logged in 2017, 15 dead adults in 2018 (including a bird with a particularly dirty vent and a bird handed in live from a passing boat which exhibited the same symptoms prevalent in 2016) and two dead adults in 2019 (plus one with a broken wing which was not found dead). There were 11 adults found dead between 18<sup>th</sup> April and 29<sup>th</sup> July this year; although some may have died as a consequence of aggressive interactions with other gulls, a very weak and uncoordinated adult (with a clean vent) near North Pond on 6<sup>th</sup> May was found dead two days later. Additionally two adults were seen with broken wings, one was seen with a broken leg and one was seen with a missing foot (although the injury had healed).

**The number of Lesser Black-backed Gulls roosting on North Plain and in the vicinity of North Pond 2013-2020.**



As is typically the case, the number of birds using traditional roost sites increased during July; North Plain and the area around North Pond again proved to be the usual site for the largest post-breeding roost, with smaller numbers congregating around the coast and at South Pond. This year saw the July roost peak at 560 birds on the 31<sup>st</sup>, this the third largest July roost of the last eight years (only down on counts of 590 and 586 logged in 2014). Nevertheless a cumulative July total of 6296 roosting birds was the third lowest noted during the same period, a total only up on the 5764 of 2018 and the 5660 of last year. Whereas roost counts between 2013 and 2017 peaked in August, the last three years have seen a more rapid departure of birds from the Island. This year saw an August peak of 379 on the 1<sup>st</sup>, the highest August roost count since the 483 of 2016 (albeit well down on August counts between 2013 and 2015 which peaked at 943 on the 21<sup>st</sup> in 2014). An August total of 3759 roosting birds was up on the 2751 of 2018 and the 2695 of 2019, but down on tallies logged between 2013 and 2017 which ranged between 4273 and 13,849. The last three-figure roost count of the year was the 167 logged on 17<sup>th</sup> August; this was the earliest such count of the last eight years (the last of 2019 and 2018 was logged on the 23<sup>rd</sup>, the last of 2017 on the 26<sup>th</sup> and the last of 2016 on 2<sup>nd</sup> September). September again proved exceedingly quiet, with only 24 roosting birds logged

during the entire month; the last six years have seen very small September roosts, quite the contrast to 2013 and 2014 when counts were still regularly in the hundreds. A small number of birds visited Skokholm in October, with 85 logged over 26 dates and highs of eight on the 18<sup>th</sup> and 12 on the 28<sup>th</sup>; the total was the highest since the 166 of 2016, albeit well down on a recent peak of 658 in 2013. Sightings on all but two November dates totalled 277 birds and included highs of 42 on the 12<sup>th</sup> (when 39 adults roosted at North Pond) and 28 on the 22<sup>nd</sup>; the peak count almost matched the 43 of last year and the bird-days total was the highest since 1991 (up on the 191 totalled during a full month of observations last year). The first week of December saw sightings on five dates, with daycounts all of four or less bar the 19 logged on the 5<sup>th</sup>.

**Ringing recovery** GR77185

**Originally ringed** as a chick, SKOKHOLM 20<sup>th</sup> July 2014

**Recovered** as an adult, CORK CITY, CORK, IRELAND 31<sup>st</sup> October 2020

**Finding condition** Metal ring read in field

**Distance travelled** 220km at 276 degrees (W)

**Days since ringed** 2295

This bird was metal ringed as part of our 2014 capture, mark, recapture productivity monitoring.

The birds previously carrying GPS tags, along with an additional 48 non-tagged controls, were all fitted with yellow darvic rings with a black alpha-numeric code (number/letter:W e.g. 5A:W) in 2014. The colour ring is on the left leg and a BTO metal ring on the right. The darvic rings have yielded a fantastic number of field resightings; the 73 ringed birds have produced 168 separate resightings of 35 different individuals away from Skokholm. Nevertheless the number of resightings logged each year is unsurprisingly dropping. The following table summarises resightings received since similar tables were published in the 2014-2019 Seabird Reports. As has been shown by the British Trust for Ornithology GPS tracking project on Skokholm, and at other British Trust for Ornithology tracking sites (Ross-Smith, *pers. comm.*), Lesser Black-backed Gulls show a high degree of wintering site fidelity. This is also reflected in the colour ringing data, with 17 birds having been resighted at the same location in successive winters; records of returning birds have come from several sites in Portugal and Spain (including 9J:W in 2020), along with two in France, one in the Channel Islands and one in Morocco.

Darvic	Ring	Location	Country	Date
5P:W	GR98209	Pentewan Sands, Cornwall	UK	07/03/20
8K:W	GR98252	Gann Estuary, Pembrokeshire	UK	28/04/20
9J:W	GR98265	Barbate Harbour, Cadiz	Spain	12/09/20
9J:W	GR98265	Malaga Harbour	Spain	12/12/20

**Guillemot** *Uria aalge*

**Gwylog**

**Very Abundant Breeder** Common during the period 1928-1996, numbers then increasing rapidly  
3 controls

1936-1976: 1023 trapped, 2013-2019: 5 pulli trapped, 17 controls

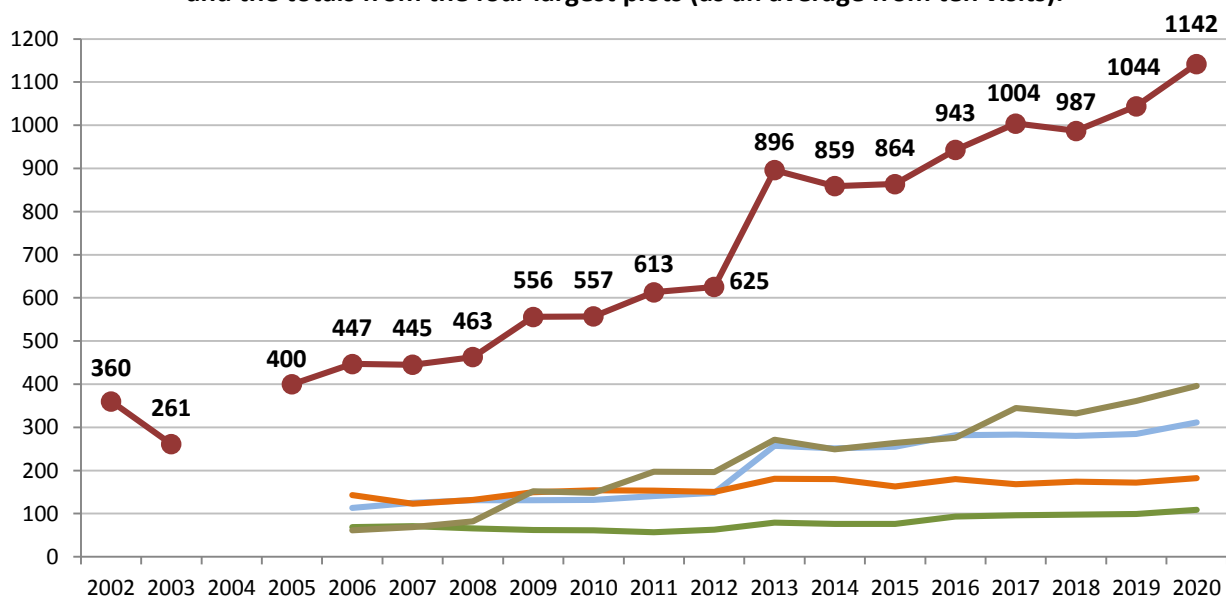
Visits for the deployment and checking of rodent bait stations allowed for calm day winter counts of 36 ashore on 22<sup>nd</sup> January and of at least 2000 ashore on 6<sup>th</sup> February. The mean March daycount following the return of staff on the 16<sup>th</sup> was 725; although there were four dates without a sighting and a further six dates when between one and 14 were logged, there were highs of 2587 on the 23<sup>rd</sup> and 3686 on the 24<sup>th</sup> (the latter the second highest March daycount to date, only down on the 3835 of last year). Customary departures for the sea continued in April, with ten dates when counts of less than 600 were logged (including three dates without a sighting and four dates with between one and 11 birds present); there were eight similar mass April departures during an unprecedentedly early 2019 breeding season, 16 in 2018, 13 in 2017, 2016 and 2015 and 19 in 2014 and 2013. A minimum



of 3971 birds on the 3<sup>rd</sup> was the highest April daycount to date and an indication of totals to come. The first egg to be found was at Middlerock on 27<sup>th</sup> April; although nine days later than the first 2019 egg (which is believed to be the earliest yet recorded in Wales (Birkhead, *pers. comm.*) and perhaps the result of unusually high 2019 sea surface temperatures (Burton, M., 2019)), this was otherwise the earliest of the last eight years and six days earlier than a 2013-2019 mean of 3<sup>rd</sup> May (the latest egg during this period, found on 15<sup>th</sup> May 2014, followed a winter of prolonged storms and significant auk wrecks). Early eggs are likely to be at risk during spring storms, as was the case on the night of 26<sup>th</sup> April last year when Storm Hannah encouraged the majority of birds back to sea (leaving those incubating birds which managed to protect their early eggs from the storm more exposed to predators). The weather during late April and the first half of May was more settled this year, although an unseasonably large swell on 22<sup>nd</sup> May was to impact 2020 productivity.



**The total number of adult Guillemot in all six study plots 2002-2020 (as an average from ten visits) and the totals from the four largest plots (as an average from ten visits).**



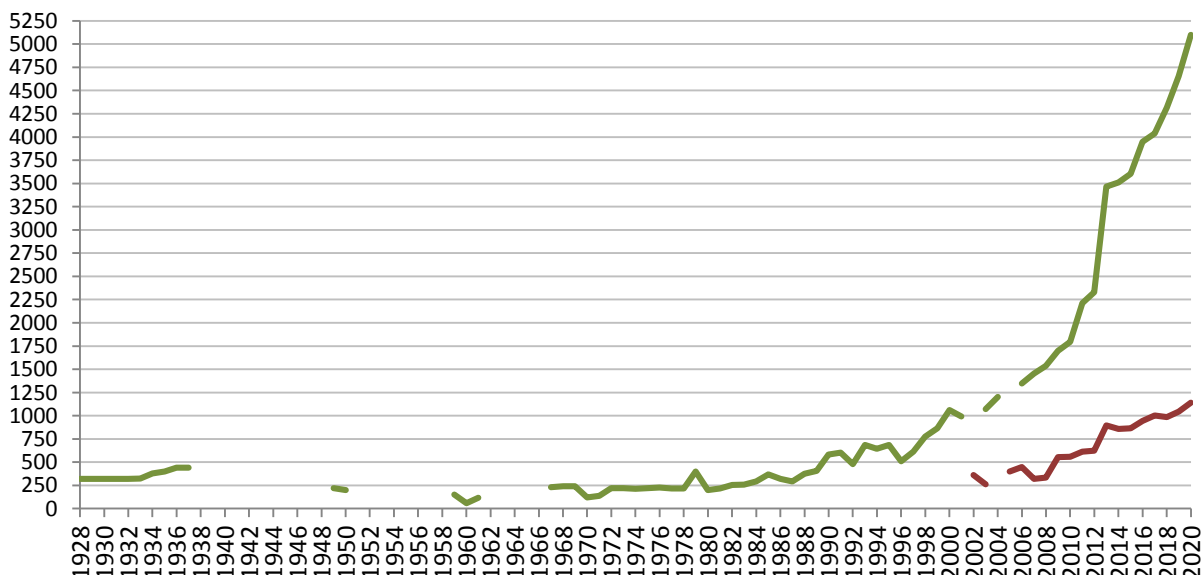
The six study plots were counted on ten dates between 25<sup>th</sup> May and 9<sup>th</sup> June. This followed a period of exceptionally large seas, with the swell peaking at 11m on 22<sup>nd</sup> May (above photograph); although Razorbills were seemingly impacted more heavily, multiple Guillemot eggs were lost from the plots

at Middlerock and North Gully along with sites at Purple Cove and the ledges to the east of Calf Bay. Such an unseasonable loss of eggs probably altered the number of adults present on at least some areas of cliff during the survey period. The mean total from all plots was 1142 adults on ledges; this was 9.4% up on the record 2019 total and 36.1% up on the 2010-2019 mean (839.2 ±sd 177.21). Numbers increased in all six plots, although small increases around Twinlet resulted in totals below or almost the same as those logged in earlier years; at Middlerock the ten visit mean increased from 55 to 58 (a 5.5% rise which took the total to six birds down on the high of 2015 and 2016) and at Guillemot Cliff the mean increased from 172 to 182 (a 5.8% rise which took the total to a new high only fractionally up on the 181 of 2013). The Little Bay Point plot contained an average of 311 birds (a 9.1% increase on the record 285 of 2019), the North Gully plot contained an average of 396 (a 9.7% increase on the record 361 of 2019) and the Steep Bay plot contained an average of 109 (a 10.1% increase on the record 99 of 2019); a North Gully increase of 35 birds was the largest numerical gain this year. The largest proportional increase was seen on the slope to Purple Cove where the mean jumped by 19.7% from 71 to 85 (a 47.9% rise was recorded here last year, this by far the largest increase in 2019). Remarkably the plots now contain more birds than were present on all of the Skokholm cliffs prior to 2003 and more than twice the number present in the plots in 2010, whilst the lowest of the ten 2020 plot counts exceeded the highest 2018 count.

**The whole Island totals, mean plot totals and the percentage of the Island totals made up of study plot birds 2011-2020. Also the range of plot counts since 2012 and the standard deviation observed over the ten plot visits since 2013. (\*includes a boat-based count)**

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Island</b>	2212*	2330	3466*	3512*	3603*	3949*	4038*	4316*	4654*	5101*
<b>Plots</b>	613	625	896	859	864	943	1004	987	1044	1142
<b>Range</b>		530-746	824-949	797-947	756-939	887-1003	939-1144	937-1060	982-1140	1069-1213
<b>±SD</b>			39.20	54.25	58.30	40.25	57.45	37.38	54.40	50.57
<b>Plot %</b>	27.7	26.8	25.9	24.5	24.0	23.9	24.9	22.9	22.4	22.4

**The total number of Guillemots (adults on ledges suitable for breeding) recorded on Skokholm since 1928 and the number of birds within the study plots since 2002.**



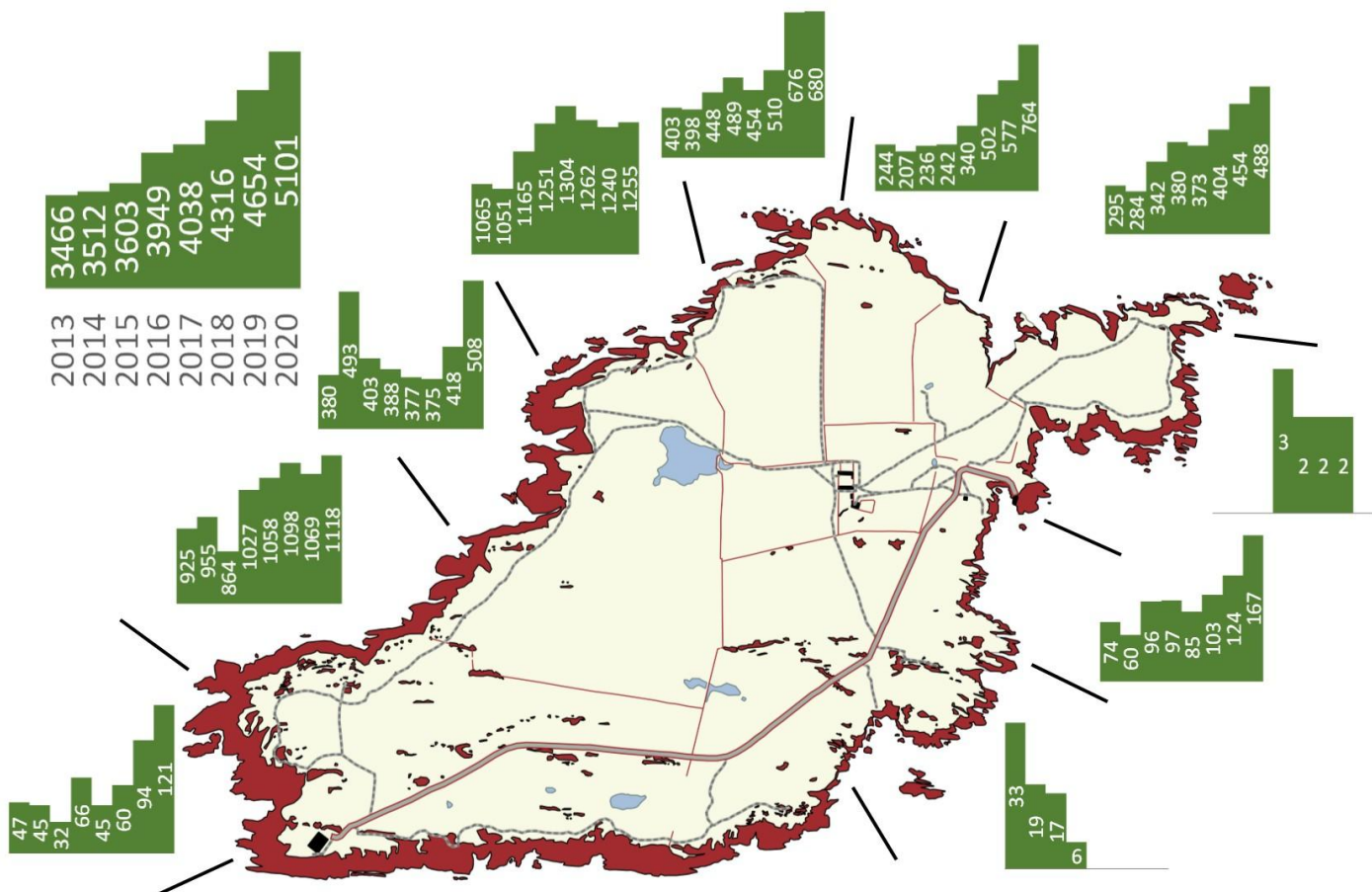
Recent Skokholm Seabird Reports have suggested that some of the study plots (particularly the Middlerock and Guillemot Cliff ledges of Twinlet) are seemingly close to capacity, perhaps in part due to an increase in Fulmar numbers; it seems possible that Fulmars will halt any further expansion of auks along their current ledges and may be excluding birds from previously occupied areas. For example a Fulmar projectile vomiting over non-breeding Guillemots at Little Bay on 27<sup>th</sup> May was



seemingly enough to deter the auks from that area for the remainder of this season. Although Fulmar-free ledges apparently suitable for colonisation by cliff nesting auks are present within the study plot boundaries, these new areas were not utilised this year.

Whole Island counts were made from the land between 25<sup>th</sup> May and 4<sup>th</sup> June and calm seas allowed for a boat-based survey on 9<sup>th</sup> June. Boat-based surveys allow some areas to be monitored which cannot be viewed from on the Island and enable closer access to some areas which can normally only be viewed at a distance. A mean total of 5101 adults in suitable breeding habitat was a 9.6% increase on the 2019 count and the highest tally yet recorded on Skokholm. Although down on the 2010-2019 average of 11.4% growth per year, the increase was the largest since 2016 (when numbers also increased by 9.6%) and equalled the third largest of the last ten years. The proportion of the whole Island count made up of study plot birds (22.4%) was down on the 2010-2019 mean of 25.4% and matched last year as the lowest this decade, perhaps suggesting that some of the factors limiting the more intensively studied plots are not impacting the entire Island population in the same way (although a 9.4% increase in the plots was very close to that seen across the Island as a whole). Additionally the Island total is based on fewer visits and only one boat-based survey, meaning that it is more likely to be further from the genuine mean.

**The distribution of Guillemots on suitable breeding ledges 2013-2020.**



As can be seen from the above map, the largest numerical increase occurred in the area around Near and Far Bays where a mean of 187 additional adults on ledges was logged; the population in this area has now increased by a remarkable 215.7% in four years. There was also a substantial increase of 90 adults in the area between Purple Cove and Twinlet, only 37 of which were in the four plots that fall within this stretch. The largest percentage increase occurred on the ledges around Hog Bay where 43 additional birds represented a 34.7% rise in the population. The reason for such rapid

growth in some areas compared with the rest of the Island is unclear, although it may just reflect the availability of previously unoccupied habitat. Although the stretch of coastline containing North Gully increased by an average of 15 adults, the North Gully plot had increased by 35 adults (suggesting that the population on the surrounding cliffs was down 20 birds and not increasing in the way observed elsewhere). There were no birds occupying ledges in Peter's Bay, this the second area to see a local extinction following a disappearance from the west of Crab Bay in 2017. These counts of individuals on ledges potentially include incubating adults, some of their partners, failed breeders, non-breeding adults and younger birds yet to pair; a correction factor is thus sometimes adopted to convert the count to an estimate of breeding pairs (Harris *et al.*, 2015). A 2015 survey on Skokholm found the correction factor to be 0.64, a figure close to the 0.67 widely adopted in previous studies (see the Skokholm Seabird Report 2015); the latter correction factor predicts the Skokholm breeding population to be in the region of 3418 pairs, 300 more than last year.

On 27<sup>th</sup> May an adult was watched as it arrived with a fish to what was seemingly its partner, the second bird receiving the fish before stooping and holding the food in position for a chick; a very close inspection revealed that this pair had neither an egg nor a chick. Four chicks were seen in the vicinity of North Gully the following day; these were five days later than the first chicks to be seen last year, but otherwise the earliest of the last eight years and eight days earlier than the 2013-2019 mean of 5<sup>th</sup> June (the first chick of 2014, the year following the severe winter auk wrecks, was on 13<sup>th</sup> June). A distinctive yellow billed individual in the North Gully plot was brooding a chick on 22<sup>nd</sup> June; similar aberrants have been seen on the Isle of Man, Bass Rock, the Farne Islands and Lambay. Productivity, calculated at between 0.55 and 0.61 jumplings per pair in 2013 and 0.6 in 2007, was not assessed in 2020 following recommendations from the Islands Conservation Advisory Committee. Chicks were jumping from 20<sup>th</sup> June and the number of adults recorded in the three regularly monitored plots dropped from 657 on the 23<sup>rd</sup> to 568 on the 24<sup>th</sup>, 488 on the 30<sup>th</sup>, 358 on 2<sup>nd</sup> July and 333 on 5<sup>th</sup> July (see chart below).

