

Treshnish Isles Auk Ringing Group

Report for 2016



Guillemot (Andrew Carter)

Compiled by
Robin M. Ward

Expedition dates:
25th June – 2nd July 2016

Expedition members:
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INTRODUCTION

Since 1971, the Treshnish Isles Auk Ringing Group (TIARG) has monitored, through ringing and census work, the breeding seabird populations of the Treshnish Isles, Argyll. A summary of the early expeditions is given in *Birds on the Treshnish Isles 1971-1995* (Walker & Cooper 1996). Annual reports have been produced since 1996. This report summarises the results of the Group's 38th expedition to the Treshnish Isles, during 25th June – 2nd July 2016.

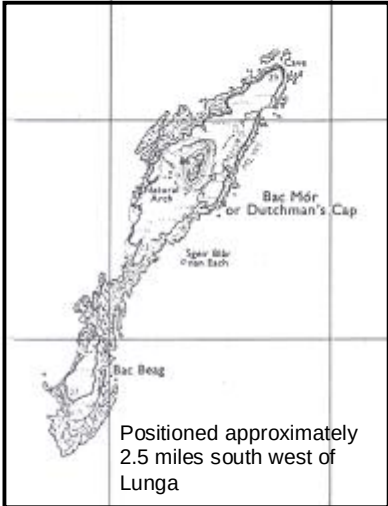
As in previous years, the expedition was based around the village ruins at the northern end of Lunga. The majority of the week's fieldwork was centred upon Lunga and Sgeir a' Chaisteil where the annual full seabird census and ringing of specific seabird colonies was carried out. The Group's activities were dictated as always by the prevailing weather conditions. The frequent occurrence of rain showers throughout the week, heavy at times, limited the extent of ringing achieved with priority given to completion of the annual full seabird census. Favourable weather overnight allowed the mist netting of Storm Petrels on Lunga during two nights. Use of the inflatable boat kindly loaned by the Hebridean Trust, enabled seabird census coverage of the islands between Lunga and Fladda, and for the first occasion since 2009, Cairn na Burgh More and Cairn na Burgh Beg. This year was the eleventh year of a Shag Retrap Adult Survival study (RAS); this entails ringing each adult with its own uniquely engraved colour-ring so that it can be re-identified in the field in future years. This is part of the British Trust for Ornithology's (BTO) Integrated Population Monitoring Programme, funded by the UK Government.

All TIARG census and ringing data are submitted to two national monitoring programmes, the Seabird Monitoring Programme (JNCC) and National Ringing Database (BTO), respectively. The data supplied are of great conservation value, being the sole means of monitoring the seabird colonies of the Treshnish Isles. The conservation importance of these islands is recognised by their designation by the UK Government as a Special Protection Area for internationally important populations of breeding Storm Petrel *Hydrobates pelagicus* and wintering Barnacle Geese *Branta leucopsis*. The islands have also been designated a Site of Special Scientific Interest (SSSI) for seabird breeding colonies of national importance. Financial support for the monitoring work TIARG undertook in 2016 was provided by the Hebridean Trust (www.hebrideantrust.org), owners of the islands.



Expedition participants 2016: (left to right back row) Matt Smith, Robin Ward, Jurjen Annen, (left to right front row) Chris Heward, Lila Buckingham, Tim Dixon, Daniel Plunkett & Andrew Carter (*Andrew Carter*)

MAP OF THE TRESHNISH ISLES



WEATHER

Date	Time	Max Wind Gust mph	Average Wind speed mph	Wind Direction	Temp °C	RH %	Pressure hPa	Notes - Significant weather during the day
25.06.2016	17:42	13.6	8.6	W	18.2	70.4	1013.9	Breezy, warm
26.06.2016	17:52	23.8	13.1	SW	13.0	98.0	1005.6	Intermittent rain, windy
27.06.2016	20:00	12.7	7.6	W	12.9	88.2	1009.2	Sun spells & showers, breezy
28.06.2016	17:45	7.0	3.9	S	12.5	88.4	1000.9	Rain/showers
29.06.2016	19:15	9.5	6.0	SW	13.3	93.0	995.1	Sunny, occasional light showers
30.06.2016	20:12	7.1	2.1	SW	12.5	95.3	994.5	Persistent rain
01.07.2016	23:30	16.0	12.8	W	11.2	85.5	995.1	Bright spells & showers
02.07.2016	08:48	13.3	10.0	NW	13.6	90.0	996.7	Cloudy, light showers

Meteorological data tabulated above was recorded using a hand-held weather station on Lunga during the period 25 June to 2 July 2016. All readings were taken NW of the Village. The weather over NW Scotland during the period was dominated by low pressure centres and fronts moving in from the Atlantic (see Appendix 1).