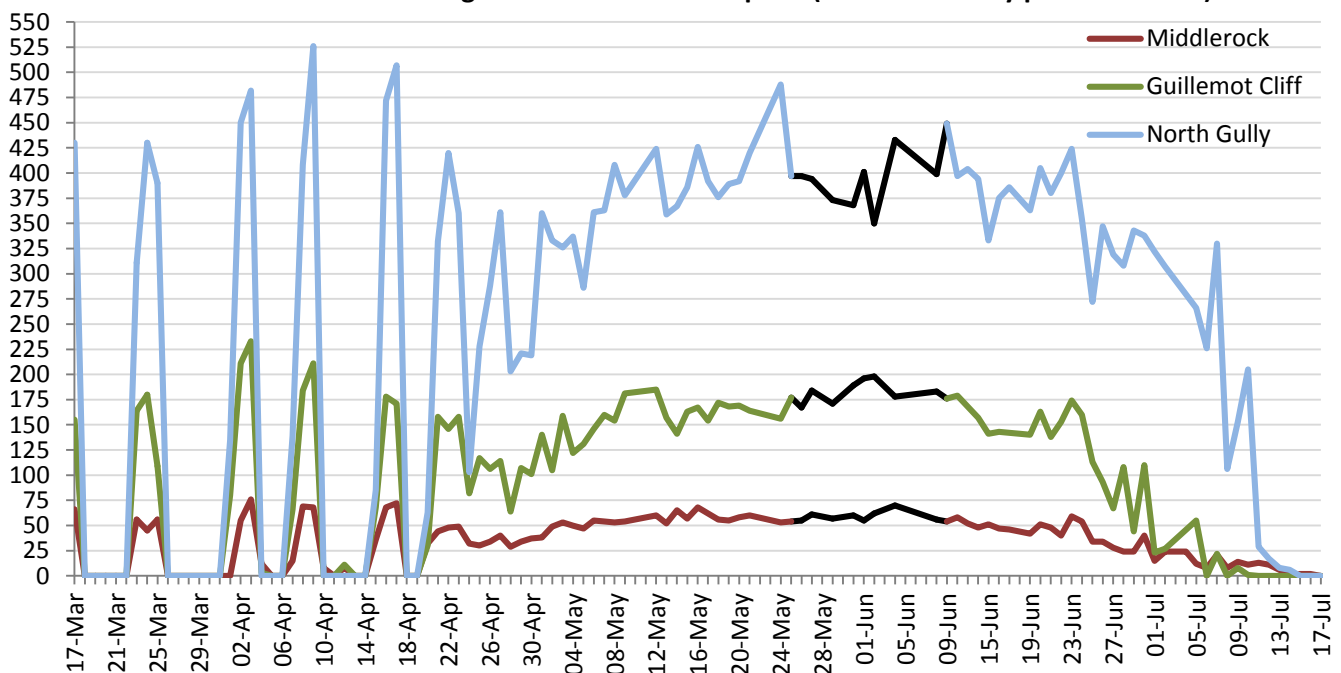


Between the 5<sup>th</sup> and 6<sup>th</sup> July, the number of adults in the Guillemot Cliff plot dropped from 55 to zero; the last birds had departed Guillemot Cliff by the 3<sup>rd</sup> last year, the 14<sup>th</sup> in 2018 and the 5<sup>th</sup> in 2017. The following day saw a late spike in numbers, with the total in the three monitored plots increasing from 234 to 373 (which included 22 birds in the Guillemot Cliff plot deserted on the 6<sup>th</sup>); similar late season returns occur each year. Following an increase to 205 on 10<sup>th</sup> July, counts at North Gully dropped to 29 on the 11<sup>th</sup> and to six on the 14<sup>th</sup> which were the last to be seen ashore here; North Gully was deserted on the 16<sup>th</sup> last year, the 20<sup>th</sup> in 2018 and the 17<sup>th</sup> in 2017. The number of birds at Middlerock dropped from 14 on 9<sup>th</sup> July to six on the 13<sup>th</sup> and just a single pair



remained between the 14<sup>th</sup> and 16<sup>th</sup> (birds which had lost their first egg to late May waves); Middlerock was also deserted on the 17<sup>th</sup> in 2018, but on the 6<sup>th</sup> last year and the 9<sup>th</sup> in 2017. This was thus the first year in seven that birds have not remained for longer at North Gully; although the larger breeding population at North Gully probably accounts for the typically later departure, the last four years have seen the last birds depart Guillemot Cliff before Middlerock (this despite the larger population at the former). Whole Island counts mirrored those made at the plots, with Steep Bay the only site to see birds ashore for longer than in the plots; 15 birds were still ashore on the 17<sup>th</sup>, up to three remained to the 21<sup>st</sup> and two on the 22<sup>nd</sup> were the last to be seen on land this breeding season (one day later than the 2013-2019 mean last date, with two on 16<sup>th</sup> July 2019 the earliest last birds and six on the 27<sup>th</sup> in 2013 the latest). Up to four were seen at sea on a further six dates to the end of July and in August there were records on 23 dates, totalling 1138 bird-days and with peaks of 156 on the 9<sup>th</sup>, 180 on the 28<sup>th</sup> and 411 on the 30<sup>th</sup> (which included one loafing with Kittiwakes on rocks to the north of the Quarry); the peak was the third highest August daycount to date, only down on counts of 475 and 1414 logged in 2018. The last three years are the only three to have produced four-figure August bird-days totals; although a boat trip four miles offshore during August 2017 revealed hundreds of rafting Guillemots, a total of 178 in 2017 was the previous August high.

**The number of adults on ledges within three of the plots (standard survey period in black).**



September counts are seldom high (the record bird-days totals are the 563 of 2014 and the 1419 of 2018), however this year saw sightings on only 15 dates tally just 63 birds (including two ashore, at least one of which was injured); the 2011-2019 mean is 317, with only three totals during that period being down on this year. There were an additional 799 distant, unidentified auks logged during September, this the second highest total in this month (down on the 2613 of 2018). Although sightings of up to 40 birds on 18 October dates totalled just 123, this was nevertheless the highest October tally to date, up on the 109 of 2018. An additional 1915 unidentified auks were logged during the same period, this the second highest October tally behind the 2055 of 2016. Despite a staff presence throughout the month and sightings on 25 dates, a daycount of 233 on the 23<sup>rd</sup> was the second lowest November peak of the last six years, whilst a monthly bird-days total of 1215 was the third lowest (well down on a high of 3441 logged last year). However an additional 3038 distant auks, the second highest November total behind the 3985 of last year, suggested that Guillemots might not be too far from Skokholm. Given the increase in the breeding population, it is perhaps unsurprising that autumn counts during the last few years have proven to be the highest on record.

Although a return of Guillemots to the breeding ledges in early winter is to be expected, there was no record of this behaviour on Skokholm between 2000 and 2014, despite the fact that staff did not depart until 16<sup>th</sup> November in 2013 and 24<sup>th</sup> November in 2014. However birds have been seen ashore in five of six subsequent Novembers, with 2017 the only year without a record (when staff departed on the 9<sup>th</sup>). This season saw 125 birds ashore on the 5<sup>th</sup>; the only earlier landfalls since birds took to the cliffs at Steep Bay on 27<sup>th</sup> October 1999 came on the 1<sup>st</sup> and 4<sup>th</sup> last year and on the 3<sup>rd</sup> in 2016. There were landfalls on a further 12 November dates, with peaks of 212 on the 22<sup>nd</sup> and 181 on the 23<sup>rd</sup> but eight counts of nine or less (guano streaks suggested that more birds had been present prior to an early departure). No birds were ashore during the first week of December. Such a return to the colony outside of the breeding season, with the risk of being attacked, must have a substantial benefit; it has been suggested that the return may be to secure the best ledge and thus attract the best mate (Harris *et al.*, 2006), but birds ashore may also use less energy than those at sea (Humphreys *et al.*, 2007). The majority of early winter sightings of birds ashore come from the ledges above the Jogs; this site holds the largest breeding season aggregation, perhaps suggesting that the need to come to land is greater in birds which occupy areas with more neighbours.

**Ringing recovery** Blue darvic with white 0373

**Originally ringed** as a pullus, THE AMOS, SKOMER ISLAND, PEMBROKESHIRE June 2016

**Previously recovered** three different colonies, SKOMER ISLAND, PEMBROKESHIRE May 2020

**Recovered** as an adult, LITTLE BAY, SKOKHOLM 21<sup>st</sup> May 2020

**Finding condition** Colour ring read in field

**Distance travelled** 4km at 163 degrees (SSE)

**Days since ringed** 1422 (approximately)

A subadult which has landed in at least four different colonies.



**Ringing recovery** Left leg green darvic with white 69K, Right leg N00620

**Originally ringed** as a pullus, THE AMOS, SKOMER ISLAND, PEMBROKESHIRE June 2005

**Previously recovered** as an adult, SKOMER ISLAND, PEMBROKESHIRE four times in 2009

**Previously recovered** as an adult, SKOMER ISLAND, PEMBROKESHIRE 11 times in 2010

**Previously recovered** as an adult, SKOMER ISLAND, PEMBROKESHIRE seven times in 2011

**Previously recovered** as an adult, NORTH GULLY, SKOKHOLM 5<sup>th</sup> May 2014

**Previously recovered** as an adult, NORTH GULLY, SKOKHOLM 29<sup>th</sup> April 2015

**Recovered** as an adult with a chick, NORTH GULLY, SKOKHOLM 21<sup>st</sup> June 2020

**Finding condition** Colour ring read in field

**Distance travelled** 4km at 163 degrees (SSE)

**Days since ringed** 5471 (approximately)

Another bird seen in different colonies before it settled to breed on the opposite side of Broad Sound to that on which it hatched.



**Ringing recovery** Yellow darvic with black 829

**Originally ringed** as a pullus, THE AMOS, SKOMER ISLAND, PEMBROKESHIRE June 2015

**Recovered** as an adult, NORTH GULLY, SKOKHOLM 13<sup>th</sup> May 2020

**Finding condition** Colour ring read in field

**Distance travelled** 4km at 163 degrees (SSE)

**Days since ringed** 1780 (approximately)

**Razorbill** *Alca torda*

**Llurs**

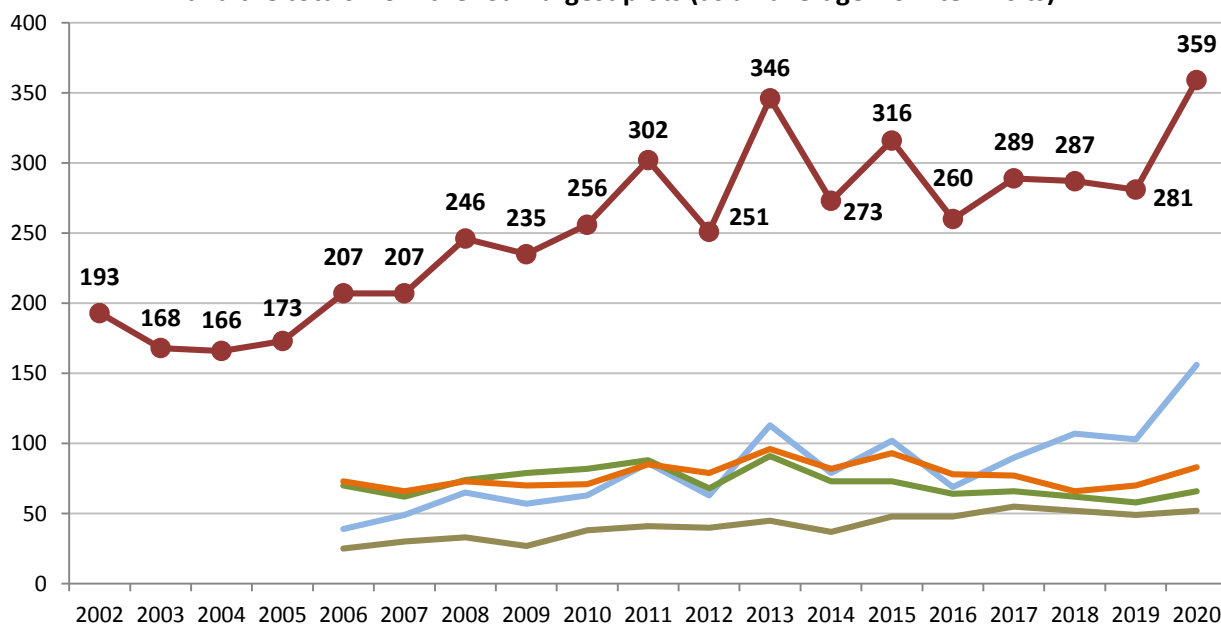
**Very Abundant Breeder** Common or Abundant until 2007, numbers then increasing rapidly

43 pulli trapped, 1 retrapped

1936-1976: 9220 trapped, 2013-2019: 243 trapped, 6 retrapped, 4 controls

Whereas visits for the deployment and checking of rodent bait stations allowed for counts of up to 2000 Guillemot, these calm weather winter excursions failed to locate a Razorbill on either 22<sup>nd</sup> January or 6<sup>th</sup> February. There were sightings on all but four March dates from the return of staff on the 16<sup>th</sup>, with highs of 1863 on the 23<sup>rd</sup> and 1875 on the 24<sup>th</sup> but five dates with 34 or fewer noted; the majority were at sea, with 945 on the 24<sup>th</sup> and 466 on the 25<sup>th</sup> the highest counts of birds ashore. Numbers continued to fluctuate during early April, with highs of 2274 on the 1<sup>st</sup> (1972 of which were at sea) and 1754 on the 2<sup>nd</sup> (865 at sea), but lows of between one and 15 on five dates between the 5<sup>th</sup> and 18<sup>th</sup>. Numbers on the cliffs increased steadily from 19<sup>th</sup> April and the first egg to be seen was being incubated at Middlerock on the 23<sup>rd</sup>; although four days later than the first of 2019 (an exceptionally early egg which was probably the result of unseasonably high sea surface temperatures), this was otherwise the earliest of the last eight years, six days earlier than the 2013-2019 mean (the latest first egg during this period was found on 13<sup>th</sup> May 2014, this no doubt a consequence of the winter storms preceding that breeding season). The majority of birds at the Neck study plot produced eggs earlier than those in the North Gully plot; at the Neck 20 of 34 pairs (58.8%) had an egg by 3<sup>rd</sup> May, whereas only 17 of 33 North Gully pairs (51.5%) had an egg by 8<sup>th</sup> May.

**The total number of adult Razorbill in all six study plots 2002-2020 (as an average from ten visits) and the totals from the four largest plots (as an average from ten visits).**



The Mid Channel Rock Lighthouse Beacon off St Ann's Head registered multiple, very unseasonable, 11m waves on 22<sup>nd</sup> May. This exceptionally large swell was devastating for some Razorbills, including those nesting at the Neck study plot; of the 30 pairs incubating eggs in the Neck plot at that time, 18

(60%) lost their eggs to the sea, although only one (or possibly two) of the 33 North Gully eggs were lost. Inevitably such untimely losses would impact the number of adults on breeding ledges during the usual whole Island and study plot count period; whereas the period following the egg losses saw an apparent increase in the number of adults present, a period during which lots of mating was observed, a survey on 30<sup>th</sup> May revealed a lack of birds (of the 16 Neck sites where a second egg would be produced, only two contained an adult). Given these huge changes in the number of birds present, it might be expected that the range in study plot counts (and the standard deviation given in the table below) might be higher than usual; this was indeed the case, although both values were down on those logged during a 2019 season characterised by a run of unsettled weather. The counts are inevitably affected by the weather; in the unsettled June of 2012, plot counts fluctuated between 164 and 338 birds, whereas the 2018 counts, made during a prolonged period of high pressure, fluctuated between 263 and 309 (with the lowest standard deviation of the last eight years (see table below)). It is possible that some higher counts, and thus the higher standard deviation observed in some years, are due to ameliorating rough weather encouraging more birds to the cliffs; there is seemingly a trend for the highest plot counts to occur following rough non-survey days.



**The whole Island totals, mean plot totals and the percentage of the Island totals made up of study plot birds 2011-2020. Also the range of plot counts since 2012 and the standard deviation observed over the ten plot visits since 2013. (\*includes a boat-based count)**

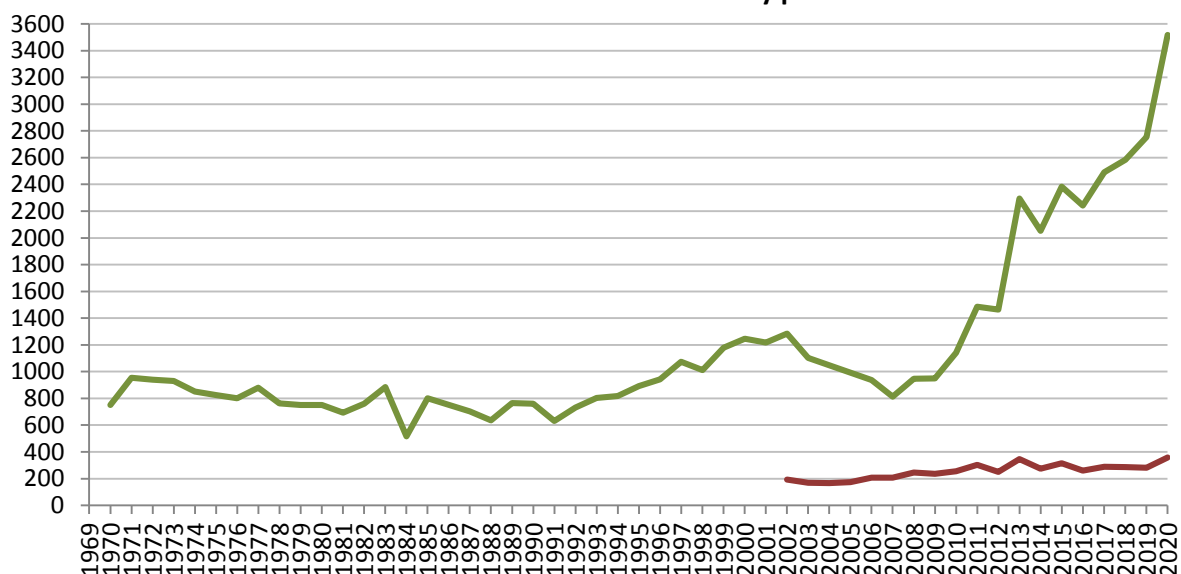
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Island</b>	1486*	1463	2294*	2052*	2382*	2242*	2491*	2585*	2755*	3517*
<b>Plots</b>	302	251	346	274	316	260	289	287	281	359
<b>Range</b>		164-338	301-397	254-315	291-346	236-324	253-334	263-309	230-351	312-395
<b>±SD</b>			30.54	19.96	15.78	26.58	25.61	13.25	40.82	30.72
<b>Plot %</b>	20.3	17.2	15.1	13.4	13.3	11.6	11.6	11.1	10.2	10.2

The six study plots, established in 2002, were visited on ten dates between 25<sup>th</sup> May and 9<sup>th</sup> June when every adult in suitable breeding habitat was counted. The mean single visit total of 359 adults on ledges was 78 (27.8%) up on that logged last year and the highest total to date, 25.4% up on the 2010-2019 mean (286.2 ±sd 29.3) and 3.8% up on the previous high logged in 2013. The largest increase was seen at Little Bay where the mean jumped by 51.5% from 103 to 156; the previous high



at this site was the 113 logged in 2013. A mean of two birds joined the Guillemot ledge on the slope to Purple Cove; although up to two birds have been seen at this site on at least one date in each year since 2013, only singles in 2013 and 2014 have been present regularly enough to register on the ten visit mean. The average number of adults in the North Gully plot increased from 49 to 52, the mean still being down on the 55 of 2017. There were larger increases in the Twinlet plots, with an additional eight birds on Middlerock taking the total to 66 (a 13.8% rise) and an additional 13 on Guillemot Cliff taking the total to 83 (an 18.6% rise); nevertheless both totals were still well down on 2013 means of 91 at Middlerock and 96 at Guillemot Cliff. The 86% increase in the number of birds occupying the plots since 2002 has thus primarily been driven by a jump in the number seen in Little Bay; the Little Bay total has increased by 117 birds (300%) since 2006 (the blue line on the above graph). A smaller 108% increase has been seen at the North Gully plot during the same period (the grey line on the above graph). It should be noted that the birds occupying the boulders in Little Bay are closer to sea level than most of those in the other plots; it is possible that the rough 2020 weather documented above impacted this area more than the other plots. Quite why the Twinlet plots have declined in recent years, particularly given the general upwards trend seen at Little Bay, North Gully and across the Island as a whole, is unclear. A possible factor is that the study plots, particularly those at Twinlet, are areas shared with both Guillemots and (perhaps more importantly) Fulmars, species currently increasing on Skokholm as a whole. The number of apparently incubating Fulmar in the Middlerock and Guillemot Cliff plots has increased since 2013, perhaps leading to competition with Razorbills for space within the confines of the plot boundaries.

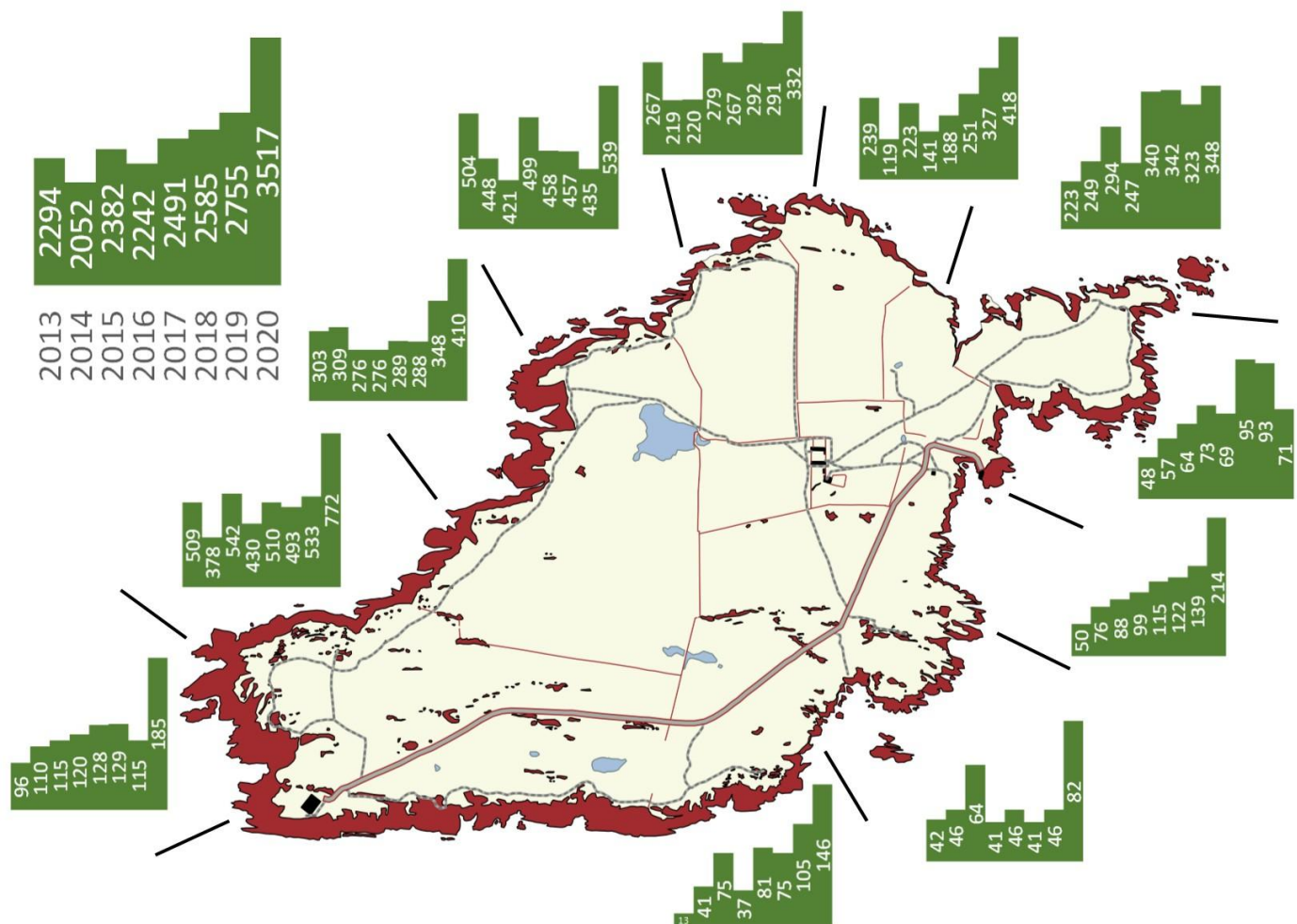
**The total number of Razorbills (adults on ledges suitable for breeding) recorded on Skokholm since 1970 and the number of birds within the study plots since 2002.**



Whole Island counts were made from the land between 25<sup>th</sup> May and 4<sup>th</sup> June, whilst a boat-based count was possible on 9<sup>th</sup> June. This was the eighth year running in which access to a boat had been available, inevitably leading to higher but more accurate whole Island counts; in 2012 rough seas meant that there was no opportunity for a boat-based count and it was concluded that ‘there remains a section of North Coast that was missed, while other parts of the North Coast and Bluffs were counted less accurately at a distance’ (Gillham and Yates, 2012). A 2020 whole Island mean of 3517 adults in suitable breeding habitat was 27.7% up on the 2755 logged in 2019 and the highest total yet recorded on Skokholm (68.4% up on the 2010-2019 mean of 2089.0 ±sd 543.64). The significant jump in numbers recorded this year is perhaps in part due to the number of pairs impacted by huge seas at the start of the survey period (see above), conditions which may also have changed the behaviour of non-breeding birds. Nevertheless the ten visit study plot mean increased by a very similar 27.8%, suggesting that any impact on numbers was not exaggerated by the fact that

the whole Island count is based on fewer visits. The proportion of the whole Island total made up of study plot birds matched last year as the lowest since the plots were initiated in 2002 (10.2%), implying that the plot limiting factors outlined above, particularly competition for space in the Twinlet plots, are not affecting the Island as a whole. As can be seen from the map below, there were increases in all but one area of the Island, with the largest numerical gains coming at the Bluffs (239 more birds), between the Jogs and the Dents (104 new birds, despite the fact that the North Gully plot increased by only three) and along Near and Far Bays (91 more birds). A loss of 22 birds to the south of the Neck mirrored the decline in Guillemot numbers at this site (which led to the extinction of the latter); interestingly Fulmar productivity is regularly below average in this area (see the Fulmar section), perhaps suggesting that an unknown factor is impacting seabirds here.

The distribution of Razorbills on suitable breeding ledges 2013-2020.