Meteorological data recorded at Tiree during the period 25 June to 2 July 2016 and synoptic charts showing the United Kingdom for the same time period are shown in Appendix 1.

Matt Smith

SYSTEMATIC LIST OF BIRDS FOR 2016

The following systematic list describes those bird species seen during the Treshnish Isles Auk Ringing Group's presence on the Treshnish Isles, 25th June – 2nd July 2016. The introductory comments (first paragraph) refer to the species' status during the breeding season as recorded by previous expeditions.

A detailed breakdown of breeding seabird numbers on Lunga and Sgeir a' Chaisteil in 2016 is provided on page 17.

Greylag Goose *Anser anser*

Breeding noted in some years, with a moulting flock present during late summer.

The moult flock had built up to no more than 70 birds by 1st July, typically most were around the islands of Sgeir an Eirionnaich, Fladda and Sgeir an Fheòir. Breeding was confirmed by the presence of broods seen on Fladda and the islands between Lunga and Fladda.

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Peak count	25	160	240	268	79	101	316	90	164	77
Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	
Peak count	80	225	160	140	50	140	196	272	70	

Canada Goose *Branta canadensis*

Rare visitor.

Two birds were seen with Greylag Geese around the islands of Sgeir an Eirionnaich and Sgeir an Fheòir on 28th June and 1st July. These sightings represent the first record by TIARG of the species on the Treshnish Isles.

Shelduck *Tadorna tadorna*

Until recently a rare visitor with one pair having bred occasionally since 2003.

One adult female with brood of three well grown young (three quarters full size) foraged daily in the 'Dirty Inlet' at Corran Lunga. These birds were joined by a male adult on 2nd July.

Eider *Somateria mollissima*

Breeds regularly in small numbers.

Four broods were noted at Lunga's south end, a duck with five ducklings and three ducks each with three ducklings. Elsewhere empty nests were found on Sgeir an Fheòir (1 nest) and Sgeir na h-Iolaire (2 nests).

The waters between Fladda and Lunga supported small numbers of late-summer moulting birds, typically male-biased with a maximum of 4 males and 2 females.

Fulmar *Fulmarus glacialis*

A common breeding species. The Treshnish Isles supported 0.2% of the Great Britain population as estimated by *Seabird 2000*.

Breeding was confirmed on Lunga, Cairn na Burgh More and Sgeir a' Chaisteil. The breeding population for Lunga and Sgeir a' Chaisteil was estimated at 271 pairs based upon apparently occupied sites (AOS). This represents a -5% decline in the number of breeding birds from the previous year. Over the longer term, 1994-2016, the population has shown an overall decline. This is consistent with a decline nationally which may be due to declines in offal from trawlers, representing a 're-adjustment' to more natural levels following a period of artificially elevated population size (JNCC 2013).

Manx Shearwater *Puffinus puffinus*

A common breeding species. The Treshnish Isles supported 0.4% of the Great Britain population as estimated by *Seabird 2000* (1998 – 2002).

Presumed breeding birds were seen and heard at night on Lunga. During the week in the evenings up to 750 birds were noted rafting off the east coast of Lunga and up to 600 birds were seen from Harp Rock flying south off the west coast.

Storm Petrel *Hydrobates pelagicus*

A common breeding species. The Treshnish Isles supported 20% of the Great Britain population and between 0.7 – 1.7% of the Atlantic (north-eastern) population as estimated by *Seabird 2000*.

Many birds were heard churring from burrows on Lunga.

Two nights of light winds and no rain gave the opportunity to mist net for Storm Petrels on Lunga at the Village and the Boulder Beach (below the Village). On the Boulder Beach, traditionally ringed locality below the Village on a single night, provided a catch of 237 birds using a 18 m net (for 4 hours). At the Village, 146 birds were caught using three 18 m nets over two nights (for 6 hour period in total).

Gannet *Morus bassanus*

Regularly seen offshore

Small numbers of adult birds with the occasional immature were seen daily, feeding or passing offshore of Lunga. A daily peak count of 60 birds was recorded.

Shag *Phalacrocorax aristotelis*

A common breeding species. The Treshnish Isles supported 2.1% of the Great Britain population and between 0.8 – 0.9% of the Atlantic (northeastern) population as estimated by *Seabird 2000* (1998 – 2002).

Breeding was confirmed on Lunga and Sgeir a' Chaisteil. The breeding populations on Lunga and Sgeir a' Chaisteil were 218 and 2 pairs respectively, based on nest counts. Following a marked decline in the numbers of active nests in 2005 and 2006, numbers have since gradually increased with fluctuations from 73 to 220 active nests.

Large numbers of adults were in the vicinity of the colonies with up to 440 birds moving offshore from the islands in the mornings to forage. Of those birds that were breeding on Lunga and Sgeir a' Chaisteil, great variation was once again found in the progress of breeding, with all stages from eggs to already fledged young noted. Brood sizes were mostly small, typically only two or three young.

2016 was the eleventh year of a Retrap Adult Survival study (RAS) that entails ringing each adult with its own uniquely engraved colour-ring so that it can be identified in the field in future years. This is part of the BTO's Integrated Population Monitoring Programme funded by the UK Government (<http://www.bto.org/ringing/ringinfo/ras/index.htm>). In 2016, of the birds marked from 2006 to 2015 on Lunga, 85 were re-sighted by TIARG of a possible 292 individuals. A further 27 breeding adults were colour-ringed on Lunga in 2016.

White-tailed Eagle *Haliaeetus albicilla*

Rare visitor

One immature bird, mobbed by Great Black-backed Gulls and a Raven, was seen flying along the north west coast on 27th June. This is the second record of the species on the Treshnish Isles by TIARG.

Buzzard *Buteo buteo*

Until recently, one pair bred in most years.

Regular sightings suggested the presence of one pair of adults on Lunga, both birds being in active wing moult.

Peregrine *Falco peregrinus*

Seen most years with breeding known to occur on adjacent coasts.

A single male was seen on Lunga on 25th and 26th June, with the only other signs of the species' presence being remains of recent Manx Shearwater kills.

Water Rail *Rallus aquaticus*

Rare visitor.

One bird was heard calling at night and on occasions by day from a bracken covered cliff top area immediately east of the Village. This is the third record of the species on the Treshnish Isles by TIARG, and notably in the same locality as the single birds in the previous two years. A notable difference was however detected in call structure of the bird(s) of the previous two years to that of the current year.

Corncrake *Crex crex*

Recorded almost annually and probably a regular breeder in small numbers.

No birds were recorded on Lunga. A single male was heard calling on Sgeir a' Chaisteil during most nights with it or another bird flushed by an expedition member during a brief visit to the island on 29th June.

Oystercatcher *Haematopus ostralegus*

Breeds regularly in small numbers.

On Lunga's beaches and rocky outcrops, 8 pairs (3 pairs at Corran Lunga, 2 pairs in area 6a and single pairs in areas 4, 8 and 9) were behaving as though on breeding territory, alarming at human intruders and performing displays on the appearance of other Oystercatchers. Confirmed breeding records were of single pairs with chicks at Corran Lunga and areas 4, 8 and 9. Away from Lunga, breeding pairs held territories on Sgeir an Eirionnaich (1 pair with a single chick), Sgeir a' Chaisteil (2 pair), Sgeir na h-Iolaire (1 pair with a single chick) and Cairn na Burgh More (2 pair).

Small flocks of presumed failed breeders/non-breeders were evident on Lunga, typically at high tide, in the area of Sgeir a' Chaisteil and Corran Lunga where there would generally be up to 23 birds roosting.

Ringed Plover *Charadrius hiaticula*

One or two pairs breed annually.

Typically, the only breeding pair on Lunga was confined to Corran Lunga, where the behaviour of the adults towards human intruders suggested that they were incubating eggs or had very young chicks.