Productivity monitoring was undertaken for an eighth consecutive year. There are some concerns among ICAC members that recent Pembrokeshire productivity estimates have been quite low (on Skokholm ranging between 0.21 in 2015 and 0.69 in 2018), perhaps lower than what actually occurred given the continued growth of the population and certainly too low to maintain the expansion. One explanation for low productivity estimates could be that the plots do not represent the Island as a whole, particularly the exposed Neck plot where predation levels are often quite high and where this year a significant number of eggs were lost to the sea; with this in mind an additional cliff plot was established at North Gully in 2017. There were thus three survey areas this year, one a cliff below the Neck Razorbill Hide where 34 incubating pairs were mapped between 30<sup>th</sup> April and 25<sup>th</sup> May, one the ledges around North Gully where 33 pairs were mapped between the 2<sup>nd</sup> and 16<sup>th</sup> May and one an area among the Bluffs boulders where 48 egg sites were marked on 8<sup>th</sup> May.



The first chicks to be seen anywhere on Skokholm this year were found in Crab Bay and the North Gully productivity plot on 23<sup>rd</sup> May; although five days later than the first of last year, these were 11 days earlier than the 2013-2019 mean (which is 3<sup>rd</sup> June, with the earliest on 18<sup>th</sup> May 2019 and the latest on 15<sup>th</sup> June 2013). The North Gully plot saw two egg stage failures (of which one pair re-laid and again failed at egg stage) and six failures at egg or very small chick stage (ledges were found empty, with no indication as to what had happened). There were no definite chick stage failures, with all 25 known chicks going on to reach jumping size. The resulting productivity value of 0.76 jumplings per pair was the highest yet recorded at this site, up on the 0.71 of last year, the 0.62 of 2018 and the 0.58 of 2017. At the Neck there were four early egg stage failures, two failures with advanced eggs, one egg or very small chick stage fail and four failures at chick stage; two chicks failed at approximately two days, one at six days (the only dead chick to be seen on the cliffs this year) and one at under 18 days. An additional 16 pairs re-laid after eggs were lost to waves (see above); of these 13 failed at egg stage and three failed at chick stage (at approximately three, eight and ten days). Only seven chicks attained jumping size at the Neck; the resulting productivity figure of 0.21 was down on a 2013-2019 Neck plot mean of 0.42 (productivity at this site is very variable, with highs of 0.86 in 2018 and 0.77 in 2013 but lows of 0.14 in 2017 and 0.03 in 2016). The combined productivity estimate for cliff nesting pairs was 0.49; this was the lowest cliff estimate since the 0.36 of 2017, a figure down on the 0.67 of last year and the 0.74 of 2018 (both the 2020 and 2017 means were lowered significantly by poor productivity in the Neck plot).



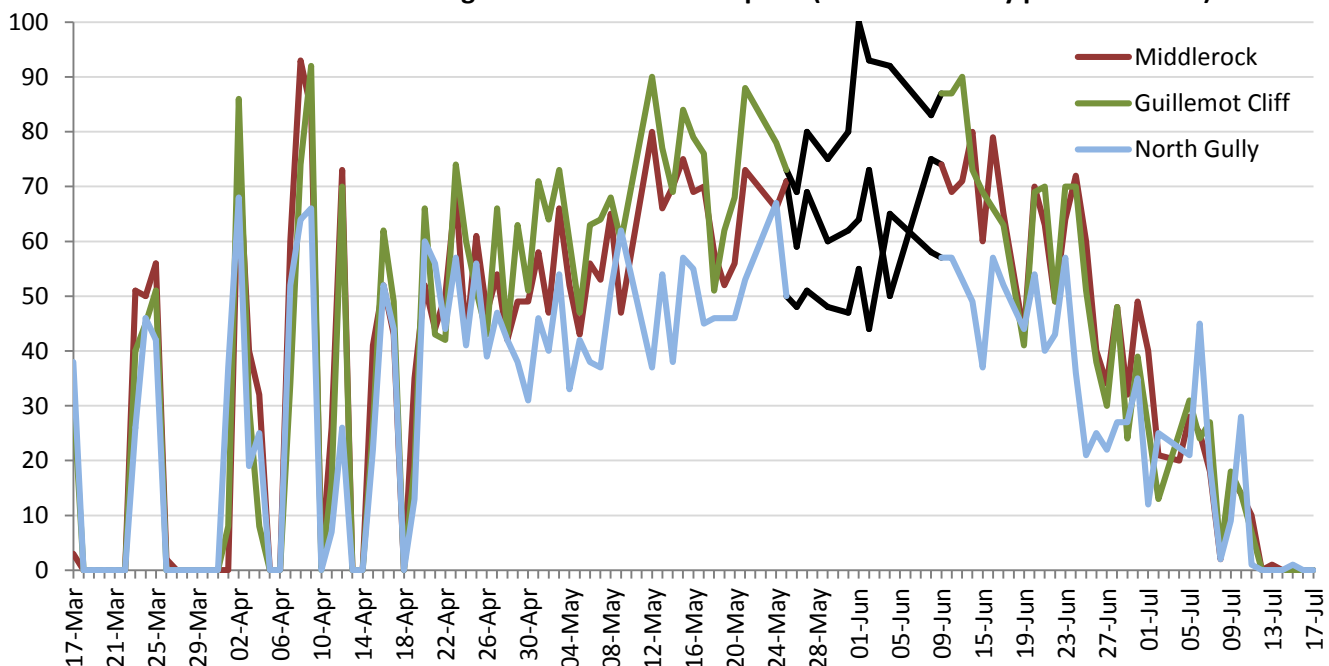
Among the Bluffs boulders four pairs failed at egg stage (three of which re-laid), seven pairs failed with eggs or small chicks (but the crevices were empty, with no indication as to what had happened), one pair failed with a small chick (hatched shell was present but no chick) and four pairs failed with chicks (two went missing at less than nine days, one at less than 17 days and one was found dead at 14 days). Of the three pairs which produced a second egg, one failed when the chick was less than 14 days old and two were successful. The offspring of an additional 32 pairs attained jumping size. Thus 34 pairs produced a jumpling, this equating to a productivity value of 0.71 per pair; the 2020 productivity estimate was the second highest to be recorded at this site, down on the 0.74 of 2016 but up on a 2013-2019 mean of 0.52 (lows during the period were of 0.29 in 2015 and 0.44 in 2014). For an eighth year running, the last of the breeding attempts within the boulders were concluded before the last of the attempts on the cliffs.

Combining the productivity figures for the cliff plots and the boulder plot to give an indication of overall productivity on Skokholm can be achieved in two ways, either by averaging the final values obtained for the three sites, as recommended in the Seabird Monitoring Handbook (Walsh *et al.*, 1995), or by combining all the data from the three plots (that is to say by dividing the total number of jumplings at all sites by the total number of monitored sites). The former, preferred, technique produces a productivity estimate of 0.56 jumplings per pair and the latter 0.57; primarily as a result

of the disappointing productivity recorded in the Neck plot, the mean 2020 estimate was down on the 0.63 of last year and the record 0.69 of 2018, albeit up on a 2013-2019 mean of 0.49 (lows during that period were the 0.23 of 2015 and the 0.39 of 2016, both these calculated prior to the establishment of the less variable North Gully plot).



The number of adults on ledges within three of the plots (standard survey period in black).

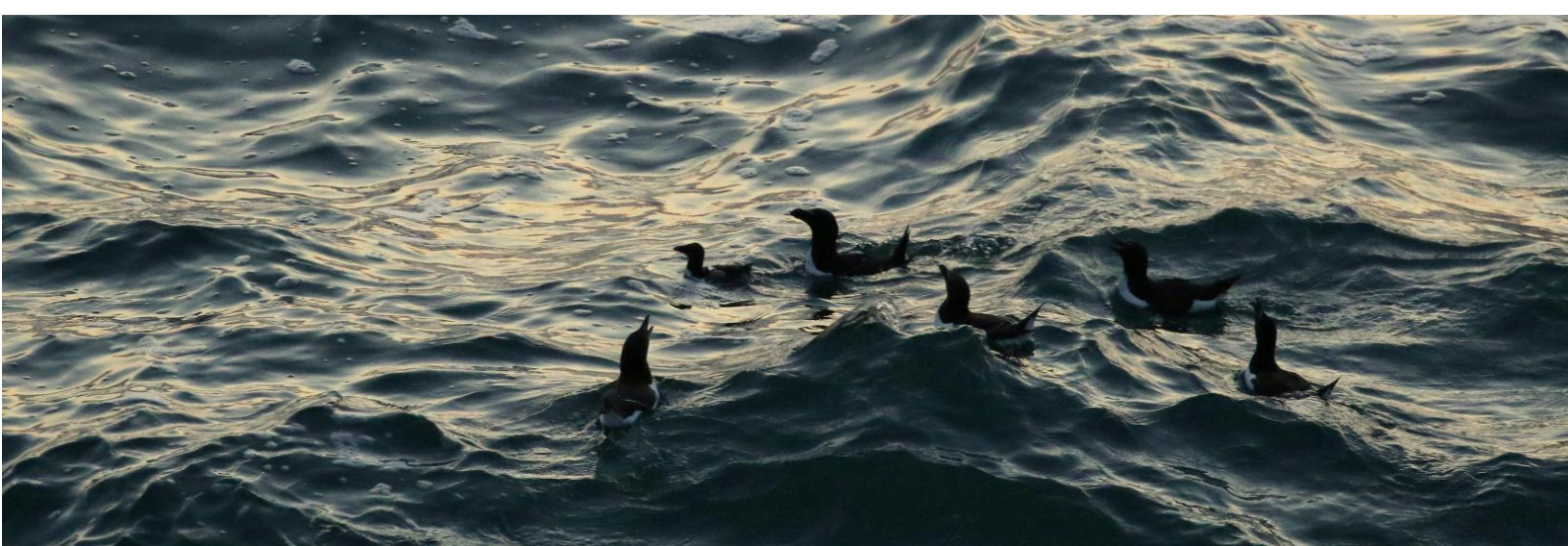


In an effort to ascertain the pattern of colony attendance, near daily counts were made at three of the plots throughout the breeding season (see chart above). There were again fluctuating numbers in all three subcolonies following the usual count period and regular peaks when the totals were augmented by the return of partners, failed adults, successful females or non-breeding birds; interestingly these peaks were again broadly consistent between subcolonies, and to a lesser extent coincided with Guillemot arrivals, suggesting that returning auks respond to the same environmental cues. The first jumpling had departed the productivity plots by 8<sup>th</sup> June; this was the earliest successful jumpling to date, one day earlier than the first of last year, 12 days earlier than the first of 2017 and 14 days earlier than the firsts of 2018 and 2016. The number of adults within the three



plots dropped steadily during June, with only double-figure totals logged from 1<sup>st</sup> July (the 2014-2019 mean is 10<sup>th</sup> July, ranging between 30<sup>th</sup> June last year and 17<sup>th</sup> July 2014) and single-figure counts from 12<sup>th</sup> July (the 2014-2019 mean is 20<sup>th</sup> July, ranging between 9<sup>th</sup> July last year and 27<sup>th</sup> July 2014). Whereas all of the Bluffs and North Gully study chicks had departed by 30<sup>th</sup> June, 13 of 34 attempts in the Neck plot (where 16 pairs had made late re-lay attempts) were still active on 1<sup>st</sup> July, nine were still active on the 12<sup>th</sup> and four were still active on the 19<sup>th</sup> (all of which had failed by the 23<sup>rd</sup>). Despite the early 2020 breeding season, there were single-figure counts of adults ashore each day from the 20<sup>th</sup> to 28<sup>th</sup> July, with birds provisioning big chicks at the Dents and Little Bay on the latter date the last to be seen this year; the 2013-2019 mean last adult ashore date is 27<sup>th</sup> July, with the earliest last date being 24<sup>th</sup> July in 2015, 2016 and 2017 and the latest being 2<sup>nd</sup> August in 2018.

There were sightings of Razorbills at sea on 21 August dates, totalling 575 bird-days and with highs of 68 on the 13<sup>th</sup>, 159 on the 28<sup>th</sup> and 129 on the 31<sup>st</sup>; both the peak daycount and bird-days total were new August records, both up on 2018 when a daycount of 114 took the total to 392. Counts on 25 September dates peaked at 82 on the 1<sup>st</sup>, 64 on the 5<sup>th</sup> and 71 on the 13<sup>th</sup>; there have been higher daycounts in six Septembers (with peaks of 200 in 1947 and a remarkable 1148 in 2017), but only three September totals up on the 507 of this year. Although down on a record 2019 October, when daycounts of up to 763 produced a bird-days total of 1224, counts of up to 79 birds on 25 dates took the 2020 October total to 496, this the third highest to date. November proved quieter, with sightings of up to 17 birds on eight dates and a bird-days total of only 42. Given recent increases in the size of the Skokholm breeding population, it is perhaps no surprise that unprecedented numbers have been logged in recent autumns. There were however no Razorbills seen ashore for an eighth successive November, this seemingly an auk behaviour confined to Guillemots during the early winter period. Further large auks were present at sea during the autumn, but they remained unidentified due to their distance from the Island; there were 799 in September, 1915 in October, 3038 in November and 228 in the first seven days of December, with a peak of 513 on 23<sup>rd</sup> November which was the sixth highest autumn daycount to date (all of which have come in the last seven years).



**Puffin** *Fratercula arctica*

Pâl

**Very Abundant Breeder**

1 trapped, 1 retrapped, 219 resighted

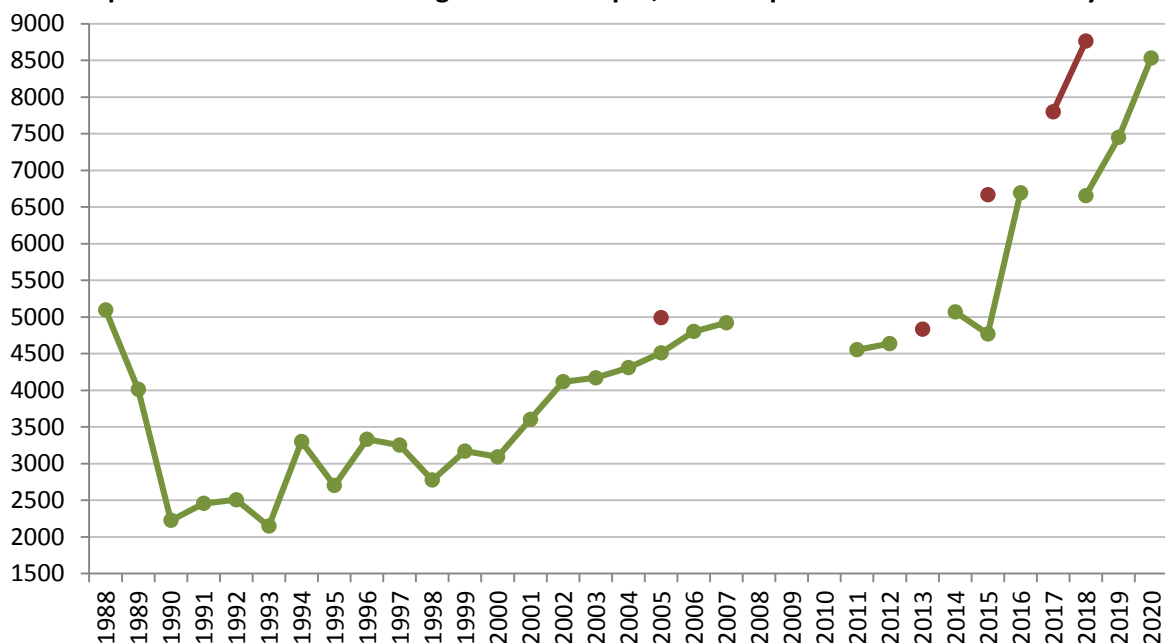
1936-1976: 5411 trapped, 2011-2019: 582 trapped, 24 retrapped, 1406 resighted, 1 control

The late return of staff on 16<sup>th</sup> March meant that early Puffins may have been missed; there had been counts of up to 23 birds on five dates totalling 31 bird-days prior to the 16<sup>th</sup> in 2019, although



these were unprecedentedly early, with the earliest pre-2019 March record being of four on the 12<sup>th</sup> in 1982. A minimum of 969 congregated offshore on the evening that staff returned; this was by far the largest arrival to have occurred by this date, with 200 in 2012 the previous 16<sup>th</sup> March high (indeed only 777 birds had been seen on this date or earlier since recording began). There were 5217 counted the following evening, this the earliest ever four-figure daycount (one day earlier than the first of last year and three days earlier than the first of 2012); of these two made landfall at Crab Bay and seven made landfall near the Bluffs, this the earliest ever return to the cliffs (two days earlier than when over 500 arrived to land in 2019 and three days earlier than an arrival of six in 2012). There were surprisingly no Puffins logged during gentle northerlies on the 18<sup>th</sup>, 19<sup>th</sup> and 20<sup>th</sup>, and less surprisingly none seen during a southeasterly gale on the 21<sup>st</sup>, however 7121 arrived offshore on the 22<sup>nd</sup>; this was the second highest March daycount to date, a tally down on the 7447 recorded on the 19<sup>th</sup> last year but up on the previous high of 4308 logged on the 27<sup>th</sup> in 2004. Sightings on all but two subsequent March dates, including highs of 2353 on the 24<sup>th</sup> and 2170 on the 25<sup>th</sup>, took the March bird-days total to 20,240 (the second highest March total on record behind the 23,633 of last year).

**The maximum Puffin daycount recorded each spring during the period 1988-2020. Green points represent counts made during March and April, maroon points counts made in May.**



Whereas the last seven years have seen daily counts made from around the Neck each spring evening (to record the pattern of colony attendance and to help select the most productive times for a whole Island count), COVID-19 dictated staffing shortages meant that this was not an option in 2020 (see the 2013-2019 Seabird Reports for charts showing spring attendance around the Neck). The impetus for a whole Island count on 7<sup>th</sup> April was thus an assessment of the number of birds rafting in South Haven. This survey produced a total of 8534 birds (to the north there were 2536 on the sea and seven in the air, to the south 1483 on the sea, 136 in the air and 1252 on land and around the Neck there were 2761 on the sea, 161 in the air and 198 on land); although numbers are still well down on Lockley's pre-War spring estimates of approximately 40,000, this was the highest April count since 10,000 were logged on the 22<sup>nd</sup> in 1953 and a tally 14.6% up on the peak spring count of 2019. Although the whole Island counts provide a relatively consistent long-term method for monitoring the trend in numbers, how the totals reflect the Skokholm breeding population is difficult to ascertain. The Crab Bay total on the evening of the 7<sup>th</sup> April peak 2020 count was 1637 birds (the 2019 peak was 1851), however more focused monitoring at this site revealed 72 active burrows in an area which comprises approximately 10% of the colony and where less than half of

occupied burrows were study burrows; we might thus predict a very rough minimum of 1440 pairs for Crab Bay (as active burrow distribution is apparently quite even) and expect over 1200 more birds to be using this area of sea than were logged during the peak whole Island count.

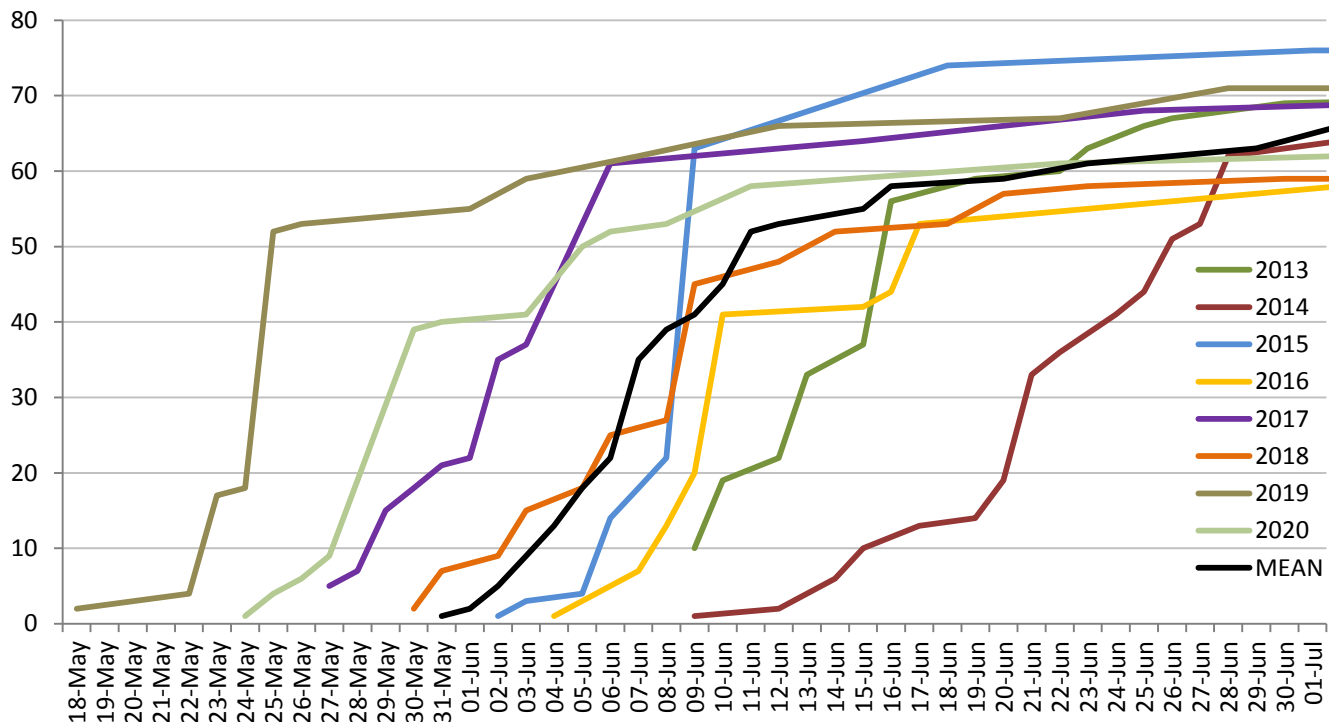
A productivity plot established at Crab Bay in 2013 was used for an eighth season. The majority of the 100 burrows individually numbered in 2013 were again used this year, although a small number of posts were repositioned due to either winter losses or subsequent excavations making it difficult to tell which hole was marked. Of these, 67 were seen to be occupied and were visible throughout the season (75 in 2019); productivity estimates are based on observations of these burrows. Despite prolonged checks, no chick food deliveries were seen anywhere until 24<sup>th</sup> May when three birds arrived with fish to Crab Bay; these were the latest first fish deliveries since one on the same date in 2017, albeit two days earlier than the 2013-2019 mean (the earliest in this period was logged on 14<sup>th</sup> May last year and the latest on 3<sup>rd</sup> June in a post-wreck 2014). The mean 2013-2019 first fish delivery to the Crab Bay plot is 31<sup>st</sup> May, 5.7 days after the whole Island mean (in 2015 the first plot delivery was only two days after the first delivery anywhere, whereas in 2013 it was ten days later); this year saw a fish delivery to the plot on 24<sup>th</sup> May, the same date as the first seen anywhere (see the graph below for the first plot delivery dates logged in previous years). The cumulative total of provisioned burrows increased rapidly; over 60% of burrows had been provisioned within a week of the first fish arriving, all of these with chicks prior to the 2013-2020 mean first fish delivery date. The 2020 chick feeding period was over three weeks earlier than in 2014 (the breeding season which followed the most severe winter storms recorded during this study). The breeding season is seemingly getting earlier; three of the four earliest chick provisioning periods between 2013 and 2020 have occurred in the last four years, with the start of the 2020 provisioning period being the second earliest to date. Five active burrows (7.46%) were not seen to be provisioned with fish and it is assumed that these failed at egg stage (the 2013-2019 mean is 5.91%, with a high of 7.79% in 2013 and a low of 3.28% in 2018).



Although the study plot was visited for a minimum of one hour most days, it certainly cannot be assumed that the first and last fish provisioning was seen for each burrow. Indeed the daylight hours Puffin watches highlight how some burrows are provisioned infrequently (see table below). Additionally it proves difficult to standardise ad hoc recording effort between years. It was thus decided in 2016 that a three visit method would be used to calculate productivity on Skokholm, but that five visits and ad hoc records would still be amassed to allow further comparisons to be made in the future (see the 2016 Seabird Report for more details). This is more in line with the Seabird

Monitoring Handbook (Walsh *et al.*, 1995) which states that, when monitoring Puffin productivity in colonies where the nest is inaccessible and the colony is shared with Manx Shearwaters, the most appropriate technique is ‘When birds are feeding large chicks, make a few watches to determine which burrows/crevices have fish taken down them’. Establishing when burrows contain large chicks is inevitably the main issue with this technique, necessitating earlier watches to detect chick hatching dates (which since 2013 have varied by as much as a month). Whereas the previous six years have seen the use of five daylight hours watches, a COVID-19 dictated staffing shortage meant that this year the five watches each lasted from 0430-1700hrs only (five fewer hours than usual).