One bird alarmed at human intruders during a brief visit to Sgeir a' Chaisteil on 28th June. Elsewhere a single bird was noted on Sgeir na h-Iolaire on 30th June.

Dunlin *Calidris alpina*

An irregular visitor.

One adult bird of the race *C.a.schinzii* was seen on the Boulder Beach, Lunga, on 26th June.

Snipe *Gallinago gallinago*

Breeds regularly in small numbers.

Up to three birds could be heard drumming/chipping over the Village on most days. Elsewhere on Lunga, up to three birds could be heard drumming/chipping over Shag Alley (Area 3), singles drumming/chipping south of the Village, over above Shearwater Gully and north of Tarbet, with up to 2 heard drumming/chipping at the south end of Lunga (area 6 and 7). These data suggest a minimum population of 9+ breeding pairs.

One bird was flushed during a brief visit by TIARG to Sgeir an Eirionnaich on 30th June.

Curlew *Numenius arquatus*

An irregular visitor.

Single birds were heard calling at the north end of Lunga on the 26th and 27th June

Redshank *Tringa totanus*

Irregular visitor

A single bird was heard from the Village, Lunga on 29th June.

Greenshank *Tringa nebularia*

Rare visitor

A single bird was heard from the Village, Lunga on 30th June.

Common Sandpiper *Actitis hypoleucos*

One or two pairs usually breed.

Typically, the only breeding pairs on Lunga were confined to Corran Lunga, where one, possibly two pairs were on territory with chicks.

Arctic Skua *Stercorarius parasiticus*

Small numbers seen daily, presumably from the breeding grounds on Coll.

Single intermediate and dark phase birds were recorded on 29th and 30th June respectively, offshore from Harp Rock, Lunga.

Great Skua *Stercorarius skua*

A small but regular breeding population has become established since the first confirmed breeding by a pair in 1998.

On Lunga breeding was confirmed by the presence of one chick on the high ground south of Tarbet (area 6), and a second pair with nest and egg immediately above the Village (area 14). Two additional pairs held territory, one north of Tarbet on the west coast and the other situated south of Tarbet towards the reedbed. The behaviour of the latter pair towards human intruders suggested that they were incubating eggs

or had young chicks.

On Fladda, at least one pair of birds could be seen from Lunga to be on an apparently occupied territory where breeding has also previously occurred.

Some 10-12 birds were observed on Bac Mór during a brief visit made on the 5th June, by Mike Stanfield (The Hebridean Trust), John Bowler (RSPB) and Janet Bowler. All birds, approximating to 5 - 6 pairs, were apparently holding territory on the west side of the island, south of the island's summit, and north-west of the pools. When last visited by TIARG in 2011, one adult was seen to come off Bac Mór as the team sailed around the island as landing was not possible. On the previous two visits by TIARG in 1999 and 2000 when landing was possible, no birds were seen.

Black-headed Gull *Chroicocephalus ridibundus*

Irregular visitor.

One first-summer bird was seen flying north from Sgeir an Eirionnaich, on 1st July.

Kittiwake *Rissa tridactyla*

A localised breeding species. The Treshnish Isles supported 0.2% of the Great Britain population as estimated by *Seabird 2000* (1998 – 2002).

Breeding was confirmed only on Lunga, where the main colony is around Harp Rock. The number of apparently occupied nests on Lunga was 423. A marked population decline of the colony from 2008 ended in 2011 since when numbers have widely fluctuated.

The breeding season was considered more advanced than average for this species, some chicks at the “primary feathers medium” stage ($\frac{1}{3}$ - $\frac{2}{3}$ emerged from sheath) and most at “primary feathers short” stage (less than $\frac{1}{3}$ emerged from sheath). This notable advancement in the timing of breeding season of this year was shared with other species of gull and the auks breeding on the Treshnish Isles.

Up to 560 birds were dispersed between roosts on Sgeirean na Giusaich, Sgeir an Eirionnaich and the intertidal rocks off Sgeir a' Chaisteil. Amongst these birds were at least five first-summer individuals.



Kittiwake chick food begging adult (Robin M. Ward)

Common Gull *Larus canus*

Irregular breeding species in small numbers.

An estimated 4 pairs (7 adults flushed) with at least 1 chick were noted on Sgeir an Eirionnaich. One or two adult birds were regularly seen frequenting Lunga. Elsewhere a single bird was noted from a boat on Fladda's south east corner where a small breeding colony has previously existed.

Lesser Black-backed Gull *Larus fuscus*

Regular breeding species in small numbers.

One pair with a chick was noted within the south end gully on Lunga, in area 8. A single bird was noted over Sgeir an Eirionnaich on 26th June. A pair of adult birds were regularly present at the puffin terraces (Area 12a) when people were notably absent, these birds waiting to kleptoparasitise any Puffin returning to their burrows with fish loads. Elsewhere on Lunga, a second-summer bird was noted on 27th June.

Approximately 5 breeding pairs were observed on Bac Mór during a brief visit made on the 5th June, by Mike Stanfield (The Hebridean Trust), John Bowler (RSPB) and Janet Bowler. These birds were situated on flat land just east of the island's summit. Whereas no pairs were recorded by TIARG on sailing around Bac Mór in 2011, apparent breeding was noted in the previous two visits, in 2000 and 1999, when during the latter, 8 breeding pairs were recorded.

Herring Gull *Larus argentatus*

A regular breeding species. The Treshnish Isles supported 0.2% of the Great Britain population as estimated by *Seabird 2000* (1998 – 2002).

Breeding was confirmed on Lunga (estimated 8 pairs). Breeding was also suggested by the presence of paired adults on territory on Sgeir a' Chaisteil (1 pair) and Cairn na Burgh More (5 pair). No birds were occupying territories on Sgeir an Eirionnaich, Sgeirean na Guisaich, Sgeir an Fheòir and Sgeir na h-Iolaire. The presence and numbers of any breeding pairs on Fladda is unknown. Of the those young seen, most had reached "primary feathers short" stage (less than $\frac{1}{3}$ emerged from sheath) suggesting that they were only a few days more advanced in development than is typical for the end of June.

The small numbers of birds now breeding on Lunga follows a marked decline in population during the late 1990's / early 2000's (see section "*Population changes for a selection of breeding species on Lunga, 1994 – 2016*").

Approximately 5 breeding pairs were observed on Bac Mór during a brief visit made on the 5th June, by Mike Stanfield (The Hebridean Trust), John Bowler (RSPB) and Janet Bowler. These birds were located on flat land just east of the island's summit. This is a reduction in numbers from the estimated 11 pairs on breeding territory when TIARG visited in 2011.

Great Black-backed Gull *Larus marinus*

A regular breeding species. The Treshnish Isles supported 2.0% of the Great Britain population as estimated by *Seabird 2000* (1998 – 2002).

From colony visits, breeding was confirmed on Lunga (14 pairs), Sgeir an Eirionnaich (estimated 23 apparently occupied territories; up to 37 adults counted), Sgeir an Fheòir (6 apparently occupied territories), Sgeir a' Chaisteil (2 pairs) Cairn na Burgh More (2 pairs with young), Cairn na Burgh Beg (3 pairs with young) and Sgeir na h-Iolaire (1 pair with 3 young). On Fladda an estimated minimum of 30 apparently occupied territories birds could be seen from Lunga. No birds were occupying territories on Sgeirean na Guisaich.

This was another seabird species for which breeding was at a more advanced stage than typically witnessed in late June, with some chicks able to fly short distances.

The small numbers of birds now breeding on Lunga follows a marked decline in population during the early 2000's (see section "*Population changes for a selection of breeding species on Lunga, 1994 – 2014*").

Some 10 pairs of adults were observed on Bac Mór during a brief visit made on the 5th June, by Mike Stanfield (The Hebridean Trust), John Bowler (RSPB) and Janet Bowler. These birds were apparently holding territory on the west side of the pools, south of the island's summit. In 2011, an estimated 11 breeding pairs were recorded on Bac Mór.

Common Tern *Sterna hirundo*

Irregular breeding species. The Treshnish Isles supported 0.6% of the Great Britain population as estimated by *Seabird 2000* (1998 – 2002).

Up to two birds were noted foraging off the Boulder Beach, Lunga on the 25th and 26th June.