**The number of study burrows which had been provisioned with fish by a particular date.**



**The number of fish deliveries to known active burrows during five 0430-1700hrs watches.**

No. of deliveries	0	1	2	3	4	5	6	7	8	9	10	12	14
No. of burrows 30 May	2	10	7	5	9	6							
No. of burrows 11 June	2	7	7	19	11	5	5						
No. of burrows 22 June	1	11	8	9	12	5	8	1	1				1
No. of burrows 2 July	1	10	11	4	9	7	8	3	2			1	
No. of burrows 14 July		7		1			1	1			2		

Puffins can fledge having spent a minimum of 34 days as a burrow-bound chick, although this is more typically 38 days and can be anything up to 60 days (Ferguson-Lees *et al.*, 2011). A flaw with the three visit technique is that some chicks could potentially be counted as fledged when they had reached as little as 13 days old (see table below). However it would be incorrect to assume that only those provisioned on all three watches went on to fledge; early hatchers could potentially have departed by the third watch whilst others may have hatched after the first watch. Although this three visit technique is more standardised than the ad hoc recording, the 2013 to 2019 productivity estimates of between 0.73 and 0.80 fledglings per pair certainly include birds which did not fledge; there have been examples each year of chicks already counted as having fledged which were eaten or found dead. This technique also missed fledglings this year, with three apparently successful chicks known to hatch after 11<sup>th</sup> June (which were thus recorded on only one of three watches and assumed to have failed). Nevertheless this more standardised monitoring method suggests that 2020 productivity of 0.78 was in line with recent years, indeed it almost matched the 2013-2019



mean (0.75 ±se 0.01). If the ad hoc records are included and it is assumed that a chick seen to be provisioned for 31 days or more was of fledging size, then the 2020 data suggests that, of the 67 monitored breeding attempts, perhaps as few as 43 (64.2%) were potentially successful (which equates to a productivity figure of 0.64 fledglings per pair); the 2013-2019 mean ad hoc productivity figure is 0.55, with a high of 0.64 in 2016 (and this year) and a low of 0.49 in 2013. At least 48 attempts saw a chick reach a minimum of 26 days (71.6% or 0.72 chicks per pair, see second table below), a figure almost identical to last year (when 72.0% reached 26 days of age (also 0.72)).

**Calculating productivity using only three daylight watches. The first watch was between 25<sup>th</sup> May and 28<sup>th</sup> June (dependent on the date of first fish delivery that year), the second between 11<sup>th</sup> June and 8<sup>th</sup> July and the third between 28<sup>th</sup> June and 24<sup>th</sup> July. Chicks are assumed to have fledged if fed on a minimum of two watches. Ad hoc productivity is based on a chick reaching 31 days.**

	First fish in plot	Last fish in plot	Fed watch 1 & 2	Min. chick age	Fed watch 2 & 3	Min. chick age	Fed all 3 watches	Min. chick age	Prod. based on 3 watches	Ad hoc prod.
<b>2020</b>	24-May	14-Jul	3	13 (30/5 - 11/6)	16	22 (11/6 - 2/7)	33	34 (30/5 - 2/7)	<b>0.78</b> (52 of 67)	0.64
<b>2019</b>	18-May	24-Jul	19	19 (25/5 - 12/6)	9	17 (12/6 - 28/6)	29	35 (25/5 - 28/6)	<b>0.76</b> (57 of 75)	0.55
<b>2018</b>	30-May	30-Jul	20	22 (9/6 - 30/6)	11	18 (30/6 - 17/7)	15	39 (9/6 - 17/7)	<b>0.75</b> (46 of 61)	0.56
<b>2017</b>	27-May	30-Jul	33	20 (6/6 - 25/6)	6	18 (25/6 - 12/7)	16	37 (6/6 - 12/7)	<b>0.80</b> (55 of 69)	0.57
<b>2016</b>	04-Jun	13-Aug	7	16 (17/6 - 2/7)	3	13 (2/7 - 14/7)	38	28 (17/6 - 14/7)	<b>0.73</b> (48 of 66)	0.64
<b>2015</b>	02-Jun	05-Aug	16	14 (18/6 - 1/7)	2	12 (1/7 - 12/7)	42	25 (18/6 - 12/7)	<b>0.75</b> (60 of 80)	0.55
<b>2014</b>	09-Jun	06-Aug	14	11 (28/6 - 8/7)	4	17 (8/7 - 24/7)	38	27 (28/6 - 24/7)	<b>0.74</b> (56 of 76)	0.50
<b>2013</b>	09-Jun	14-Aug	11	15 (16/6 - 30/6)	6	14 (30/6 - 13/7)	39	28 (16/6 - 13/7)	<b>0.73</b> (56 of 77)	0.49

**The number of days between first and last observed chick feeding based on ad hoc recording and five 0430-1700hrs watches.**

Days	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-51
No. of burrows	3	2		2	7	5	29	8	2	4

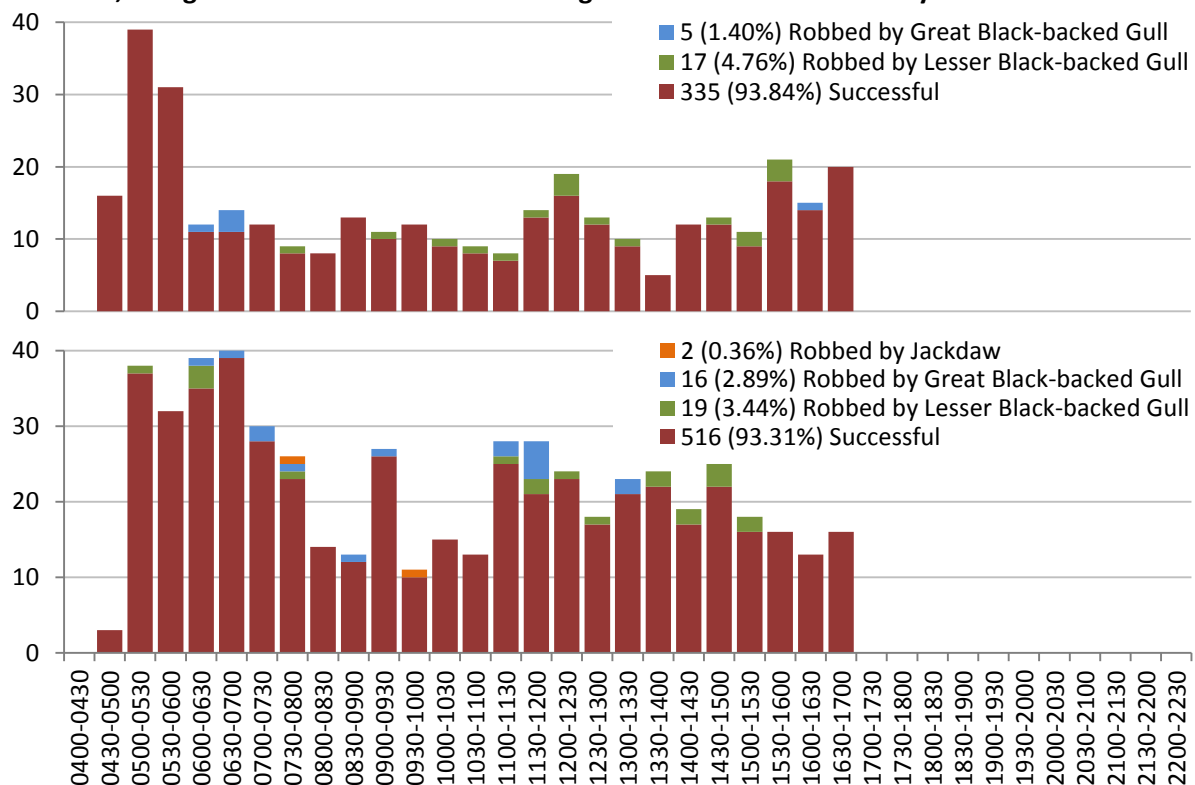
The five 0430-1700hrs watches were also used to monitor kleptoparasitism. The study plot was again confined to the area of the 100 numbered burrow stakes at Crab Bay. On 30<sup>th</sup> May 357 Puffins arrived to the study area with fish and of these 22 (6.16%) were successfully robbed. On 11<sup>th</sup> June 553 arrived and 37 (6.69%) were robbed. On 22<sup>nd</sup> June 600 arrived and just three (0.50%) were robbed. On 2<sup>nd</sup> July 659 arrived and ten (1.52%) were robbed. On 14<sup>th</sup> July 170 arrived and five (2.94%) were robbed. These figures do not take into account the number of fish lost to gulls at sea or on the approach to the colony. In terms of the percentage of deliveries lost over the study plot, a five visit mean of 3.29% was down on a 2013-2019 mean of 4.06% (it should be remembered that there were approximately 25 fewer hours of observations this year, although there is nothing to suggest that kleptoparasitism levels increase in the evening). The last four years have seen the lowest levels of monitored kleptoparasitism, whilst the highest level to be recorded so far occurred in 2013 (when 8.77% of deliveries were lost during four daylight hours watches). A general decline in kleptoparasitism is perhaps in part due to a reduced Lesser Black-backed Gull population (which has declined by 40.4% in the last eight years), although an increase in Great Black-backed Gull numbers may at the same time be having an effect, with the more aggressive large gulls keeping the Herring

and Lesser Black-backed Gulls from the study area. There has been an increase in corvids kleptoparasitising Puffins in the plot; there were no records between 2013 and 2016, a Crow stole one delivery in 2017, Jackdaws stole single deliveries in 2018 and 2019, a Raven stole a delivery in 2019 and this year saw two successful steals by Jackdaws.

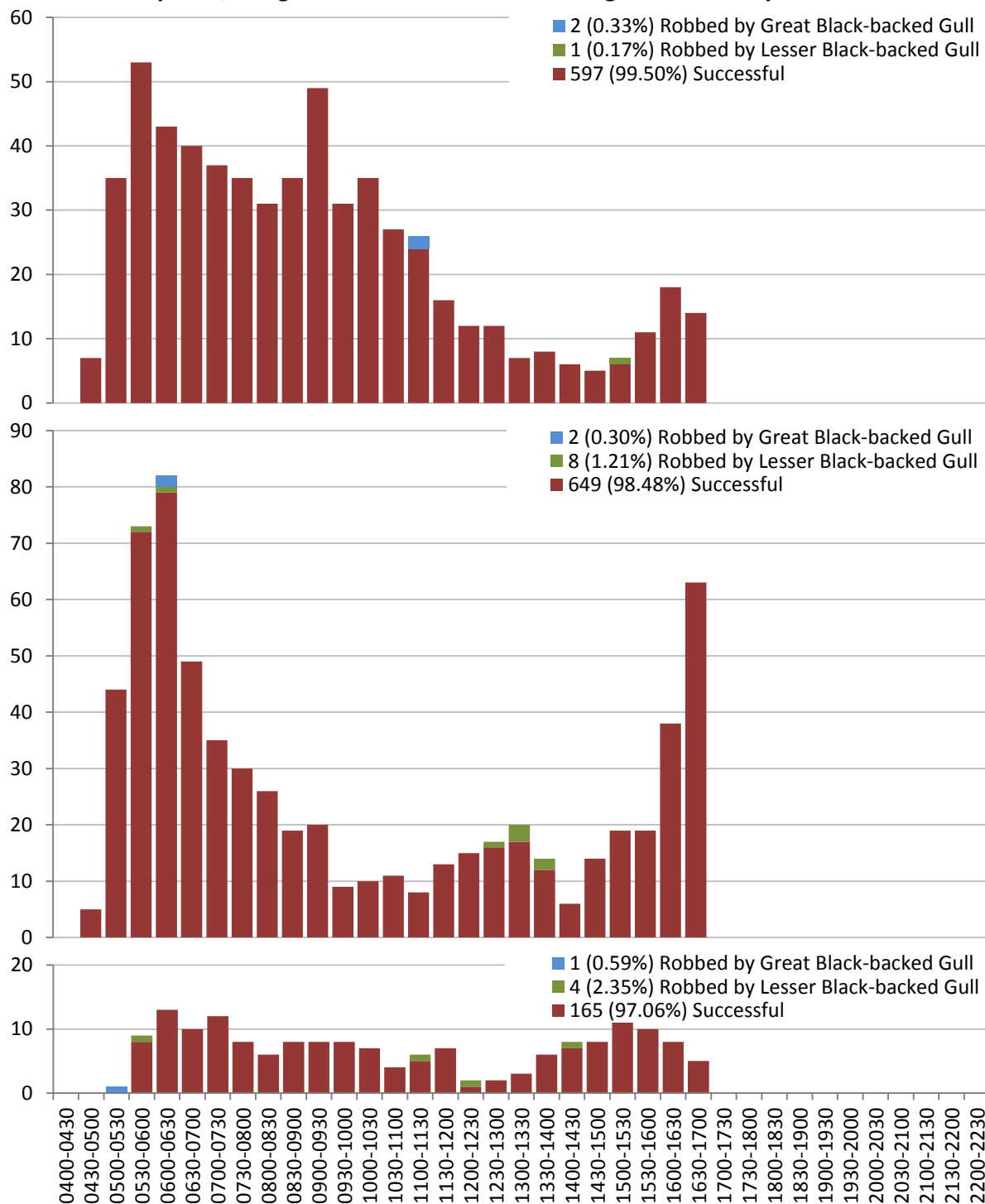
**The number of fish deliveries made to the study plot during each daylight hours watch, the number of Puffins which lost fish over the plot and the percentage which lost fish. (\*watches stopped at 1700hrs)**

		Watch 1	Watch 2	Watch 3	Watch 4	Watch 5	Total
<b>2020*</b>	Number of deliveries	357	553	600	659	170	<b>2339</b>
	Number parasitised	22	37	3	10	5	<b>77</b>
	Percentage parasitised	6.16	6.69	0.50	1.52	2.94	<b>3.29</b>
<b>2019</b>	Number of deliveries	579	929	504	429	228	<b>2669</b>
	Number parasitised	25	18	14	18	5	<b>80</b>
	Percentage parasitised	4.32	1.94	2.78	4.20	2.19	<b>3.00</b>
<b>2018</b>	Number of deliveries	701	852	527	511	359	<b>2950</b>
	Number parasitised	19	12	8	8	33	<b>80</b>
	Percentage parasitised	2.71	1.41	1.52	1.57	9.19	<b>2.71</b>
<b>2017</b>	Number of deliveries	844	991	1100	527	177	<b>3639</b>
	Number parasitised	30	11	3	7	5	<b>56</b>
	Percentage parasitised	3.55	1.11	0.27	1.33	2.82	<b>1.54</b>
<b>2016</b>	Number of deliveries	421	733	889	489	525	<b>3057</b>
	Number parasitised	20	45	35	10	28	<b>138</b>
	Percentage parasitised	4.75	6.14	3.94	2.04	5.33	<b>4.51</b>
<b>2015</b>	Number of deliveries	699	927	916	521	123	<b>3186</b>
	Number parasitised	43	34	23	10	4	<b>114</b>
	Percentage parasitised	6.15	3.67	2.51	1.92	3.25	<b>3.58</b>

**The number of chick provisioning attempts between 0430 and 1700hrs on 30<sup>th</sup> May and 11<sup>th</sup> June 2020, along with the number of times that gulls and corvids successfully robbed the fish.**



The number of chick provisioning attempts between 0430 and 1700hrs on 22<sup>nd</sup> June and on the 2<sup>nd</sup> and 14<sup>th</sup> July 2020, along with the number of times that gulls successfully robbed the fish.



A colour ringing project was begun at Crab Bay in 2011 to allow an estimate of adult survival to be made each year. There were 128 ringed in the first year, 166 between 2012 and 2014, 78 between 2016 and 2018 and a further 28 were added last year; another impact of COVID-19 was that a ringing team could not be safely assembled this year. The table below summarises the resighting data collected so far. What is apparent is that some birds are not seen every year, perhaps because they have not returned to the plot or perhaps because their rings have not been seen, indeed 12 were not seen for two years (including two which went missing for two years twice) and seven were not seen for three years. We now know, for example, that the 154 birds seen in 2013 was only 92.77% of



the number actually alive and that when 219 were seen last year, at least 233 were alive. With nine years of resighting data now available, we can start to look at fluctuations in survival over time. The percentage of birds surviving the winter during the period 2011 to 2020 has varied between 79.72% (in 2014) and 96.51% (in 2013), with only the 2014 return rate being below 89% (until this year) and an overall mean of 90.76%. A flaw with this survivorship estimate is that colour marks were added to Puffins caught in flight, individuals potentially resident in areas not visible to researchers; a better estimation of survival may therefore come from looking for birds previously seen in the field (thus discounting individuals in the year after ringing). The resulting survival estimates range from 80.12% (in 2014) to 97.37% (in 2013), with a mean of 91.81%. The most striking feature of these estimates is the substantial drop in survival noted after the severe 2013 to 2014 winter wrecks; it remains to be seen how often such drops in survival can occur before the spring raft counts show a decline. The 2020 return rate was down on that seen in all years bar 2014, although resighting effort was inevitably reduced this year; the survival estimates for more recent years are likely to be increased in the future as it seems probable that some birds missed this year will be seen again.

**Survival in adult Puffins.** An average survival figure for each year is based on the number of birds ringed in the preceding year plus the number of previously ringed birds known to be still alive, for example 215 birds (93.48%) are now known to have been alive in 2015, of a 2014 total of 230 (57 ringed in 2014 plus 173 (93+40+40) ringed previously and known to be alive). Survival after a one year establishment period means that birds have been seen within the study area before (and are therefore assumed to be located in visible positions); birds ringed in the preceding year are therefore excluded from the calculations as they may be occupying hidden areas of the colony.

	2011	2012	2013	2014	2016	2017	2018	2019	Total	Survival after one year
<b>Total Ringed</b>	128	58	51	57	23	24	31	28	400	
Seen in 2012	72								72	
Alive in 2012	114								114	
<b>% survival</b>	89.06								89.06	<b>No data</b>
Seen in 2013	102	52							154	
Alive in 2013	111	55							166	
<b>% survival</b>	97.37	94.83							96.51	<b>97.37</b>
Seen in 2014	86	36	37						159	
Alive in 2014	93	40	40						173	
<b>% survival</b>	83.78	72.73	78.43						79.72	<b>80.12</b>
Seen in 2015	78	37	35	50					200	
Alive in 2015	86	39	37	53					215	
<b>% survival</b>	92.47	97.50	92.50	92.98					93.48	<b>93.64</b>
Seen in 2016	67	34	32	43					176	
Alive in 2016	79	37	35	47					198	
<b>% survival</b>	91.86	94.87	94.59	88.68					92.09	<b>92.09</b>
Seen in 2017	71	35	31	44	19				200	
Alive in 2017	79	37	32	44	19				211	
<b>% survival</b>	100.00	100.00	91.43	93.62	82.61				95.48	<b>96.97</b>
Seen in 2018	69	34	28	40	19	20			210	
Alive in 2018	75	36	30	40	19	22			222	
<b>% survival</b>	94.94	97.30	93.75	90.91	100.00	91.67			94.47	<b>94.79</b>
Seen in 2019	65	33	27	36	17	20	21		219	
Alive in 2019	68	34	28	37	18	21	27		233	
<b>% survival</b>	90.67	94.44	93.33	92.50	94.74	95.45	87.10		92.09	<b>92.79</b>
Seen in 2020	60	31	23	33	15	18	22	17	220	
Alive in 2020	60	31	23	33	15	18	22	17	220	
<b>% survival</b>	88.24	91.18	82.14	89.19	83.33	85.71	81.48	60.71	83.91	<b>86.70</b>



Ad hoc records again mirrored the whole Island count in suggesting that the number of birds on Skokholm is increasing; despite a small number of Puffins breeding in crevices at the Quarry and in burrows to its north, a congregation of non-breeders using the cliff top to the south of the Quarry on 30<sup>th</sup> June was a novel observation. Although the main colonies were crowded during the day on 13<sup>th</sup> July, from the 11<sup>th</sup> the majority of birds did not come ashore until the evening. Between 2030hrs and 2100hrs on the 16<sup>th</sup>, an impressive 6490 birds were rafting off South Haven and Crab Bay alone. Number dropped significantly on the 22<sup>nd</sup> and the last four-figure daycount was logged the following day (only 122 of which were ashore). Raft counts remained in the hundreds until 29<sup>th</sup> July (2<sup>nd</sup> August last year) and no more than 11 were seen on each date from the 31<sup>st</sup>. The last fish delivery was seen at Twinlet on 9<sup>th</sup> August, this five days later than the last definite delivery of 2019 but otherwise the earliest last delivery of the last eight years (the 2013-2019 mean last delivery date is 12<sup>th</sup> August, with the latest on 23<sup>rd</sup> August in 2014). No Puffins were logged during the following six days, but on the evening of the 16<sup>th</sup> a bird carrying fish was watched as it circled the Bluffs; this individual did not make landfall and headed out distantly to sea (almost certainly of its own accord as it was observed distantly). The only other 2020 record was of one flying northeast off South Haven on 28<sup>th</sup> August.





**Storm Petrel** *Hydrobates pelagicus*

**Abundant Breeder** a 2016 whole Island survey predicted 1910 occupied sites  
431 trapped (including 14 pulli), 39 retrapped, 16 controls  
1936-1976: 18,526 trapped, 2011-2019: 4876 trapped, 370 retrapped, 203 controls

Despite the sizable Skokholm breeding population and the significant amount of time dedicated to seawatching, Storm Petrels typically prove a rare sight at sea. The only at sea sightings this year concerned a single west on the evening of 28<sup>th</sup> June and August records of one on the 4<sup>th</sup>, 19 during a storm on the 21<sup>st</sup>, two on the 22<sup>nd</sup>, one on the 23<sup>rd</sup>, seven on the 25<sup>th</sup> and a final single east on the 27<sup>th</sup>; the 21<sup>st</sup> August tally is seemingly the second highest diurnal count to date, a total only down on the 28 of 6<sup>th</sup> August 2017 (27 of which were following the potting vessel 'Boy's Pride'). A bedraggled adult, which had been tape lured in South Haven on 23<sup>rd</sup> July 2015 but not seen since, was found in the Courtyard during the morning of a wet 25<sup>th</sup> July (egg shell fragments fused to its brood patch and very sandy plumage suggested that there may have been a burrow collapse); the bird was dried in a box and released at the Cottage Wall, but died there overnight. With the exception of a small number of incubating adults visible in shallow crevices or in nest boxes, all other 2020 sightings came at night, although birds occasionally called from holes during the day and vocal responses were elicited for monitoring purposes. One calling from the plastic nest boxes above the Quarry at 0800hrs on 27<sup>th</sup> April was nine days later than the first nocturnal sighting of 2019, but was over two weeks earlier than the first diurnal record of that year; earlier diurnal records were logged on the 23<sup>rd</sup> in 2017, the 24<sup>th</sup> in 2014 and the 25<sup>th</sup> in 2015. Nights in May saw small numbers noted at various locations around the Island and infrared viewing equipment allowed a minimum of 100 to be watched around the Quarry on 12<sup>th</sup> May.

Four playback transects established at the Quarry in 2010, along with plots in North Haven Gully and along two of the walls which radiate from the Farm, potentially provide a sound method for monitoring changes in the Skokholm population (see the 2013-2019 Seabird Reports for full details). Unfortunately the COVID-19 dictated Island closure meant that there were not sufficient staff to safely survey the boulder areas this season. A check of the boxes and accessible crevices used for productivity monitoring in recent years revealed incubating adults in the vast majority of usual sites; although the sample size is poor, there was nothing to suggest a major decline in numbers this year.