Arctic Tern *Sterna paradisaea*

Regular breeding species.

A ternery was present on Sgeir an Eirionnaich at its south end and the islet at the north end of Sgeir an Eirionnaich. A brief census visit on 1st July to the south end colony found no eggs and small numbers of chicks that ranged widely in size from a few days old to some chicks at the "primary feathers long" stage ($2/3$ - $3/3$ emerged from sheath). The advanced stage of growth of some chicks prohibited full coverage of this and other colonies visited due to the inherent risk of these individuals evading capture by entering the sea prematurely. Colony size was therefore estimated from flush counts with an estimated 75 pairs (150 adults counted when flushed) on Sgeir an Eirionnaich and its adjacent islet. Elsewhere breeding was confirmed on Sgeirean na Guisaich (estimated 175 pairs; 350 adults counted) and Sgeir na h-loaire (estimated 18 pairs; 36 adults counted).

Guillemot *Uria aalge*

Common breeding species. The Treshnish Isles supported 0.7% of the Great Britain population as estimated by *Seabird 2000* (1998 – 2002).

Breeding was confirmed only on Lunga and Sgeir a' Chaisteil, with the main concentration as usual within the vicinity of Harp Rock where 8,319 adults were estimated. The total for Lunga and Sgeir a' Chaisteil combined was 8,758. The mean count for the past five years is 7,296 birds (range 6,324-8,758). An unprecedented abundance of well-developed chicks were seen compared with previous years by TIARG expeditions, with many chicks seen fledging during the evenings.

Razorbill *Alca torda*

Common breeding species. The Treshnish Isles supported 0.8% of the Great Britain population as estimated by *Seabird 2000* (1998 – 2002).

Breeding was confirmed on Lunga and Sgeir a' Chaisteil. The main concentration was typically located within the vicinity of Harp Rock. A total of 553 birds was counted on Lunga and Sgeir a' Chaisteil, in addition to the birds associated with 4 chicks located amongst accessible boulder colonies. A doubling in numbers from the previous year would suggest the population is starting to recover from an (as yet) unexplained marked reduction in numbers in 2009 following a period of 'comparative' stability.

One chick was seen to fledge with its parents from opposite Harp Rock, the first known occasion that a TIARG expedition has witnessed fledging in this species.

Black Guillemot *Cephus grylle*

Regular breeding species in small numbers. The Treshnish Isles supported 0.4% of the Great Britain population as estimated by *Seabird 2000* (1998 – 2002).

Adults were seen around the Sgeir an Eirionnaich - Sgeir an Fheòir sea area (9 birds), Cairn na Burgh More (8 birds), Cairn na Burgh Beg (4) and Lunga (5).

Puffin *Fratercula arctica*

Common breeding species. The Treshnish Isles supported 0.3% of the Great Britain population as estimated by *Seabird 2000* (1998 – 2002).

Breeding adults occupied burrows on Lunga, Sgeir a' Chaisteil and Cairn na Burgh More. Two birds were seen entering burrows with fish on Cairn na Burgh More during a brief visit to the island by TIARG. The estimated breeding population on Lunga and Sgeir a' Chaisteil was 2,976 apparently occupied burrows (AOBs). For counts of birds, one bird is taken to represent one AOB (Mitchell *et al.* 2004). Numbers have since 2004 fluctuated between 2,423 and 3,165 AOBs with the exception of the comparatively low estimates of the two years 2010-2011; 1,705 and 1,611 AOBs respectively.

Rock Dove *Columba livia*

Regular breeding species in very small numbers.

Birds were seen daily on Lunga, principally along the east coast, the largest groups being of 6 birds exiting a sea cave in Area 5 and 4 birds on occasions at the south end. Most days produced one to four sightings of party of 2-4 birds with the odd lone bird as well.

Skylark *Alauda arvensis*

A regular breeding species in small numbers.

Up to three singing males were on Lunga. One singing male was present south of Tarbet (Area 7) and two on the slopes of Cruachan (above Shag Alley and the Village). Two birds were flushed in Area 6 on 27th June.

Swallow *Hirundo rustica*

Irregular visitor

Single bird was seen over the north end of Lunga on the 25th June.

Meadow Pipit *Anthus pratensis*

A regular breeding species in small numbers.

Widespread breeding species on Lunga with no estimate of territories made, though less numerous than Rock Pipit *Anthus petrosus*. Food carrying, alarms and recently fledged young confirmed breeding on Lunga.

Rock Pipit *Anthus petrosus*

A regular breeding species in small numbers.

Breeding birds were common along the coast of Lunga and on Sgeir a' Chaisteil. Food carrying, alarms and recently fledged young confirmed breeding on Lunga and Sgeir a' Chaisteil. A minimum of 6 breeding pairs with young were estimated to be present at the south end of Lunga (Areas 5, 6a and 8), including Tarbet (Area 9).

Brief visits to adjacent islands located birds on Cairn na Burgh More (8 birds), Cairn na Burgh Beg (3 birds including one carrying food), Sgeir an Fheòir (1) and Sgeir na h-Iolair (4).

Pied Wagtail *Motacilla alba yarrelli*

A regular breeding species in very small numbers.

One pair of adults was regularly seen in the vicinity of the Village, Lunga, which were seen on occasions flying to Corran Lunga. Single birds were regularly seen at Harp Rock. Single record occurrences elsewhere on Lunga included an adult male at Tarbet and a single bird at the Gullery in Area 8.

Brief visits to adjacent islands located birds on Cairn na Burgh Beg (an adult with a juvenile) and Sgeir an Fheòir (1).

Sedge Warbler *Acrocephalus schoenobaenus*

A scarce but almost annual visitor.

There were no records of this species.

Wren *Troglodytes troglodytes*

A regular breeding species, quite common where habitat is suitable.

As in previous years, the vast majority of records were confined to the northern half of Lunga, predominantly amongst the boulder scree and bracken-covered slopes from Cruachan down to the sea and on Corran Lunga. Food carrying, alarms, a nest and recently fledged young confirmed breeding on Lunga. Casual observations indicated a minimum of seven territories along the east coast footpath between the Village and Shearwater Gully; one territory in Shag Alley; an occupied nest north of Harp Rock; two territories beside the Boulder Beach; one territory in Tarbet (east); alarming bird in Area 8; a singing male with 2 recently fledged juveniles in Area 5 and a juvenile in Area 6. An adult female with brood patch and two recently fledged juveniles were ringed in the Village on 29th and 30th June.

A family party of 5 birds was recorded during a brief visit to Cairn na Burgh More on 1st July.

Dunnock *Prunella modularis*

Irregular breeding species.

A singing male was heard within the vicinity of the Village between 25th and 27th June. One adult male and a recently fledged juvenile were ringed in the Village on 29th June.

Wheatear *Oenanthe oenanthe*

A regular breeding species in small numbers.

Widespread breeding species on Lunga with adults and fledged young observed across all count areas. Several families of adults with dependent (and presumed locally bred) young were seen on Lunga, including east of the Village (one family), Area 8 (one) and Area 6 (one). A minimum of 13 birds in total and which included juveniles were recorded during a walk between the Village and Harp Rock whilst 12 birds were recorded over the northern slopes of Cruachan.

Elsewhere during brief visits to adjacent islands, one bird was seen at Sgeir a' Chaisteil.

Hooded Crow *Corvus cornix*

A regular breeding bird in small numbers.

For a third consecutive year, the frequency and number of birds recorded on Lunga was notably

lower than in previous years. The species was seen on most days either on or flying between Lunga and Sgeir a' Chaisteil, with no more than two birds noted at any one time.

Elsewhere during brief visits to adjacent islands, two birds were seen at Sgeir an Eirionnaich.

Raven *Corvus corax*

At least one pair breeds in most years.

At least six individuals were seen on occasions frequenting the north end of Lunga, the largest group at any one time being of all six birds. At least two birds were moulting adults that were accompanied at times by what were thought to be two juveniles due to the absence of wing moult or abraded flight feathers.

Elsewhere during brief visits to adjacent islands, two birds were seen from the sea on Fladda.

Starling *Sturnus vulgaris*

A regular breeding species in small numbers.

Small flocks of up to 30 birds were noted daily on Lunga, comprising mostly juveniles. One adult was regularly observed foraging in the vicinity of the Village and carrying food off to a presumed nest site. One adult carrying food was seen visiting a nest site located in Area 5.