There is a clear need to discover what the birds which respond to playback during the annual monitoring are actually doing; due to the fact that the vast majority of responding birds are hidden,



it is unclear how many of these (and indeed how many of the 1910 occupied sites predicted during the 2016 whole Island census) are actually breeding (as opposed to non-breeders moving around potential nest sites or diurnal refuges unsuitable for nesting). Previous attempts to use an endoscope in natural sites have failed to locate a sufficiently large sample size for monitoring purposes. One way to improve our knowledge is to encourage petrels to occupy accessible artificial sites. With this in mind a study wall containing 119 nest holes was created during the 2016 season (with the final inspection hatches and endoscope holes added in April 2017). Ten visits were made to this 'Petrel Station' between 26<sup>th</sup> June and 11<sup>th</sup> July when an MP3 playback census was conducted (this within the standard period used for the transect survey). The ten visits elicited calls from just three boxes (including the two which were successful last year), with a mean of 1.1 responses per visit and a mean apparent response rate of 36.67% (which is higher than that seen typically). Confirmatory checks during the chick provisioning period revealed discrepancies between the playback results and the box contents. One of the boxes found to be active during the survey only contained a nest scrape, a further two boxes from which responses were not elicited contained nest scrapes and six additional boxes contained egg stage failures by silent pairs (four of the eggs were damaged and two had not developed, five of these being in boxes which failed at egg stage in 2019); this has obvious implications for the whole Island census as evidently some active sites were not detected over ten visits (which would perhaps suggest that the Skokholm population is larger than estimated in 2016). It should however be remembered that the Petrel Station is probably not yet representative of the Island as a whole, primarily as the majority of occupants are likely to be younger, inexperienced birds. This theory is supported by the productivity estimate; of eight boxes which definitely contained breeding attempts, only two young fledged (from the same two boxes from which young fledged last year). A productivity figure of 0.25 chicks per pair is well below what is expected on average (see below), as might be predicted for younger, less practiced pairs.



There were 20 sites discovered this season where an incubating bird was evident early enough in the nesting period to allow a productivity estimate to be made (this equalling that of 2018 and 2015 as the largest post-2012 sample, up on a mean of 16.3); the Petrel Station birds were again excluded as it was felt that the sample could be biased towards younger, less experienced individuals. Although

some early egg stage failures may have been missed, the study is biased towards birds in shallow crevices or boxes and the sample size is far from great, these visible birds provide a rare opportunity to estimate productivity on Skokholm. The first eggshell fragments indicative of hatched chicks are usually encountered towards the end of the transect survey period (between 29<sup>th</sup> June (in 2019) and 17<sup>th</sup> July (in 2016), with a mean of 5<sup>th</sup> July); given that this survey was postponed in 2020, it is unsurprising that no evidence of early chicks was found. Of the 20 monitored nests, two definitely failed at egg stage; one in an exposed crevice near the Petrel Station was caked in mud during wet weather and one in the Gantry was abandoned by 17<sup>th</sup> August. An additional six failed at either egg or small chick stage (but neither could be located) and three failed at chick stage (youngsters at the Gantry and in the Knoll Wall went missing, whilst another was found dead below its Cottage Wall crevice). Only nine monitored pairs fledged young, the resulting productivity value of 0.45 fledglings per pair being the lowest of the last seven years (the 2014-2019 mean is 0.60, with a high of 0.74 last year and a low of 0.50 in 2017); it is unclear why productivity was so poor this year.

Although only small numbers of accessible chicks are ringed each year on Skokholm, tape luring of adult birds in South Haven is giving some indication as to their post-fledging survival. Of 32 chicks ringed between 2013 and 2015, seven (21.9%) have been mist netted in South Haven in subsequent years (at between one year, 323 days and three years, 344 days later) and an eighth bird, ringed as a chick in October 2015, was controlled at Gwennap Head, Cornwall in 2018; thus at least eight (25.0%) of the 32 survived a minimum of two winters. Intriguingly 12 of the 32 were ringed at either the Quarry or Wall's End and have not been seen again; although this may be due to chance, it is perhaps possible that young non-breeders return to sites close to their natal crevice, in this instance sites far enough from the South Haven MP3 lure that birds are not attracted. If the Quarry and Wall's End birds are removed from the equation, eight of 20 (40.0%) have been reencountered. If only the 2014 data is used, three of seven birds have survived for at least one year, 323 days since being ringed (42.9%). However, of the six chicks ringed in 2016, the seven ringed in 2017, the ten ringed in 2018 and the 23 ringed last year, only singles from 2016 and 2017 had been reencountered by the end of this year (one of which was mist netted on the nearby mainland).

On the night of 12<sup>th</sup> July a leucistic or progressively greying individual was taken from the South Haven mist net; the white feathering formed a thin breast band. This followed a bird on 2<sup>nd</sup> August last year which had white throat feathering and a thin white breast band and a bird taken on 25<sup>th</sup> July 2018 which had a white throat, a broken white breast band and a white nape patch. Of over 5000 birds handled since 2013, these are the only three to show more than a single aberrant feather. Although such individuals are clearly unusual, similar white patches are documented on occasion; a comparable bird photographed on Filfla, Malta in 2001 was recorded in a paper which mentions a few other incidences in Storm Petrels (Sultana and Borg, 2002).



In 2013 a thermal imaging camera recorded a Short-eared Owl hunting Storm Petrels in the Quarry, an event which has subsequently been shown to be quite regular. The remains of six petrels were found that year, with 16 in 2014, 18 in 2015, 51 in 2016, 98 in 2017 (the only year on record in which Short-eared Owls have been proven to breed), 31 in 2018 and five last year; the majority of these

were thought to be the victims of Short-eared Owls, usually due to the presence of feathers or pellets. There were only 16 Short-eared Owl bird-days logged this season, this the lowest tally of the last eight years (the mean during this period is 40.3 bird-days, with a high of 76 in 2017). The remains of only three Storm Petrels were located; adults were found in the Quarry on the 12<sup>th</sup> and 28<sup>th</sup> August, whilst the feathers of an unaged bird were near the Bluffs on 9<sup>th</sup> September. There were again no Little Owl records (the last was seen on 17<sup>th</sup> March 2018); this introduced species is a well-documented Storm Petrel predator, for example the 1936 Skokholm Bird Observatory Report includes details of a Little Owl nest containing the remains of nearly 200 petrels. In 2019 a House Mouse was watched via a live infrared camera feed as it entered Petrel Station burrow 64; it was seen to walk to the end of the entrance tunnel but did not drop down into the chamber or interact with the resident Storm Petrel chick, indeed neither seemingly reacted to the other's presence. The six eggs abandoned in the Petrel Station this year were left in situ to see if they would be found by mice; all six were still present in December.

Adult Storm Petrels were lured to the traditional South Haven netting site on seven nights between 11<sup>th</sup> July and 13<sup>th</sup> September; this was six fewer nights than last year and the lowest total of the last eight years. The largest catch was of 129 birds on the night of 12<sup>th</sup> July; this was the lowest peak catch of recent years, down on the 169 of 2019, the 142 of 2018, the 252 of 2017 and the 247 of 2016. Of 468 adults handled in South Haven this year, 11.1% were already wearing a ring (the mean during the period 2013-2019 was 10.0%, with a high of 12.7% in 2017 and a low of 5.4% in 2014), there was a single retrap from 2013, 12 retraps from 2019 and 15 (3.21%) had been ringed elsewhere (the mean during the same period was 4.38%, with a high of 5.68% in 2013 and a low of 3.57% in 2018). As was the case on Skokholm, the COVID-19 pandemic will inevitably have reduced trapping effort at some sites; this probably goes some way to explaining why the proportion of birds ringed elsewhere was the lowest of the last eight years. Additional to the birds listed below, we received news of seven birds ringed at Wooltack Point (4km to the NNE) retrapped on Skokholm (with singles retrapped after 384, 383, 363, ten and two days and two birds retrapped the following day), one bird ringed on Skokholm and retrapped at Wooltack (after 342 days), two birds ringed on Skomer Island (4km to the NNW) retrapped on Skokholm (with singles retrapped after nine and two days) and eight birds ringed on Skokholm and retrapped on Skomer (after between 13 and 1459 days). Since ringing fully recommenced in 2013 we have now received news of 369 Storm Petrels either ringed on Skokholm and found elsewhere or ringed elsewhere and controlled on Skokholm; of these 232 have been exchanged with sites more than 10km away from the Island (see map below). Unless stated otherwise, all of the following recoveries were of birds deliberately mist netted.

**Ringing recovery 2587601**

**Originally ringed** as a juvenile, FRESHWATER WEST, PEMBROKESHIRE 27<sup>th</sup> October 2017

**Recovered** as an adult, SOUTH HAVEN, SKOKHOLM 13<sup>th</sup> July 2020

**Distance travelled** 16km at 291 degrees (WNW)

**Days since ringed** 990

Soon after fledging, this individual was attracted to lights at a Milford Haven oil refinery. Although we have amassed several recoveries of Manx Shearwaters released back to sea following similar misadventures, this is the first Storm Petrel we have shown to have successfully survived repatriation. There is clearly huge value in returning displaced seabirds to the coast.

**Ringing recovery 2649664**

**Originally ringed** as an adult, PORTH YSGADEN, TUDWEILIOG, GWYNEDD 25<sup>th</sup> June 2020

**Recovered** as an adult, SOUTH HAVEN, SKOKHOLM 21<sup>st</sup> July 2020

**Distance travelled** 140km at 198 degrees (SSW)

**Days since ringed** 26

Additionally 2649666, ringed as an adult at Porth Ysgaden on 26<sup>th</sup> June 2020, was controlled in South Haven on 17<sup>th</sup> July after 21 days.



**Ringing recovery 2683481**

**Originally ringed** as an adult, GWENNAP HEAD, PORTHWARRA, CORNWALL 26<sup>th</sup> July 2018

**Recovered** as an adult, SOUTH HAVEN, SKOKHOLM 13<sup>th</sup> July 2020

**Distance travelled** 188km at 9 degrees (N)

**Days since ringed** 718

**Ringing recovery 2699104**

**Originally ringed** as an adult, PORTLAND BILL, DORSET 6<sup>th</sup> July 2018

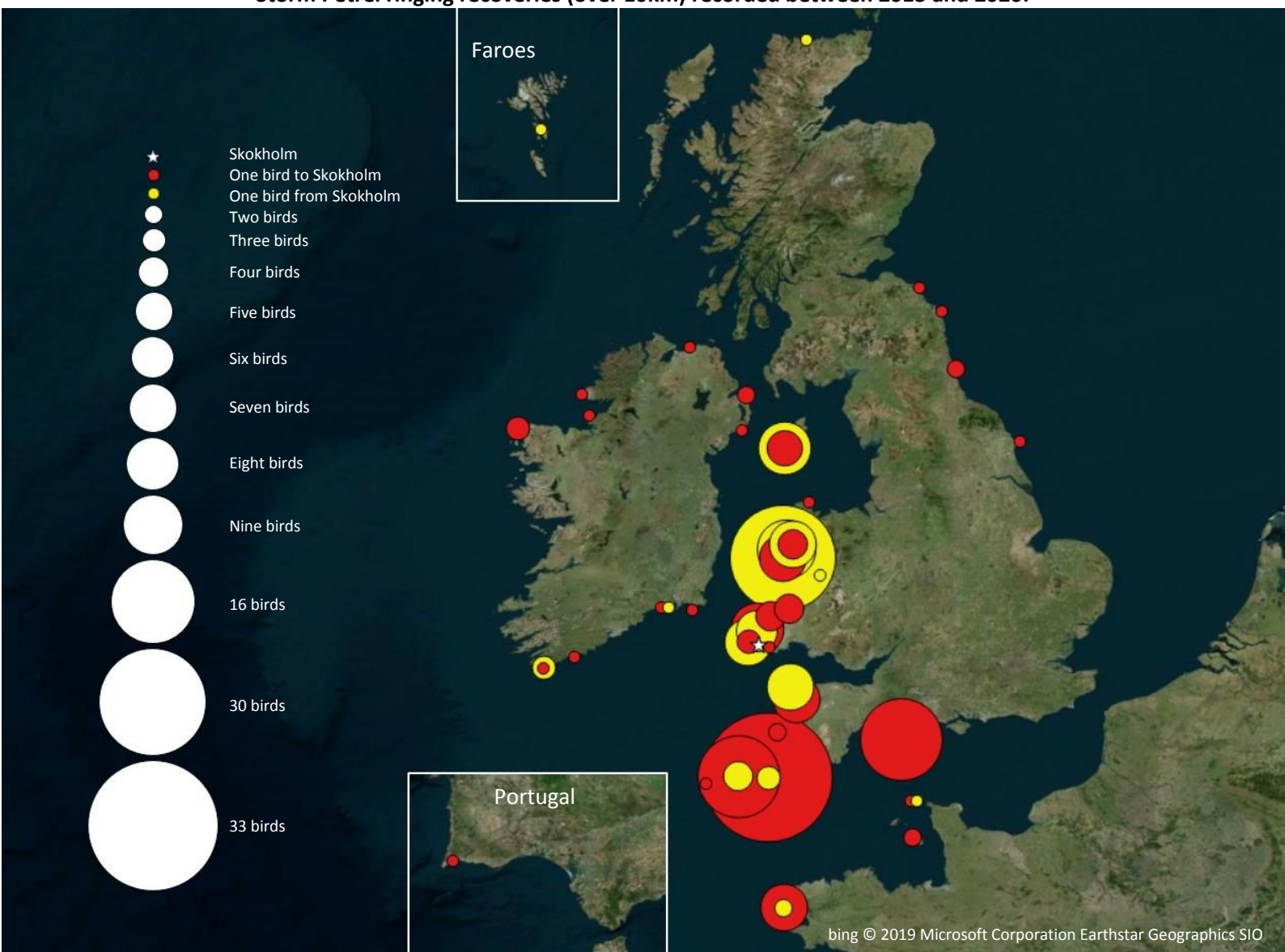
**Recovered** as an adult, SOUTH HAVEN, SKOKHOLM 12<sup>th</sup> July 2020

**Distance travelled** 238km at 304 degrees (NW)

**Days since ringed** 737

Additionally 2699139, ringed as an adult at Portland Bill on 18<sup>th</sup> June 2019, was controlled in South Haven on 13<sup>th</sup> July after 391 days.

**Storm Petrel ringing recoveries (over 10km) recorded between 2013 and 2020.**



**Ringing recovery 2705614**

**Originally ringed** as an adult, SOUTH HAVEN, SKOKHOLM 1<sup>st</sup> August 2015

**Recovered** as an adult, BARDSEY ISLAND, GWYNEDD 29<sup>th</sup> June 2019 (sic)

**Distance travelled** 124km at 17 degrees (NNE)

**Days since ringed** 1428

Additionally 2722803, 2740294 and 2740793, ringed as adults in South Haven on the 21<sup>st</sup> and 22<sup>nd</sup> July and 25<sup>th</sup> August 2018, were controlled at Bardsey on 29<sup>th</sup> June 2019 (sic) after 343, 342 and 308 days respectively. 2740791, ringed as an adult in South Haven on 22<sup>nd</sup> August 2018, was controlled at Bardsey on 20<sup>th</sup> July after 698 days. 2740951 and 2741000, ringed as adults in South Haven on 23<sup>rd</sup> July 2019, were controlled at Bardsey on the 24<sup>th</sup> and 7<sup>th</sup> July after 367 and 350 days. 2746089, 2746380 and 2746432, ringed as adults in South Haven on the 16<sup>th</sup> and 28<sup>th</sup> July and 1<sup>st</sup> August 2019, were controlled at Bardsey on the 7<sup>th</sup>, 24<sup>th</sup> and 14<sup>th</sup> July after 357, 362 and 348 days. 2746453, ringed as an adult in South Haven on 2<sup>nd</sup> August 2019, was controlled at Bardsey on 24<sup>th</sup> June after 327 days. 2746881 and 2746942, ringed as adults in South Haven on the 17<sup>th</sup> and 20<sup>th</sup> July 2020, were controlled at Bardsey on 8<sup>th</sup> August after 22 and 19 days. Finally 2746996, ringed as an adult in South Haven on 21<sup>st</sup> July 2020, was controlled at Bardsey on 24<sup>th</sup> July after 3 days.

**Ringing recovery** 2722803

**Originally ringed** as an adult, SOUTH HAVEN, SKOKHOLM 21<sup>st</sup> July 2018

**Previously recovered** as an adult, BARDSEY ISLAND, GWYNEDD 29<sup>th</sup> June 2019

**Recovered** as an adult, PORTH IAGO, LLANGWNNADL, GWYNEDD 17<sup>th</sup> July 2020

**Distance travelled** 134km at 17 degrees (NNE)

**Days since ringed** 727

Additionally 2746089, ringed as an adult in South Haven on 16<sup>th</sup> July 2019 and previously controlled at Bardsey Island, Gwynedd on 7<sup>th</sup> July, was controlled at Porth Iago on 11<sup>th</sup> July after 361 days. 2746674 and 2746834, ringed as adults in South Haven on the 12<sup>th</sup> and 13<sup>th</sup> July 2020, were controlled at Porth Iago on 16<sup>th</sup> July after 4 and 3 days respectively.

**Ringing recovery** 2746598

**Originally ringed** as an adult, SOUTH HAVEN, SKOKHOLM 26<sup>th</sup> August 2019

**Previously recovered** as an adult, BARDSEY ISLAND, GWYNEDD 24<sup>th</sup> June 2020

**Previously recovered** as an adult, PORTH IAGO, LLANGWNNADL, GWYNEDD 25<sup>th</sup> June 2020

**Recovered** as an adult, BARDSEY ISLAND, GWYNEDD 14<sup>th</sup> July 2020

**Distance travelled** 124km at 17 degrees (NNE)

**Days since ringed** 323

Whilst the majority of Storm Petrels controlled on Skokholm have been ringed to our south, primarily in Cornwall and Dorset, the majority of birds ringed on Skokholm are controlled to our north. Skokholm ringed birds have now been controlled at Bardsey Island on 30 occasions since 2013, with nine at Porth Ysgaden and eight at the Calf of Man being the next highest tallies.

**Ringing recovery** 2740571

**Originally ringed** as an adult, SOUTH HAVEN, SKOKHOLM 4<sup>th</sup> August 2018

**Recovered** as an adult, PORTH YSGADEN, TUDWEILIOG, GWYNEDD 26<sup>th</sup> June 2020

**Distance travelled** 140km at 18 degrees (NNE)

**Days since ringed** 692

Additionally 2740737, ringed as an adult in South Haven on 9<sup>th</sup> August 2018, was controlled at Porth Ysgaden on 21<sup>st</sup> July after 712 days.

**Ringing recovery** 2746154

**Originally ringed** as an adult, SOUTH HAVEN, SKOKHOLM 17<sup>th</sup> July 2019

**Recovered** as an adult, LUNDY ISLAND, DEVON 26<sup>th</sup> August 2020

**Distance travelled** 70km at 144 degrees (SE)

**Days since ringed** 406

Additionally 2746790, ringed as an adult in South Haven on 13<sup>th</sup> July 2020, was controlled at Lundy Island on the 11<sup>th</sup> and 27<sup>th</sup> August after 29 and 45 days.

**Ringing recovery 2746205**

**Originally ringed** as an adult, SOUTH HAVEN, SKOKHOLM 17<sup>th</sup> July 2019

**Recovered** as an adult, CALF OF MAN, ISLE OF MAN 20<sup>th</sup> June 2020

**Distance travelled** 263km at 7 degrees (N)

**Days since ringed** 339

**Ringing recovery 2746418**

**Originally ringed** as an adult, SOUTH HAVEN, SKOKHOLM 1<sup>st</sup> August 2019

**Recovered** as an adult, BURHOU ISLAND, ALDERNEY, CHANNEL ISLANDS 18<sup>th</sup> July 2020

**Distance travelled** 307km at 136 degrees (SE)

**Days since ringed** 352

**Ringing recovery 2746717**

**Originally ringed** as an adult, SOUTH HAVEN, SKOKHOLM 12<sup>th</sup> July 2020

**Recovered** as an adult, GWENNAP HEAD, PORTHGWARRA, CORNWALL 11<sup>th</sup> August 2020

**Distance travelled** 188km at 189 degrees (S)

**Days since ringed** 30

**Ringing recovery 2746924**

**Originally ringed** as an adult, SOUTH HAVEN, SKOKHOLM 17<sup>th</sup> July 2020

**Recovered** as an adult, ST JUSTINIAN, ST DAVIDS, PEMBROKESHIRE 11<sup>th</sup> August 2020

**Distance travelled** 21km at 354 degrees (N)

**Days since ringed** 25

**Ringing recovery CIJ P11220**

**Originally ringed** as an adult, PLEMONT POINT, JERSEY, CHANNEL ISLANDS 29<sup>th</sup> June 2019

**Recovered** as an adult, SOUTH HAVEN, SKOKHOLM 1<sup>st</sup> and 7<sup>th</sup> August 2019 (sic)

**Distance travelled** 348km at 322 degrees (NW)

**Days since ringed** 33 and 39

Although two birds have been exchanged with Alderney since 2013, this is the first Jersey ringed bird to be controlled on Skokholm.

**Ringing recovery FRP SE36056**

**Originally ringed** as an adult, LE CONQUET, FINISTÈRE, FRANCE 4<sup>th</sup> July 2019

**Recovered** as an adult, SOUTH HAVEN, SKOKHOLM 28<sup>th</sup> July 2019 (sic)

**Distance travelled** 375km at 355 degrees (N)

**Days since ringed** 24

This is the seventh individual ringed in this region of France to be found on Skokholm since 2013. The commune of Le Conquet is home to Banneg, the largest Storm Petrel colony in France, an island believed to support just under a thousand pairs which primarily nest in abandoned Rabbit burrows. Interestingly this nesting habitat was not found to be in use on Skokholm during the 2016 whole Island census (although in 2019 birds were found calling from a small area of burrows to the west of Dip Gully).

**Fulmar *Fulmarus glacialis***

**Aderyn-drycin y Graig**

**Fairly Common Breeder** first bred in 1967

1936-1976: 34 trapped, 2017-2019: 5 pulli trapped

Rough weather and an unfavourable swell led to a late staff arrival, meaning that the early season colony attendance documented in recent years was not witnessed. Perhaps owing to the unsettled weather and gales earlier in the month, a 16<sup>th</sup> to 31<sup>st</sup> March daycount mean of 43.6 was the lowest of the last seven years, down on a 2013-2019 mean of 60.8 and a high of 85.0 logged in 2018. Birds

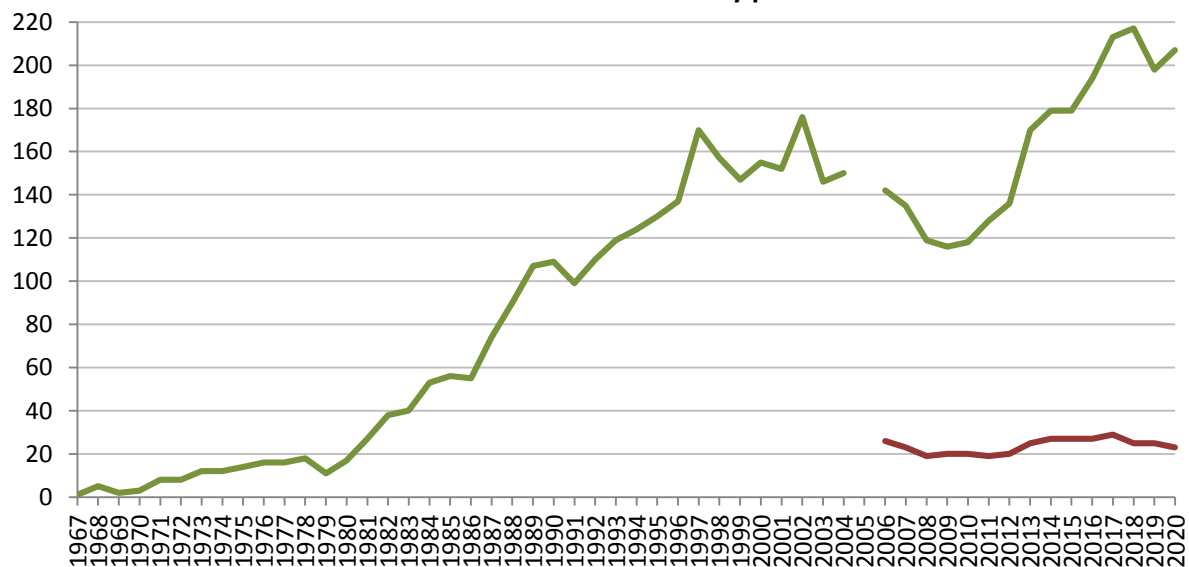


were entirely absent from the cliffs on four dates during the period; between 2016 and 2019 the cliffs were empty for a mean of 1.5 days, with a high of three in 2018. Although there were fewer three-figure April daycounts than noted in recent years, a bird-days total of 2616 was up on a 2013-2019 mean of 2493.4 and a total of 222 on the 4<sup>th</sup> (207 of which were ashore), was the highest April daycount to date. There was a more obvious pre-laying exodus this year; the mean daycount during the period between the 3<sup>rd</sup> and 14<sup>th</sup> May was only 27.2, with a low of six on the 5<sup>th</sup> and a high of 44 on the 9<sup>th</sup> (there were 173 present by the 17<sup>th</sup>). The first egg to be seen was at North Gully on 16<sup>th</sup> May, this the same date as the first of last year but otherwise the earliest this decade; the 2013-2019 first egg mean is 21<sup>st</sup> May, with the latest during that period logged on the 28<sup>th</sup> in 2014 (this following prolonged and severe storms during the preceding winter). Further eggs were seen at Little Bay Point, Peter’s Bay and North Gully on the 17<sup>th</sup>.

**The whole Island totals (apparently occupied sites), mean plot totals, the range of totals over ten study plot visits, the standard deviation observed over the ten visits since 2013 and the percentage of the Island total made up of study plot birds. (\*includes a boat-based count)**

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Island</b>	128*	136	170*	179*	179*	194*	213*	217*	198*	207*
<b>Plots</b>	19	20	25	27	27	27	29	25	25	23
<b>Range</b>	(16-22)	(16-25)	(22-28)	(23-29)	(26-29)	(25-29)	(26-31)	(23-27)	(23-27)	(19-27)
<b>±SD</b>			2.07	1.79	1.14	1.26	2.00	1.26	1.35	2.27
<b>Plot %</b>	14.8	14.7	14.7	15.1	15.1	13.9	13.6	11.5	12.6	11.1

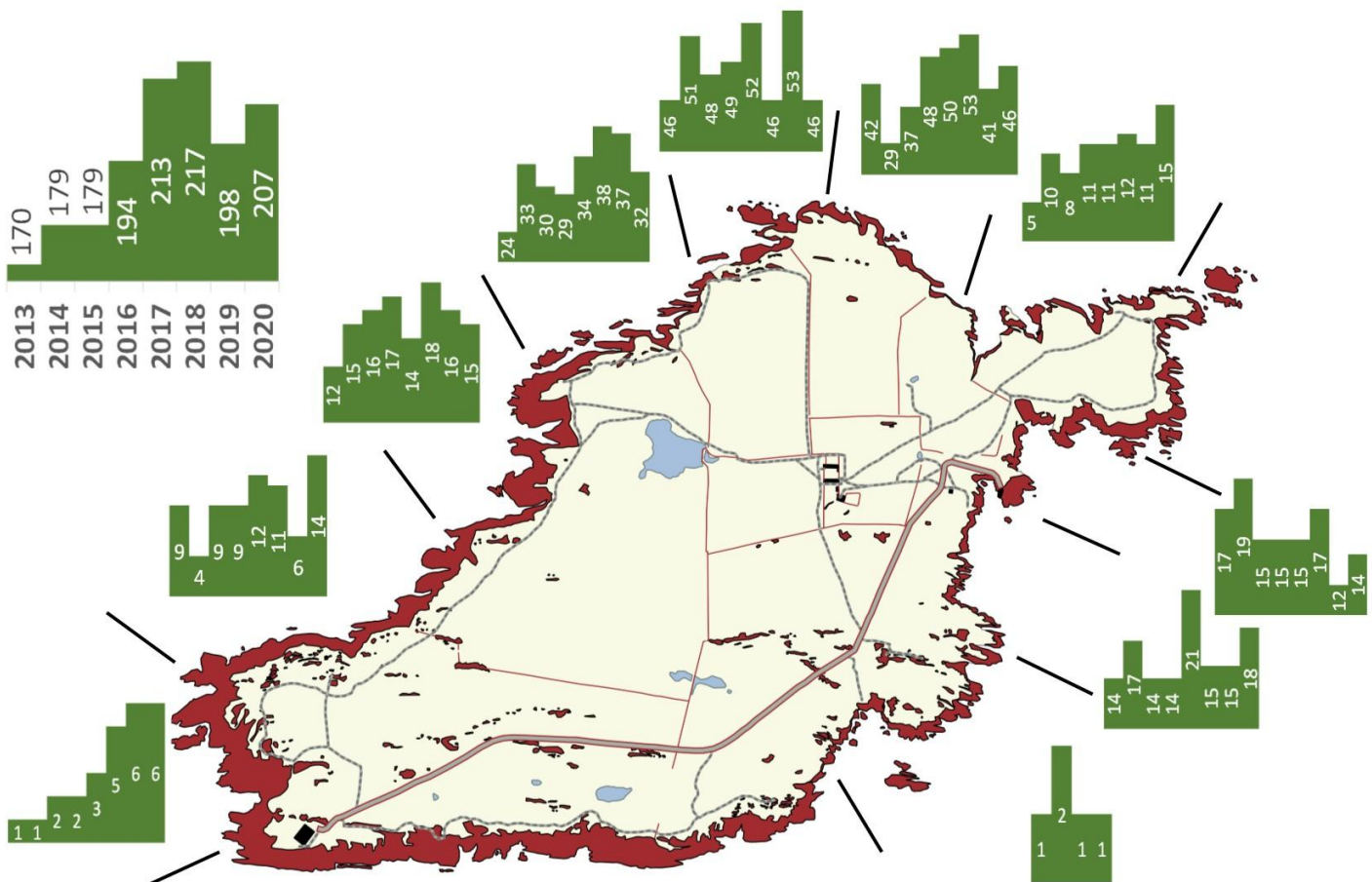
**The total number of apparently occupied Fulmar sites recorded on Skokholm since breeding began in 1967 and the number within the study plots since 2006.**



The six study plots counted annually since 2006 were visited on ten dates between 25<sup>th</sup> May and 9<sup>th</sup> June. Although this was a period dominated by calm and dry weather, gales on the 22<sup>nd</sup> and 23<sup>rd</sup> May (accompanied by nine, and occasionally 11, metre waves) had impacted the breeding auks and gulls; there was no evidence that Fulmars were affected, but it is possible that the higher standard deviation observed this year was due to the weather reducing breeding success and ledge attendance in some areas (the range of totals across the ten visits was the broadest since 2012). Up until the 2017 season only three of the six plots had contained Fulmars, however a hollow in the top third of the North Gully auk colony has occasionally been occupied in three of the last four years; an apparently incubating bird present on only two June dates this year did not change the overall mean. A 2020 average of 23 apparently occupied sites was two down on last year, six down on the 2017 record and the lowest total since 2012. The mean total at Little Bay remained at 14 for a third

successive year, this a plot where the number of occupied ledges has declined from a high of 19 in 2013 to 18 in 2014 and 2017, 17 in 2015 and 16 in 2016; quite why the total has declined here is unclear, however given the close proximity of the nest ledges to each other, the intraspecific interactions noted in recent years may have had an impact (see below). The Middlerock mean dropped from six to five, and thus matched that logged in 2017 and 2015, whilst the Guillemot Cliff mean dropped to four, this down on the five observed in each year between 2014 and 2019.

### The distribution of apparently incubating Fulmar 2013-2020.



The whole Island counts undertaken between 25<sup>th</sup> May and 9<sup>th</sup> June yielded an average of 207 apparently occupied sites, this a 4.5% increase on the 198 logged last year, the third highest tally to date and a total 14.3% up on the 2010-2019 mean (173.20 ±sd 35.12). Nevertheless the coastal sections between Purple Cove and Little Bay Point saw a decline in mean numbers; there were seven fewer occupied sites between Little Bay and Little Bay Point (this despite the fact that the plot count in this area was stable), five fewer occupied sites between the Jogs and the Dents and one less occupied site between Purple Cove and Twinlet (this despite the fact that the Twinlet plots had seen a drop of two). These declines were more than offset by an additional eight occupied sites in the region of the Bluffs, an additional five sites around Near and Far Bays and an additional four sites along the north coast of the Neck. The 2020 whole Island count includes approximately 30 pairs which would be difficult or impossible to see from the Island itself (birds seen from a boat north of North Gully, north of Wreck Cove, on the Little Neck and in hidden crevices between Smiths Bay and Little Bay Point); the drop in numbers observed between 2006 and 2012 may perhaps thus be linked to a lack of boat access, although the study plots broadly mirrored the dip in the Island total. The proportion of the Island total made up of study plot birds declined to 11.1% this year; this is 22.4% down on the 2010-2019 mean (14.3% ±sd 1.5), the lowest recorded since the plots were begun and probably an indication that the study plots are not representative of the Island as a whole (due to a

lack of space for expansion). The study plots are nevertheless still useful as they give an indication as to how the number of occupied ledges varies during the whole Island count period (and thus serve as a reminder that the population could be rather different to that predicted during a comparatively low number of visits, particularly this year when the range of plot counts was larger than usual).

From 20<sup>th</sup> May, 65 incubating adults were selected for productivity monitoring (ten at Twinlet, ten at North Gully and the Dents, 14 in Little Bay, 12 on Little Bay Point, seven at Rat Bay and 12 at Peter's Bay); birds seen with eggs or those apparently incubating for ten consecutive days were included in the sample (thus more birds were initially monitored but were soon discovered not to be incubating). It was again found that eggs were easier to see following heavy rain as energetically preening adults were more likely to reveal their nest scrape. There were five early egg stage failures, after approximately two, six, 12, 16 and 18 days, whilst two further attempts failed at egg stage after approximately 31 days and one failed after 40 days. An additional 21 failures became apparent at the time that the eggs of neighbouring pairs were hatching, however the nest sites were found to be empty; none of these sites were seen to contain abandoned eggs, hatched eggshell or dead chicks (the contents were thus removed by either the parents, by other Fulmars visiting abandoned ledges, by predators or by scavengers). There were three definite chick stage failures this year, although in each instance only hatched eggshell was recorded (chicks were not observed); chick stage failures became apparent after three, seven and 19 days, although it is possible (as was the case last year), that apparently brooding adults remained for some days after the loss. There were none of the large chick failures observed in 2014, 2015 and 2018.

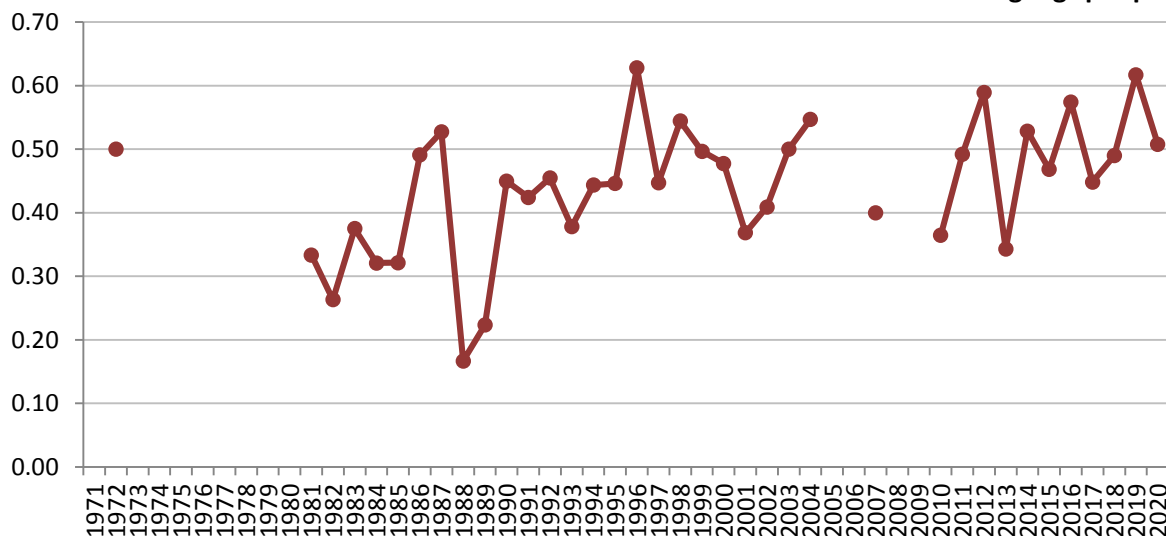


Of the 65 monitored breeding attempts, 33 (50.77%) were successful; a productivity estimate of 0.51 fledglings per pair is 15.9% up on the post-1972 average of 0.44  $\pm$ se 0.02 and 4.1% up on the 2010-2019 average of 0.49  $\pm$ se 0.03, but 17.7% down on the 0.62 of last year (which was the second highest on record). The last seven years have seen above average productivity, with a 2013 estimate of 0.34 chicks per pair the last to fall below the mean. An above average productivity estimate, coupled with the third highest number of apparently occupied sites to date, leads to a predicted 106 Skokholm fledglings in 2020; this matches that of 2018 as the third highest total yet predicted (down on the 122 of last year and the 111 of 2016). Poor productivity at Peter's Bay in 2013, 2014, 2015, 2017 and 2018 influenced the overall figures for those years; Peter's Bay productivity in 2013 was 0.06 (compared with an overall figure of 0.34), in 2014 it was 0.33 (compared with 0.53), in 2015 it



was 0.18 (compared with 0.47), in 2017 it was 0.31 (compared with 0.45) and in 2018 it was 0.36 (compared with 0.49). The 2016 season saw 0.54 fledglings per pair, a total virtually identical to the overall value of 0.57 and last year saw 0.60 fledglings per pair, a total virtually identical to the overall value of 0.62. Eight of the 12 pairs monitored at Peter’s Bay failed this year, the productivity value of 0.33 chicks per pair again being down on that observed elsewhere; two failed after approximately 30 days, five failed at the time when neighbouring eggs were hatching (but no nest contents were observed) and one chick went missing after a week. The reason for this near annual discrepancy is still unclear, as is what linked the more successful 2016 and 2019 seasons; neither environmental factors, predation pressure nor the behaviour of the birds themselves have been obviously different at this site (although interestingly the tiny Peter’s Bay Guillemot population went extinct this year).

**Fulmar productivity (total number of fledged chicks per monitored pair) for each year that it has been calculated between 1972 and 2020. The 1972-2020 mean is 0.44 ±se 0.02 fledglings per pair.**



It is likely that the larger Fulmar population of recent years will have affected other species; observations during the last few years have included both adult and young Herring Gulls oiled by nesting Fulmars, adult Fulmars sat on Herring Gull nests, Razorbill adults and chicks evicted from ledges by prospecting birds, an oiled juvenile Peregrine and what was probably a Raven oiled so extensively that it led to the failure of a nest attempt. Intraspecific interactions have also been witnessed, with heavily oiled adults noted on occasion and at least two egg stage failures attributed to aggressive neighbours (in both cases eggs were lost prior to the whole Island census). Similar observations this year were of intraspecific oiling on 28<sup>th</sup> April and of one oiling loafing Guillemots at Little Bay on 27<sup>th</sup> May.

The first fledgling of the year had left its Little Bay natal ledge by 21<sup>st</sup> August, this the same date as the mean 2013-2019 first fledgling (the earliest during this period had departed on the 18<sup>th</sup> in 2019 and the latest on the 25<sup>th</sup> in 2013). The remaining 32 productivity plot fledglings departed over the following 14 days; the first 25% had fledged by 26<sup>th</sup> August (which matched the 2014-2019 mean), 50% had departed by 28<sup>th</sup> August (one day earlier than the 2014-2019 mean), 75% had departed by 30<sup>th</sup> August (three days earlier than the 2014-2019 mean) and the last had left by 4<sup>th</sup> September (two days earlier than the 2014-2019 mean, with the latest gone by the 10<sup>th</sup> in 2015). The number of birds around the cliffs again dropped rapidly as the fledglings departed, although there were highs of 84 on 31<sup>st</sup> August and 68 on 5<sup>th</sup> September. Daycounts between the 7<sup>th</sup> and 12<sup>th</sup> September ranged between 21 and 37, with two at Near Bay on the 10<sup>th</sup> the last to be seen ashore (this one day earlier than the 2014-2019 mean and five days earlier than the last of 2019 which was the latest to be seen ashore during that period). There followed daycounts of between one and 14 at sea on all but one date between the 13<sup>th</sup> and 20<sup>th</sup> and four on the 24<sup>th</sup> which were the last of the month.

Seawatching during October produced the second highest bird-days total on record; up to 12 birds on five dates between the 2<sup>nd</sup> and 7<sup>th</sup>, along with daily counts of up to 17 between the 25<sup>th</sup> and 30<sup>th</sup>, tallied 79 bird-days (the only higher total is the 185 of 2013 (when an unprecedented 155 were logged on the 30<sup>th</sup>), with 42 in 2017 the next highest October total). There were November records on all but three dates, although the number of birds present varied considerably; there were ten three-figure counts during the month (a new record), with highs of 165 on the 13<sup>th</sup>, 209 on the 22<sup>nd</sup> and 167 on the 30<sup>th</sup> (the maximum of which was the fourth highest November daycount, down on a high of 283 logged on the 28<sup>th</sup> last year), but lows of between one and ten on five dates (in addition to the three days on which birds were absent). A total of 39 birds returned to the cliffs on 10<sup>th</sup> November, this six days later than the first of last autumn and the latest landfall since five returned on the same date in 2016 (the 2013-2019 mean return date is 7<sup>th</sup> November, with one ashore on the 11<sup>th</sup> in 2015 the latest during this period). There were birds ashore on 18 further November dates (one less than last year), including peaks of 101 on the 14<sup>th</sup>, 99 on the 16<sup>th</sup> and 153 on the 22<sup>nd</sup> (the latter down on a record 189 counted on the 28<sup>th</sup> last year). There were sightings on all but one December date prior to the departure of staff on the 7<sup>th</sup>, with highs of 147 on the 1<sup>st</sup> and 148 on the 3<sup>rd</sup>, a low of 15 on the 4<sup>th</sup> (along with the absence on the 5<sup>th</sup>) and birds ashore on six dates.



**Manx Shearwater** *Puffinus puffinus*

**Aderyn Drycin Manaw**

**Very Abundant Breeder** a 2018 census estimated 88,945 pairs (95% CI: 21,892). 2012-13 est. 63,980  
731 trapped (including 118 pulli), 479 retrapped, 2 controls  
1936-1976: 169,895 trapped, 2011-2019: 12,273 trapped, 5076 retrapped, 23 controls

A late staff return on 16<sup>th</sup> March meant that the shearwaters were back first this year; staff were greeted by a fresh corpse above the Dip and their caterwauling filled the night, although it was not until the 18<sup>th</sup> that birds were heard calling from burrows during the day. Numbers increased quickly but, as in the majority of previous years, seawatching during April resulted in some surprisingly small counts; peak daycounts of 2100 on the 24<sup>th</sup> and 1500 on the 26<sup>th</sup> were down on a 2012-2019 mean April high of 8049.1 and an impressive 21,600 logged during Storm Hannah on the 26<sup>th</sup> last year. May seawatching produced unremarkable highs of 6000 on the 7<sup>th</sup> and 8500 on the 22<sup>nd</sup>, whilst moderate southwesterlies on the 22<sup>nd</sup> and 27<sup>th</sup> June led to evening counts of 24,750 and 16,945 respectively; despite the peak being up on a 2012-2019 June mean of 17,833.9, it was down on a spectacular 72,000 logged on the 16<sup>th</sup> last year. Although four five-figure July daycounts matched 2019, peaks of 12,180 during a southwesterly gale on the 5<sup>th</sup> and 16,200 during moderate southwesterlies on the

7<sup>th</sup> were the lowest of the last six years, down on a 2012-2019 mean of 25,725.8 and a high of 45,016 logged in 2018. A near gale on 4<sup>th</sup> August resulted in a count of 28,800, calm conditions on the 16<sup>th</sup> saw a minimum of 18,608 shearing a glassy sea and a southerly gale on the 20<sup>th</sup> produced the biggest count of the year, with a remarkable 87,520 passing observers watching from the Lighthouse and Howard's End; the latter was the highest daycount to date (up on the record set last June), nevertheless more than twice this number are thought to be breeding on Skokholm and ten times this number are believed to be using the waters around the Pembrokeshire islands.



Three areas of study burrows, that is to say natural burrows where a paving slab covers a manmade access point to the nest chamber, were established in 2012 and 2013; all birds found within the burrows are ringed. Of 308 breeding adults bearing rings in 2019, 245 were found this year (79.55%); this was the third lowest next-year return rate of the last seven years, down on a 2014-2019 mean of 80.60%. However this figure is not an accurate estimate of survival as there was no searching for marked birds in neighbouring, non-study burrows; the number of birds known to be alive will thus be revised upwards as they are discovered in future years. For example 82.27% of 2013 adults were encountered in 2014, but we now know that at least 89.36% of birds were alive (see table below); the revised survival estimate includes a bird encountered this year which had not been seen since it was ringed in 2013. Two 2014 ringed breeders were encountered for the first time this year, taking the revised 2019 figure of 84.89% to 85.61%, and four 2016 ringed breeders were encountered for the first time, taking the revised total to 93.03% (the highest return rate yet seen in this study). There were 14 2018 ringed breeders seen this year which had not been found in 2019 (taking the return rate from 83.45% to 88.18%). Given that we are still encountering birds not seen for up to six years, it is likely that all of these figures will again be revised upwards in the future; nevertheless the 2014-2019 mean return rate of 87.50% is already fractionally up on that seen elsewhere.

**The number of Manx Shearwaters breeding in the study plots which were encountered the following year and the number to have been found by 2020 (which were thus actually alive the following year).**

	Birds found the next year		Birds found by 2020	
Birds breeding in 2019	245 of 308	79.55%		
Birds breeding in 2018	247 of 296	83.45%	261 of 296	88.18%
Birds breeding in 2017	236 of 309	76.38%	252 of 309	81.55%
Birds breeding in 2016	238 of 287	82.93%	267 of 287	93.03%
Birds breeding in 2015	230 of 283	81.27%	247 of 283	87.28%
Birds breeding in 2014	215 of 278	77.34%	238 of 278	85.61%
Birds breeding in 2013	116 of 141	82.27%	126 of 141	89.36%



There is a discrepancy in return rates dependent on the breeding success of the previous year; of 230 birds successful with their 2019 breeding attempt, 199 were found in 2020 (86.52%), whereas only 47 of 78 unsuccessful birds returned (60.26%). Of 70 birds which went missing in 2020, 38 (54.29%) had either failed with their 2019 breeding attempt or had been found without an egg in a burrow in which they had previously bred. Assuming that not all of the failures were due to the death of a bird, it could be concluded that some of the missing birds have rather opted for more suitable nesting sites. It was noted in 2017 that Storm Ophelia had caused considerable damage to the Lighthouse Study Plot, a destruction of burrows which no doubt led, at least in part, to the reduced number of recaptures in 2018; although 16 of the missing birds have been found subsequently, the return rate of 2017 breeders remains the lowest of the last six years (81.55%). Ultimately the study burrows give a better insight into burrow fidelity and show an interesting correlation with the stability of the colony; in the fragile Lighthouse colony 16 of 81 marked birds were in the same burrow this year as that in which they bred in 2013 (19.8%), whereas in the more stable Quarry Track and Crab Bay colonies six of 18 birds (33.3%) and 19 of 40 birds (46.3%) were still in their 2013 burrows respectively. The fragile nature of the Lighthouse colony, along with the high density of burrowing birds and occasional storm events, sees the structure of the breeding tunnels change annually; clearly some lose their suitability as nest sites.



A Manx Shearwater ringing transect was established in 2013. It was defined as the track between the Observatory and the Lighthouse and the length of a landing net to either side; ringers were not to deviate from the track. The aim was to see whether, by ringing birds on the surface in this defined area, the retrap data could be interpreted to provide large sample size estimates of adult survival and the recruitment of juveniles to the breeding population. This is still a project in its infancy which is producing a substantial amount of data, data which is currently difficult to examine in any detail as the British Trust for Ornithology changes its recording system from IPMR to DemOn (the latter of which still lacks the reporting capabilities of the former). Of the 8979 birds ringed along the transect between 2013 and 2020 (3641 of which were ringed as fledglings), 2161 have been retrapped or found dead on Skokholm subsequently (with these recaptured individuals accounting for 3598 separate handlings). On the night of 15<sup>th</sup> September, staff ringing along the transect (near Cutting Rocks) encountered the fledgling shown in the above photograph; a quantitative melanin reduction had caused 'dilution', the reduced number or size of melanin granules resulting in the black areas of

plumage becoming a washed out grey. A similar bird was photographed on the Calf of Man in 2016 (Flood and Fisher, 2020), although the feet and bill of that individual were unaffected (whereas the Skokholm bird had pale pink bare parts).



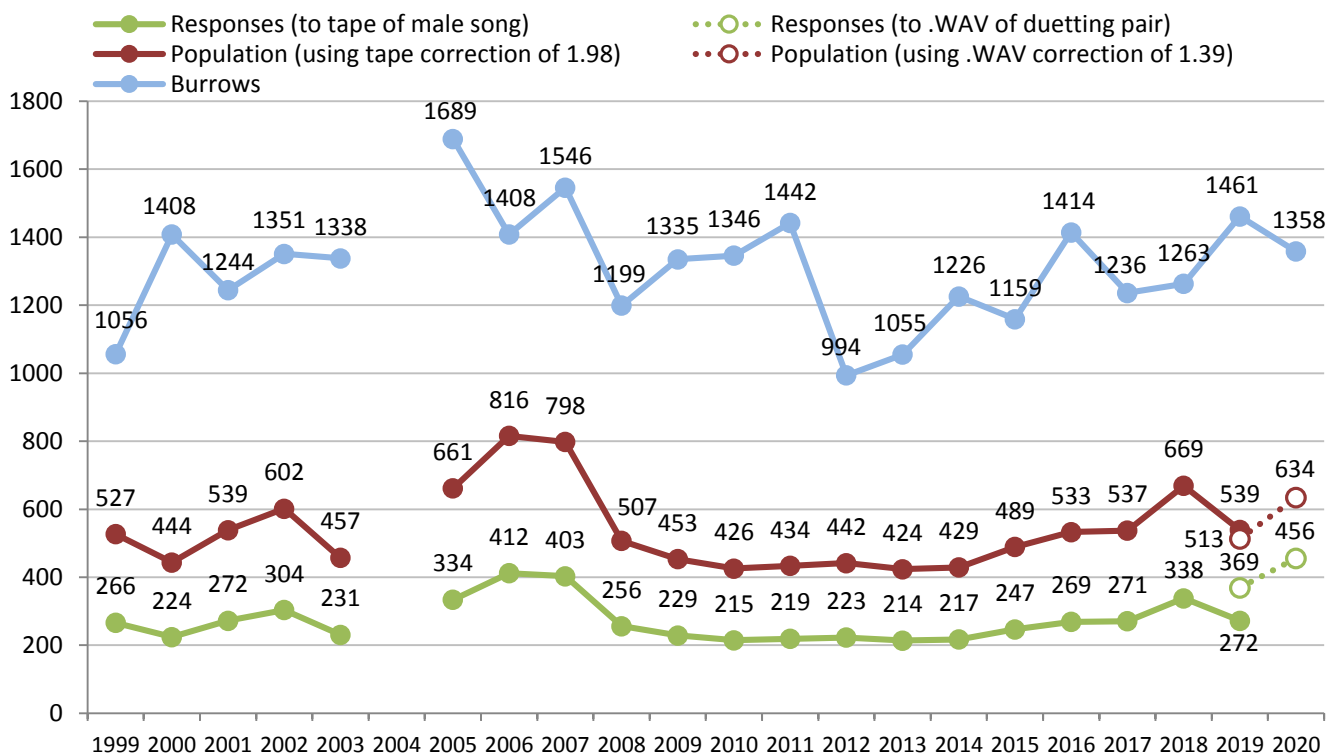
The study burrows facilitate an accurate assessment of breeding success on Skokholm. There were 135 burrows at the Lighthouse occupied by a pair which produced an egg, ten burrows contained an egg along the Quarry Track and 23 pairs produced an egg inland of Crab Bay. There were thus 168 burrows this year from which productivity could be assessed (a new high, up on the 159 of 2017 and 2019). Of these 20 definitely failed at egg stage, eight of which were damaged, five of which were found cold and seven of which went missing (including one half-sized egg); in two instances failure was probably brought about when burrows were usurped by second pairs. An additional 20 pairs failed at egg or very small chick stage (but neither eggs nor dead chicks were found) and one chick was known to have died during hatching. There were 12 chick stage failures, with five recently hatched chicks going missing and one being found dead, five larger chicks going missing (after their wing chords had reached 32mm, 35mm, 132mm, 152mm and 195mm) and one chick with a wing chord of 34mm being found dead; the missing chicks were perhaps taken by Great Black-backed Gulls, although in only one instance had a hole been excavated to allow access to the nest chamber. Ad hoc observations again suggested an increase in the number of Great Black-backed Gulls digging out chicks elsewhere, indeed it seemed likely that a small number of birds were specialising in this form of hunting (although they were not ringed, making it impossible to confirm individuals, they worked the same areas of burrows from day to day). For a chick to be assumed to be of fledging size it was required to reach a wing length in excess of 200mm (although not ready to fledge, we have shown that chicks larger than this size may swap to a different burrow and therefore go undetected). There were 115 chicks which reached this size in 2020. Productivity was thus 0.68 fledging-sized chicks per breeding pair (68.45% of pairs produced a fledging-sized chick); this matched the lowest productivity estimates since the 0.63 of 2014 and was down on a 2013-2019 mean of  $0.71 \pm se 0.02$  (the peak during this period was the 0.80 observed in 2017). It should be noted that this is the number of chicks which attained fledging size and does not reflect the number



of fledglings which are lost to Great Black-backed Gulls (and to a lesser extent corvids) as they exercise their flight muscles and make their first flights. Having said that, only one of the 115 fledglings ringed in the study plots was found eaten this year (one of 115 was found in 2019, none of 114 were found in 2018 and two of 135 were found eaten in 2017). The latest of the study plot chicks had attained a wing chord of 213mm by 15<sup>th</sup> September; this was one of two eggs laid after 1<sup>st</sup> June, the date by which we typically expect all eggs to have been produced (the second late attempt failed at egg stage).

In 1999 nine study areas, each a circle of 1000 square metres, were established to allow a reasonable subset of the Skokholm Manx Shearwater population to be monitored from year to year. Two of these plots were discontinued, one in 2006 and one in 2007, as the survey work was disturbing the Lesser Black-backed Gull colonies. New plots were established in 2006 and 2015 to maintain a good sample size, however only seven plots have been studied for a full 21 years. On each annual visit the number of burrows within the area is counted, as is the number of burrows from which a response is elicited when the call of a male bird is played down them. The standard correction factor (1.98) is then used to estimate the population within the area (see the 2013 and 2014 Seabird Reports for checking of the correction factor). The latest whole Island census utilised a .WAV recording of a duetting pair (as opposed to the male only cassette tape) as it has been shown that a dual-sex recording achieves a higher and less variable response rate (Brown and Eagle, 2018; Perkins *et al.*, 2017). Bearing this in mind, along with the fact that the cassettes and playback devices are becoming harder to maintain and replace, it was decided in 2019 that it was time to begin the process of changing the annual plot methodology from the use of cassettes to the use of .WAV playback. This changeover will occur over the course of several years to ensure that the data collected over the previous 20 years remains comparable with that collected in the future. However COVID-19 dictated staffing shortages meant that there was not time to conduct both a tape and a .WAV playback census this year; it was thus decided that only the .WAV recording would be used as this would preserve the life of the cassettes and maximise the number of times that both techniques could be used in the same years.

**The total number of burrows, responses (to tape 1999-2019 and to .WAV 2019-2020) and the corrected population estimates for the 7000m<sup>2</sup> sampled annually since 1999.**





This year saw each of the nine plots visited between 28<sup>th</sup> May and 13<sup>th</sup> June. The 7000m<sup>2</sup> (seven plots) monitored since 1999 contained 103 fewer burrows than last year, although the total was the third highest of the last nine years and 3.8% up on the 1999-2019 mean (1308.50 ±sd 171.30). It is likely that this reflects a genuine change in numbers as opposed to counting inaccuracies; two separate visits to all nine plots in 2019 produced exceedingly similar burrow counts each time, with the mean difference between visits being 4.56 burrows, the largest difference between visits being 11 burrows and the overall totals differing by just nine (1992 burrows on one visit and 2001 on the next). A 2020 drop in the number of burrows was also seen at the plot started in 2006, where there were 30 fewer, and at the plot started in 2015, where there were 19 fewer. It is not only digging by Manx Shearwaters which alters the number of burrows present; the weather may both close burrows and cause additional entrance holes to open (with both very dry and very wet periods shaping the landscape), whilst digging by Rabbits, Great Black-backed Gulls and in some areas by Puffins will also affect burrow counts.

Despite the drop in burrow numbers since 2019, an additional 87 responses were elicited in the original 7000m<sup>2</sup> using the .WAV recording (an increase of 23.6%). This was the result of a drop of one response in one plot, an increase of between seven and 13 responses in five plots and an increase of 33 responses in the Spy Rock plot (the latter a site which has seen a steady increase in the predicted population since 1999). Using the Skokholm specific .WAV correction of 1.39 predicts that there were 634 occupied burrows across the seven plots (see graph above). Although any comparison with the population predicted using the male only tape playback should clearly be a cautious one, it would appear that there has not been a significant decline; indeed the 2019 .WAV population estimate was below the tape estimate, perhaps giving us some confidence that we are not overestimating the population when using the .WAV correction. The 1000m<sup>2</sup> plot visited since 2006 produced two more responses than last year. The 730 occupied burrows predicted across the 8000m<sup>2</sup> using the .WAV recording was up on the 606 of last year and the 2006-2019 tape playback mean of 611.36 ±sd 147.22, indeed it was a total only down on those of 2006, 2007 and 2018 (although this again relies on a cautious comparison of .WAV and tape playback results). There were ten fewer responses to the .WAV recording at the Table plot first visited in 2015, the predicted population being the lowest of the last six years (one down on that predicted in 2016). Nevertheless it would appear that the Skokholm population can still be cautiously regarded as stable, although the observed variance in the percentage of birds which respond to the playback on any given date highlights the degree of error in these numbers (see Brown and Eagle, 2013, 2014 and 2019). That the number of pairs producing eggs in the accessible study burrows is also rather constant supports the conclusion that the population is stable (see above).

**The estimated number of pairs in the 8000 square metres sampled since 2006.**

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
869	954	620	525	499	495	501	521	477	533	588	584	739	655	730

In the period between 1957 and 1997 the number of dead Manx Shearwaters located on Skokholm was recorded in the daily census log. The corpses were either stored or thrown into the sea to ensure that birds were not counted more than once. The practice was stopped in 1997 as it was felt that the removal of corpses would be impacting the species reliant on this food source. However, with a Great Black-backed Gull population more than twice the size it was when the counting was stopped, the study was begun again in 2014. To limit the impact on the scavenging community, the birds were left in situ but their wings were painted with stock marker so that they were not double counted. This year, as in the previous five, corpses were marked by neatly slicing the flight feathers of both wings with a pair of scissors (using scissors has the added advantage that it makes it easier to check for rings in tightly inverted corpses). Although the vast majority of Manx Shearwater kills are made by Great Black-backed Gulls, a small number are also taken by Peregrines and Ravens (a Sparrowhawk eating the head of a puffinised youngster in 2019 had perhaps also made the kill).

The number of Manx Shearwater corpses found between 1957 and 1983 from Gynn (1984) plus data from 1984 to 1991 and 2014 to 2020. The number of Great Black-backed Gull breeding pairs is also included for each year.

	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
Corpses	2465	1886	924	1354	1089	640	688	1059	857	946	816
GBBGU	27	30	30	10	12	5	7	12	8	10	10
	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Corpses	841	829	304	606	1350	1082	869	1051	1266	1913	1820
GBBGU	3	14	11	16	12	12	7	7	7	6	10
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Corpses	1153	1024	1080	1479	1373	1316	1571	1068	1759	1760	1694
GBBGU	10	10	11	16	11	14	11	10	11	12	15
	1990	1991	2014	2015	2016	2017	2018	2019	2020		
Corpses	1915	2703	4271	4123	3782	3449	3270	2707	4091		
GBBGU	16	20	84	83	93	93	93	86	83		

The number of adult and juvenile Manx Shearwater corpses found each year since 2014, along with the number of untouched puffinosised bodies.

	2014	2015	2016	2017	2018	2019	2020
Adults	2931	2702	2299	2071	2228	1618	3008
Juveniles	1287	1324	1398	1289	971	1043	970
Puffinosis	53	97	85	89	71	46	113
<b>Total</b>	<b>4271</b>	<b>4123</b>	<b>3782</b>	<b>3449</b>	<b>3270</b>	<b>2707</b>	<b>4091</b>

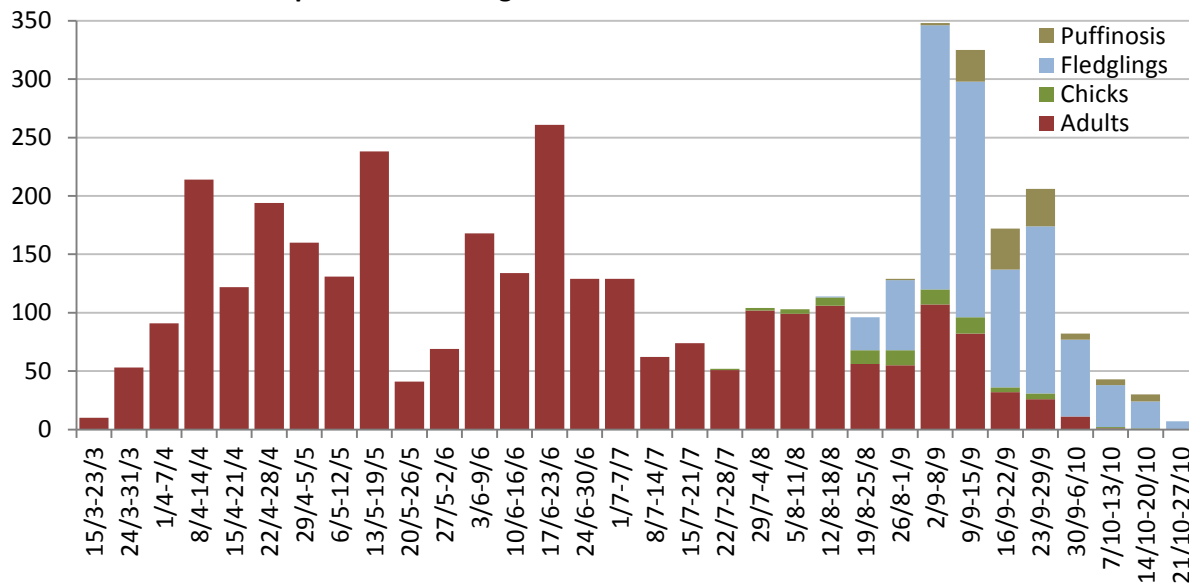
As might be expected with a larger Great Black-backed Gull breeding population, the number of corpses marked over the last seven years has been the most ever. However the average number of corpses per Great Black-backed Gull pair was only 49.3 in 2020; this was lower than in all years except the last four, 1970 and 1959 (there have been highs of 318.8 in 1977, 280.3 in 1968 and 182.0 in 1978). One possible explanation for this reduction in kills per pair is that the breeding gulls were routinely disturbed between 1949 and 1985 which, whilst reducing the number of breeding pairs, probably inflated the non-breeding flock (which would still be taking shearwaters). There was a significant increase in the number of adult corpses found this year; a total of 3008 was 85.9% up on that logged in 2019 and the highest yet recorded. Perhaps the reduced human presence brought about by the COVID-19 closure meant that there was less nocturnal disturbance (particularly along the ringing transect), allowing the Great Black-backed Gulls to hunt for longer. It is often suggested that the majority of these predated shearwaters are younger, less experienced non-breeders, those which spend longer on the surface as they prospect for burrows and mates. However the 151 ringed birds found predated in 2020 do little to support this theory (see below table); although several more years of ringing data would be helpful and there is no information on the breeding status of those eaten (so they could perhaps still have been unpaired or burrowless birds spending longer on the surface), there is no evidence that most eaten birds are younger. Other factors which may impact predation rates are vegetation heights, the number of gulls specialising in shearwaters (Westerberg *et al.*, 2018), the complexities of the weather and moon cycle influencing hunting, the availability of food away from the Island and perhaps the size of the Rabbit population (Rabbits being the other main prey item on Skokholm). The prevalence of puffinosis may well be affecting juvenile losses (see below).

When the 151 marked adults found eaten in 2020 were ringed. Note that the pre-2013 bird was a control ringed elsewhere and that intensive ringing on Skokholm recommenced in 2013.

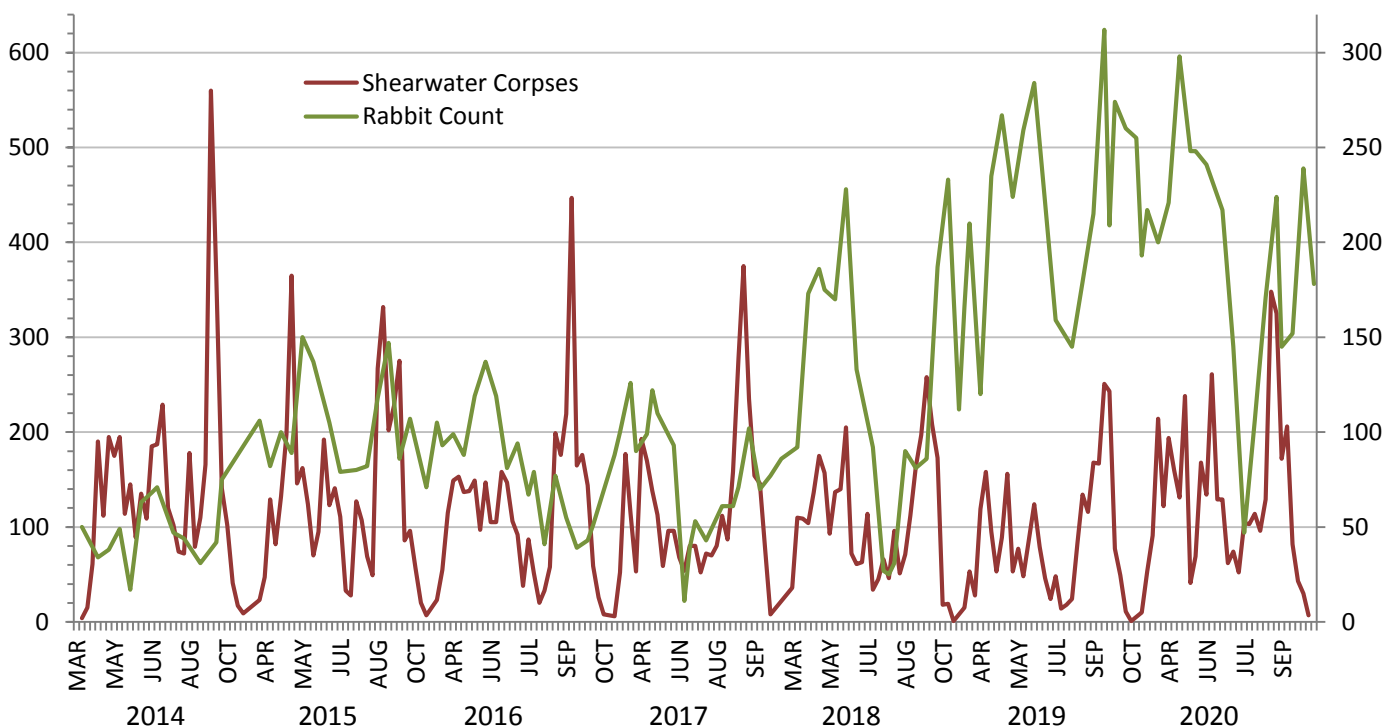
Adult 2007	Adult 2013	Fledged 2013	Adult 2014	Fledged 2014	Adult 2015	Adult 2016	Fledged 2016	Adult 2017	Fledged 2017	Adult 2018	Fledged 2018	Adult 2019	Fledged 2020
1	21	2	26	3	22	17	4	12	1	18	1	18	5

The data from the last seven years lends some support to the theory that Rabbit numbers influence Manx Shearwater predation (by providing an alternative food source for the gulls), with the North Plain Rabbit count being considerably lower in 2014, when shearwater mortality was at its highest, and progressively higher during 2018 and 2019, the period during which fewer shearwater carcasses were located (see second graph below). However the 2020 data does not fit this pattern, with the highest number of adult Manx Shearwater corpses being found in a year with a high Rabbit population (the mean North Plain Rabbit count was the second highest of the last seven years, only down on that of 2019). One potential issue with this comparison is that North Plain Rabbit counts are probably not representative of the Island as a whole, with the effects of Viral Haemorrhagic Disease seemingly differing in different parts of the Island at different times. It will be interesting to see if the next crash in Rabbit numbers coincides with an increase in Manx Shearwater carcasses.

**The number of corpses found during each week from 15<sup>th</sup> March until 27<sup>th</sup> October 2020.**



**The total number of Manx Shearwater carcasses found each week 2014-2020 and the number of Rabbits counted in the North Plain census plot during the same period (secondary axis).**





The first fledgling had departed on 18<sup>th</sup> August, the same date on which the first three were found in 2019 and four days earlier than the 2013-2019 first fledgling date mean (the 2019 birds were the earliest during this period and two on the 27<sup>th</sup> in 2018 were the latest). The first fledgling showing signs of puffinosis was at Isthmian Heath on the 29<sup>th</sup>, four days later than the first infected individual to be found last year. Puffinosis is a mysterious affliction which, possibly due to the actions of a virus which leads to bacterial infection, sees the development of conjunctivitis, blistered feet and problems with limb control; it is often fatal. The number of puffinosised birds found dead and intact during the last seven years has ranged between 46 and 113 (see above table); unlike predated birds, which are usually taken to open areas, puffinosised birds may die deep in the Bracken (meaning that corpses in fragile areas of dense vegetation are probably going undetected). In an attempt to achieve a better understanding of how puffinosised birds are distributed across Skokholm during the course of the autumn and of how the number of infected individuals changes from year to year, a transect walked by Island staff over eight September nights was established in 2015 (the 2015 report gives details of the route). The position of each fledgling is recorded using a GPS unit before they are inspected for signs of puffinosis. An additional route, which ran from North Pond Wall and west over Western Plain before cutting in at the Bluffs, was walked on eight different nights between the 2<sup>nd</sup>-3<sup>rd</sup> and 21<sup>st</sup>-22<sup>nd</sup> to assess a more exposed, less Bracken covered area (see top map below).

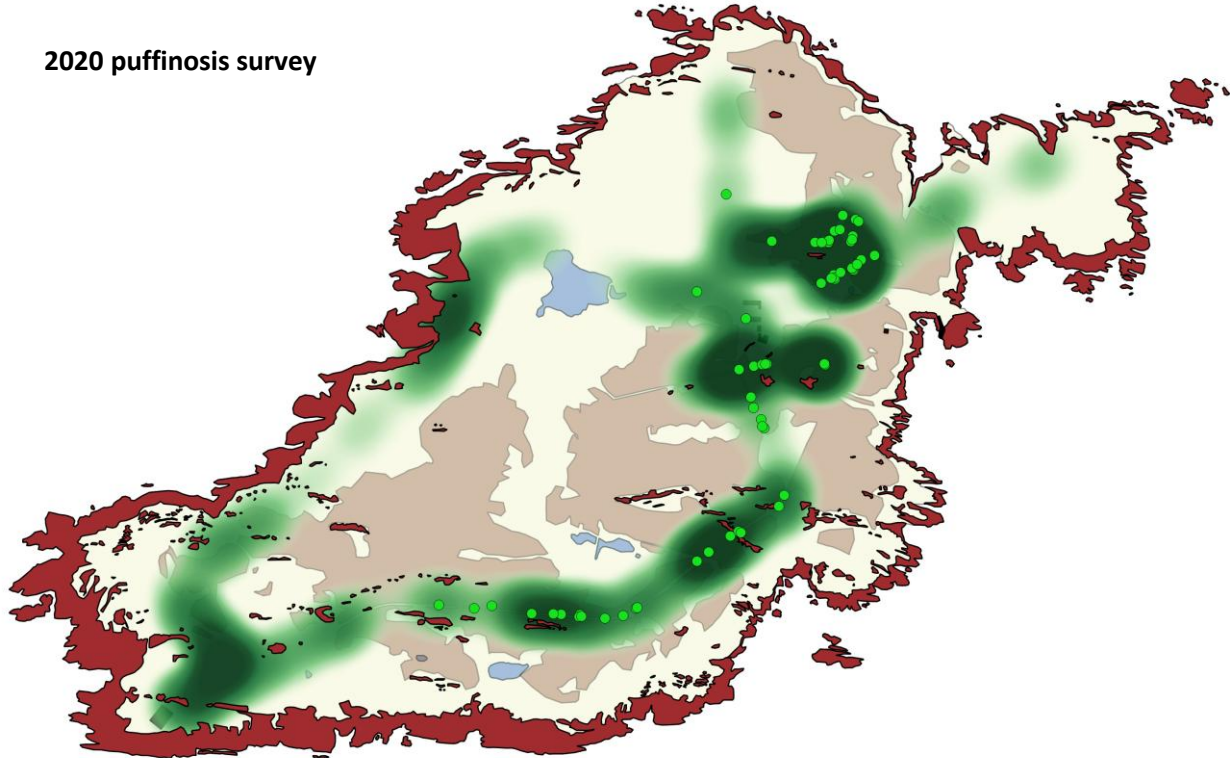
**The number of fledgling Manx Shearwaters encountered along the transect between 2020 and 2015, the number which showed signs of puffinosis and the percentage of encountered birds made up of those showing signs.**

<b>2020</b>	<b>1<sup>st</sup>-2<sup>nd</sup></b>	<b>4<sup>th</sup>-5<sup>th</sup></b>	<b>7<sup>th</sup>-8<sup>th</sup></b>	<b>11<sup>th</sup>-12<sup>th</sup></b>	<b>13<sup>th</sup>-14<sup>th</sup></b>	<b>16<sup>th</sup>-17<sup>th</sup></b>	<b>18<sup>th</sup>-19<sup>th</sup></b>	<b>20<sup>th</sup>-21<sup>st</sup></b>	<b>Total</b>
<b>Birds</b>	52	101	201	235	118	111	68	55	<b>941</b>
<b>Puffinosised</b>	1	5	2	23	14	14	15	10	<b>84</b>
<b>% Puffinosised</b>	1.9	5.0	1.0	9.8	11.9	12.6	22.1	18.2	<b>8.9</b>
<b>2019</b>	<b>1<sup>st</sup>-2<sup>nd</sup></b>	<b>4<sup>th</sup>-5<sup>th</sup></b>	<b>7<sup>th</sup>-8<sup>th</sup></b>	<b>11<sup>th</sup>-12<sup>th</sup></b>	<b>13<sup>th</sup>-14<sup>th</sup></b>	<b>16<sup>th</sup>-17<sup>th</sup></b>	<b>18<sup>th</sup>-19<sup>th</sup></b>	<b>20<sup>th</sup>-21<sup>st</sup></b>	
<b>Birds</b>	120	182	100	70	55	81	34	49	<b>691</b>
<b>Puffinosised</b>	6	2	11	16	9	9	6	6	<b>65</b>
<b>% Puffinosised</b>	5.0	1.1	11.0	22.9	16.4	11.1	17.6	12.2	<b>9.4</b>
<b>2018</b>	<b>1<sup>st</sup>-2<sup>nd</sup></b>	<b>4<sup>th</sup>-5<sup>th</sup></b>	<b>7<sup>th</sup>-8<sup>th</sup></b>	<b>9<sup>th</sup>-10<sup>th</sup></b>	<b>12<sup>th</sup>-13<sup>th</sup></b>	<b>15<sup>th</sup>-16<sup>th</sup></b>	<b>18<sup>th</sup>-19<sup>th</sup></b>	<b>21<sup>st</sup>-22<sup>nd</sup></b>	
<b>Birds</b>	72	142	139	197	155	167	88	48	<b>1008</b>
<b>Puffinosised</b>	2	3	11	16	23	21	10	2	<b>88</b>
<b>% Puffinosised</b>	2.8	2.1	7.9	8.1	14.8	12.6	11.4	4.2	<b>8.7</b>
<b>2017</b>	<b>1<sup>st</sup>-2<sup>nd</sup></b>	<b>4<sup>th</sup>-5<sup>th</sup></b>	<b>8<sup>th</sup>-9<sup>th</sup></b>	<b>11<sup>th</sup>-12<sup>th</sup></b>	<b>14<sup>th</sup>-15<sup>th</sup></b>	<b>17<sup>th</sup>-18<sup>th</sup></b>	<b>20<sup>th</sup>-21<sup>st</sup></b>	<b>23<sup>rd</sup>-24<sup>th</sup></b>	
<b>Birds</b>	44	77	100	115	66	43	42	21	<b>508</b>
<b>Puffinosised</b>	4	13	16	10	4	16	14	1	<b>78</b>
<b>% Puffinosised</b>	9.1	16.9	16.0	8.7	6.1	37.2	33.3	4.8	<b>15.4</b>
<b>2016</b>	<b>2<sup>nd</sup>-3<sup>rd</sup></b>	<b>5<sup>th</sup>-6<sup>th</sup></b>	<b>8<sup>th</sup>-9<sup>th</sup></b>	<b>11<sup>th</sup>-12<sup>th</sup></b>	<b>14<sup>th</sup>-15<sup>th</sup></b>	<b>17<sup>th</sup>-18<sup>th</sup></b>	<b>20<sup>th</sup>-21<sup>st</sup></b>	<b>23<sup>rd</sup>-24<sup>th</sup></b>	
<b>Birds</b>	110	194	159	88	42	33	43	51	<b>720</b>
<b>Puffinosised</b>	20	18	22	13	8	5	5	6	<b>97</b>
<b>% Puffinosised</b>	18.2	9.3	13.8	14.8	19.1	15.2	11.6	11.8	<b>13.5</b>
<b>2015</b>	<b>1<sup>st</sup>-2<sup>nd</sup></b>	<b>4<sup>th</sup>-5<sup>th</sup></b>	<b>7<sup>th</sup>-8<sup>th</sup></b>	<b>10<sup>th</sup>-11<sup>th</sup></b>	<b>13<sup>th</sup>-14<sup>th</sup></b>	<b>16<sup>th</sup>-17<sup>th</sup></b>	<b>19<sup>th</sup>-20<sup>th</sup></b>	<b>21<sup>st</sup>-22<sup>nd</sup></b>	
<b>Birds</b>	54	164	219	155	162	101	58	41	<b>954</b>
<b>Puffinosised</b>	3	29	63	31	55	55	32	10	<b>278</b>
<b>% Puffinosised</b>	5.6	17.7	28.8	20.0	34.0	54.5	55.2	24.4	<b>29.1</b>

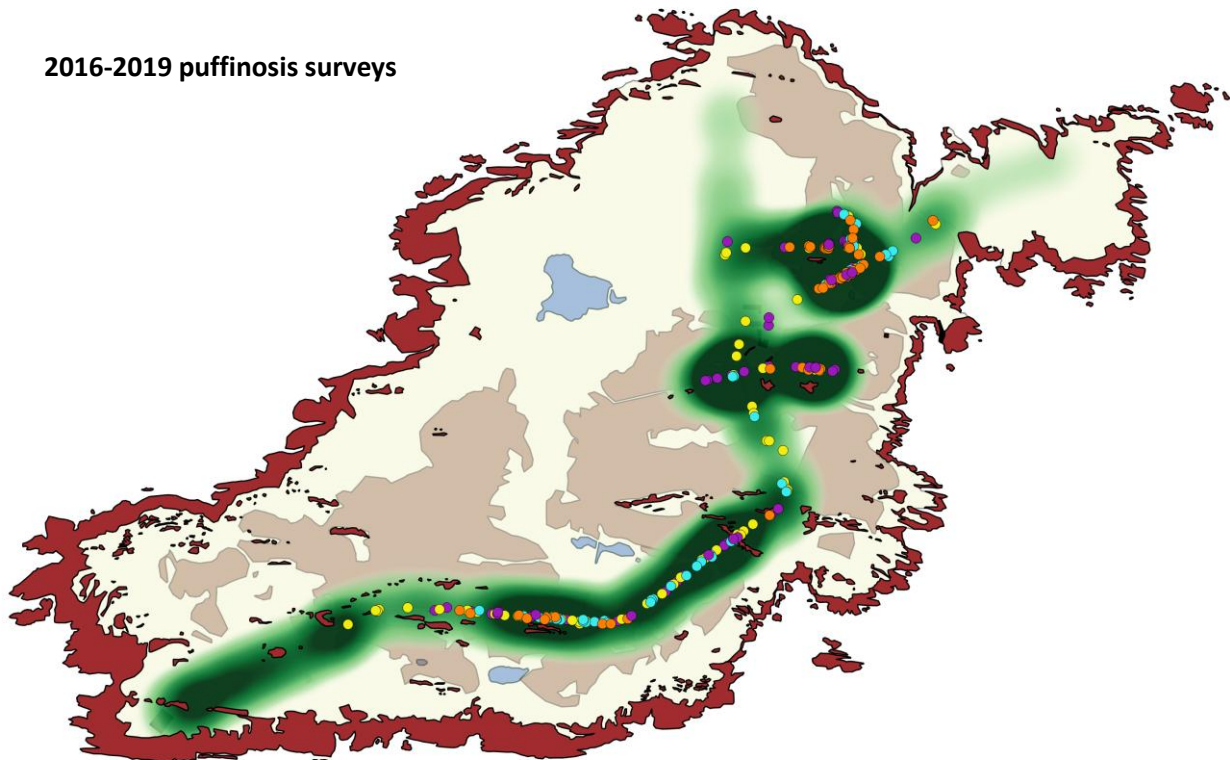
The number of shearwater fledglings located along the transect is likely to be different between years, not just because of fluctuations in productivity, but more critically due to differences in the weather and moon cycle which influence their surface behaviour. In total over the eight visits there were 250 more fledglings encountered this year than in 2019, with a total of 941 being 21.2% up on the 2015-2019 mean (776.20 ±sd 204.75). Although the count of apparently infected birds was 19 up on last year, the percentage of birds showing signs was down and the second lowest to date.

The 2020 and 2016-2019 puffinosis surveys. Manx Shearwater fledgling density is shown in green, with the darker areas holding more birds. Each puffinosised bird encountered over the eight visits is marked by a circle, lime in 2020, blue in 2019, yellow in 2018, orange in 2017 and purple in 2016. The 2018 Bracken distribution is also shown. The northern footpath between Middle Heath and the Table was only surveyed this year.

2020 puffinosis survey



2016-2019 puffinosis surveys



As in previous years, puffinosised birds were primarily distributed in the wetter areas of Skokholm, away from more exposed aspects which also typically lack Bracken. Indeed the new northerly route, which produced 270 fledglings over the eight nights, only held one bird showing signs of puffinosis (0.4%); the infected bird was along North Pond Wall, close to the Farm where a small number of similar birds have been seen previously (see above two maps). Given that there is seemingly a link between wetter, poorly drained areas and diseased birds, one possible explanation for the lower proportion of puffinosised individuals encountered during the last three years is that they all proved to be comparatively dry breeding seasons. That the proportion of infected birds was lowest in 2018 and 2020, the same two years which have seen the lowest two totals of predated juveniles, is intriguing (see above); it is quite probable that puffinosised birds are easier for Great Black-backed Gulls to catch, potentially leading to higher mortality in high puffinosis years (it would usually be difficult to tell that an eaten bird had been suffering from disease). However the number of juvenile corpses located in 2015, the worst puffinosis year of this six year study, was not significantly higher than in 2016 and 2017 when the proportion of puffinosised birds was lower.

September seawatch counts peaked at 10,970 on the 1<sup>st</sup> and 2905 on the 7<sup>th</sup>, the former being the second highest September daycount to date (only down on the 20,115 logged on the 8<sup>th</sup> in 2018). The last three grounded adults to be encountered along the transect were ringed on 9<sup>th</sup> September, nine days earlier than the last of 2019 and 13 days earlier than the last of 2018 (although a presumed adult was calling on the evening of the 20<sup>th</sup>). The last three-figure seawatching total was the 181 logged on 13<sup>th</sup> September, this also the last night of the year during which 50 fledglings could be found along the ringing transect. There followed daily records to the end of the month, with seawatching counts peaking at 63 on the 24<sup>th</sup> and the nocturnal ringing total dropping to 24 by the night of the 17<sup>th</sup>, six by the night of the 18<sup>th</sup> and four by the night of the 20<sup>th</sup>. There were daily sightings at sea during the first week of October, with a peak of 51 on the 5<sup>th</sup> which was the second highest October daycount to date (only down on the 83 seen on the same date in 2014) and two on the 7<sup>th</sup> which were the last live birds logged during the month. Up to four juveniles were seen on two October nights to the 4<sup>th</sup>, at least three (presumed) adults were calling overhead on the 5<sup>th</sup> and freshly eaten fledglings were encountered on the 7<sup>th</sup> and 15<sup>th</sup> (the latter seven days earlier than the last live fledgling recorded in 2019). In November there were up to two seen at sea on three dates to the 7<sup>th</sup>, at least two flying birds calling after dark on the 8<sup>th</sup>, at least three doing likewise on the 9<sup>th</sup>, six shearing into 50mph southwesterlies on the 14<sup>th</sup>, two in Broad Sound the following day and one south past the west end of Broad Sound on the 24<sup>th</sup> which was the last of the year; there have only been November records in 11 years since 1927, including six of the last seven, whilst the only later sighting is of a single logged on the 26<sup>th</sup> in 1991.

**Ringing recovery** EA46764

**Originally ringed** as a juvenile, MANX SHEARWATER TRANSECT, SKOKHOLM 9<sup>th</sup> September 2020

**Recovered** as a juvenile, MARLOES SANDS, PEMBROKESHIRE 13<sup>th</sup> September 2020

**Finding condition** Dead on beach (fresh, headless)

**Distance travelled** 5km at 69 degrees (ENE)

**Days since ringed** 4

**Ringing recovery** EA46879

**Originally ringed** as a juvenile, MANX SHEARWATER TRANSECT, SKOKHOLM 10<sup>th</sup> September 2020

**Recovered** as a juvenile, SAUNDERSFOOT, PEMBROKESHIRE 12<sup>th</sup> September 2020

**Finding condition** Alive in road, released to sea unharmed

**Distance travelled** 41km at 91 degrees (E)

**Days since ringed** 2

Ringing recoveries have shown that disorientated youngsters which inadvertently fledge towards the mainland can go on to reach maturity, if returned to the sea unharmed. Unfortunately, as highlighted by EA46764 above, grounded birds need to be found quickly. Of 640 fledglings ringed on



Skokholm in 2020, the above two were the only birds to be found on the mainland (one of 1215 fledglings was found in 2019 and two of 1498 were found in 2018 (all three were returned to sea)).

**Ringing recovery** EX74428

**Originally ringed** as an adult, LUNDY ISLAND, DEVON 6<sup>th</sup> June 2013

**Previously recovered** as an adult, MANX SHEARWATER TRANSECT, SKOKHOLM 19<sup>th</sup> May 2018

**Recovered** as an adult, MANX SHEARWATER TRANSECT, SKOKHOLM 28<sup>th</sup> May 2020

**Finding condition** Dead, eaten by Great Black-backed Gull

**Distance travelled** 73km at 325 degrees (NW)

**Days since ringed** 2548

**Ringing recovery** EZ53576

**Originally ringed** as an adult, SOUTH HAVEN, SKOKHOLM 6<sup>th</sup> August 2017

**Previously recovered** as an adult, SOUTH HAVEN, SKOKHOLM 31<sup>st</sup> July 2019

**Recovered** as an adult, BARRA DO SAI, ITAPOA, SANTA CATARINA, BRAZIL 26<sup>th</sup> September 2020

**Finding condition** Dead on beach (fresh, seemingly starved)

**Distance travelled** 9632km at 207 degrees (SSW)

**Days since ringed** 1147

**Ringing recovery** FB29118

**Originally ringed** as an adult, BARDSEY ISLAND, GWYNEDD 20<sup>th</sup> July 2007

**Recovered** as an adult, SKOKHOLM 2<sup>nd</sup> June 2020

**Finding condition** Dead, eaten by Great Black-backed Gull

**Distance travelled** 122km at 196 degrees (SSW)

**Days since ringed** 4701

A bird which survived a Bardsey Lighthouse attraction.

**Ringing recovery** FB42623

**Originally ringed** as an adult, MANX SHEARWATER TRANSECT, SKOKHOLM 6<sup>th</sup> July 2013

**Recovered** as an adult, JARDIM BEIRA-MAR, PERÚIBE, SÃO PAULO, BRAZIL 23<sup>rd</sup> September 2020

**Finding condition** Dead on beach (fresh)

**Distance travelled** 9388km at 206 degrees (SSW)

**Days since ringed** 2636

There have been 13 Skokholm ringed Manx Shearwaters found dead in South America since 2013. There was one in September 2014, two in November 2015, two in September and one in October 2016, one in September and one in October 2017, one in November 2018, one in March and one in November 2019 and two in September this year. They have all been found in Brazil, bar the November 2018 casualty found in Uruguay. Three have died in their first winter, one in its second winter, one in at least its third winter, four in at least their fourth winter, one in at least its fifth winter, two in at least their sixth winter and one in at least its tenth winter (the above bird).

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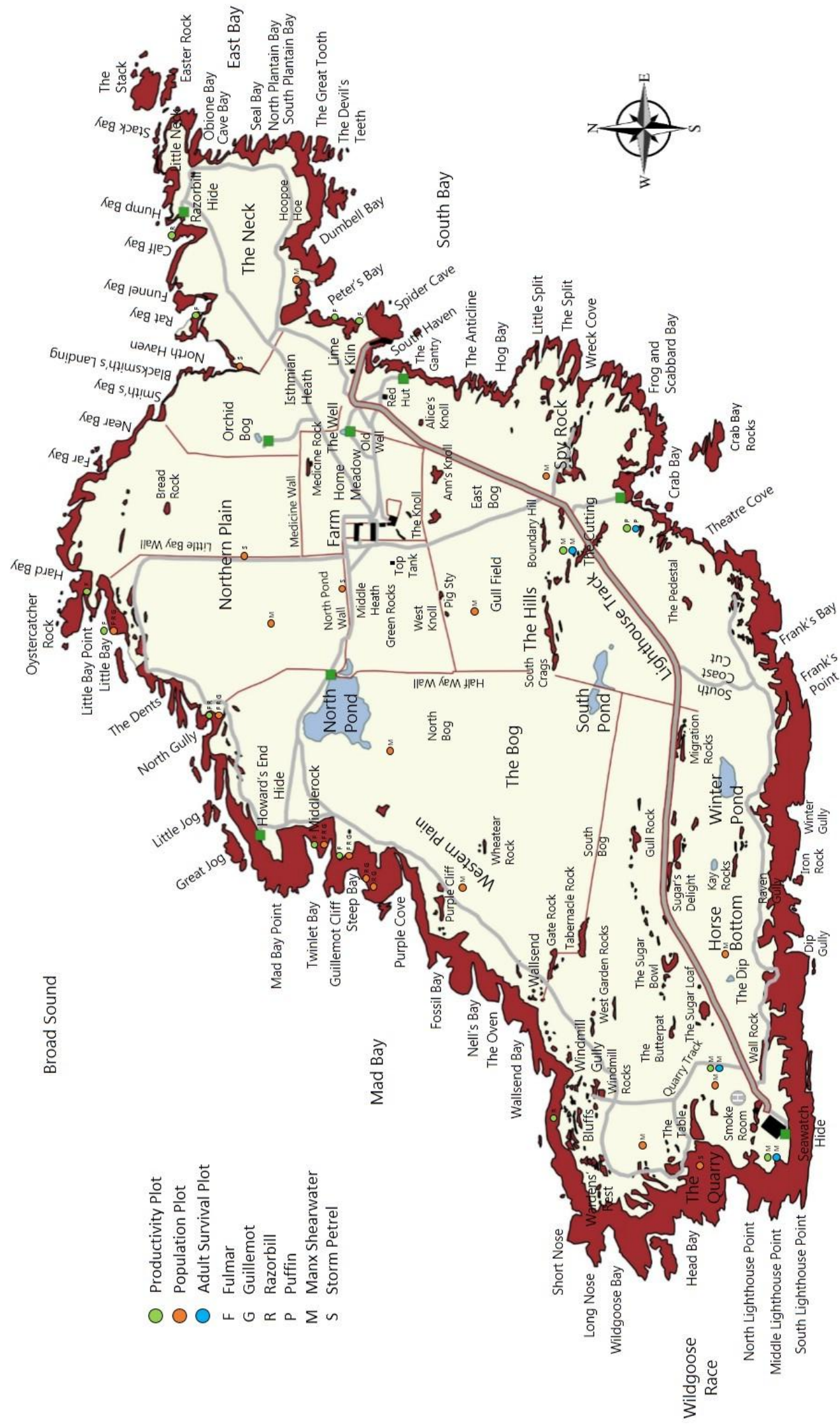
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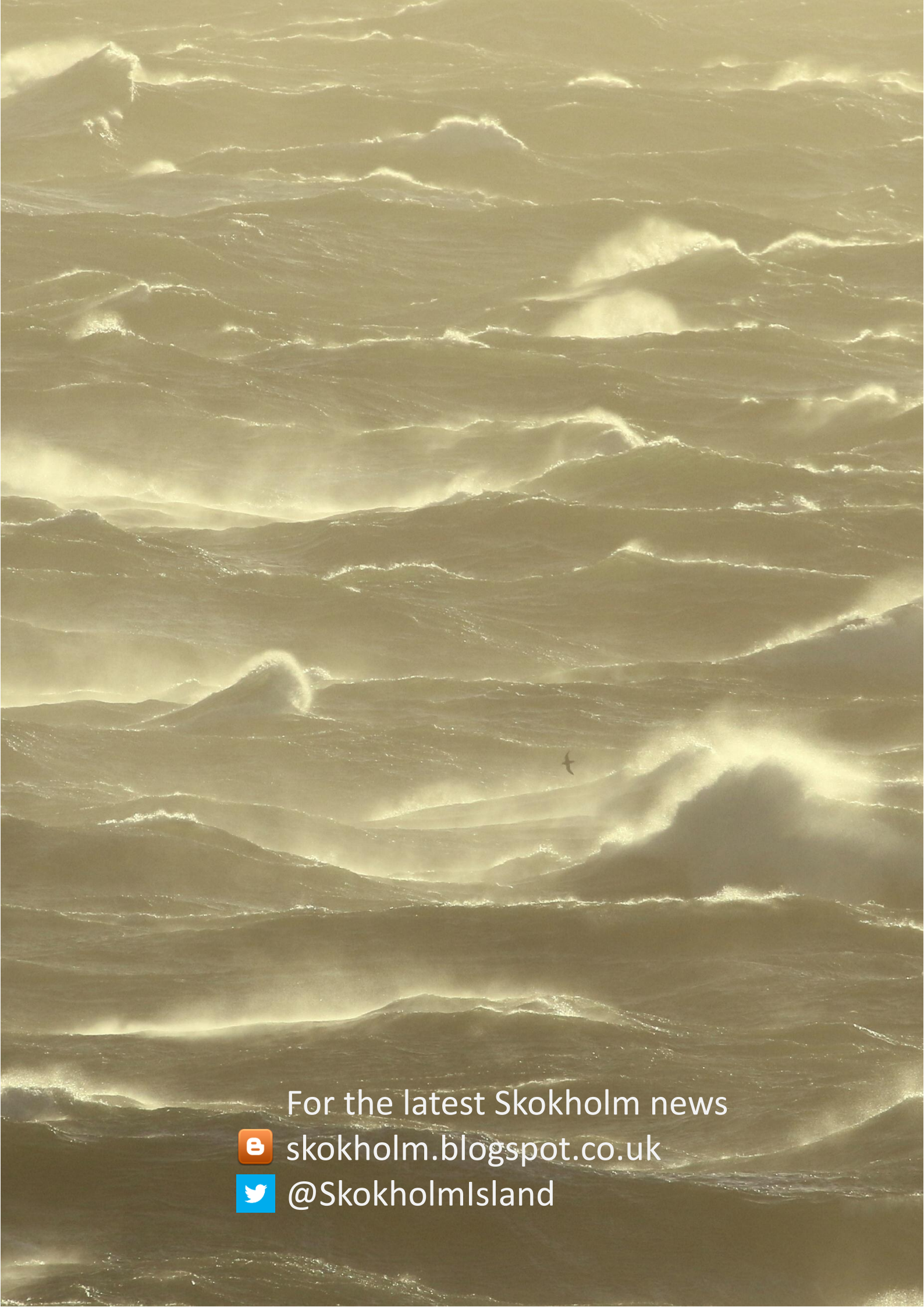
- Productivity Plot
- Population Plot
- Adult Survival Plot
- F Fulmar
- G Guillemot
- R Razorbill
- P Puffin
- M Manx Shearwater
- S Storm Petrel

Broad Sound




Scale bar





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