Elsewhere during brief visits to adjacent islands, 17 birds were seen on Sgeir a' Chaisteil and six birds on Cairn na Burgh More.

Siskin *Carduelis flavirostris*

Rare visitor

A single bird was heard calling in flight over the Boulder Beach on 25th June.

Twite *Carduelis flavirostris*

Regular breeding species in small numbers

Small parties of up to four birds were noted daily around the northern half of Lunga. The frequency and number of birds recorded on Lunga was notably lower than in previous years. When aged all birds were adults with also no confirmation of breeding suggestive of either a poor or late breeding season for the species.

Elsewhere two birds were seen on Cairn na Burgh More whilst no birds were recorded on Sgeir a' Chaisteil and Cairn na Burgh Beg probably on account of the brevity of the visits to those islands.



Adult Storm Petrel (Andrew Carter)

SYSTEMATIC LIST OF MAMMALS FOR 2016

Otter *Lutra lutra*

Evidence of presence regularly noted.

However in this year, no evidence of this species was noted on either Lunga or Sgeir a' Chaisteil.

American Mink *Neovison vison*

No known occurrences.

No evidence of this species was noted on either Lunga or Sgeir a' Chaisteil.

House Mouse *Mus musculus*

Resident, apparently in small numbers.

Individual animals were seen on several occasions at the expedition base in the Village, at the north end of Lunga.

Chocolate wax monitoring blocks are a method with which to attract and record the distinctive bite marks of different rodent groups e.g. mice and rats (Varnham 2008). Pairs of chocolate wax monitoring blocks, "chew sticks", were laid for between one and three successive days overnight at nine locations on Lunga, most within or beside seabird colonies. The chew sticks were then inspected for rodent teeth marks. The chocolate wax monitoring blocks were made following the method of Varnham (2008).

Site no.	Site	Seabirds breeding in close proximity	Date of deployment	No. of nights deployed	No. of chew sticks	
					No. deployed	No. chewn by mice
1	Base of rock face beside coast path north of Shearwater Gully	Manx Shearwater	27 th June	3	2	0
2	Beside stream across coast path at Shearwater Gully	Manx Shearwater	27 th June	3	2	0
3	Cliff top low stone wall north of Shag Alley	Storm Petrel	27 th June	3	4	0
4	Low stone wall east of coast path approaching Tarbet (north of)	Storm Petrel	27 th June	3	4	2
5	Boulders at east end of settlement at southern foot of Cruachan	Storm Petrel	27 th June	3	4	2
6	Low stone wall at west end of settlement at southern foot of Cruachan	Storm Petrel	27 th June	3	4	0
7	South end of cliff top seabird boulder colony, Area 10	Puffin, Shag, Razorbill.	30 th June	1	4	0
8	Middle of cliff top seabird boulder colony, Area 10	Puffin, Shag, Razorbill.	30 th June	1	4	0
9	Low stone wall beside coast path above 2 nd gully north of Village, Area 12	Storm Petrel	30 th June	1	4	0
10	Vegetation and boulders two metres away from south east corner edge of Village	Storm Petrel, Manx Shearwater	30 th June	2	4	2

Teeth marks were found on some but not all chew sticks at three sites, 4, 5 and 10 (The Village). They were found to be chewed by mice. All three locations were either beside or in proximity of earlier human settlements. Where the current survey recorded the mice was also within, or at least in close proximity to, known colonies of breeding Storm Petrel (Gilbert & Helmsley 1996). Whether these presumed House Mice are predating breeding Storm Petrels, their young or eggs, remains to be established. Determining this will be difficult given the nest sites are hidden from view in crevices within walls and under rocks, and the need for monitoring to be non-invasive.

No rodents were detected at the remaining seven localities at which two or more chew sticks were deployed.

This survey follows similar exercises on Lunga in 2012 and 2013 as reported by TIARG in their respective annual reports, when mice were detected on the Boulder Beach but not within the seabird colony along the footpath above the 2nd gully in Area 12 and in Area 10.

Brown Rat *Rattus norvegicus*

No known occurrences.

No evidence of this species was noted on either Lunga or Sgeir a' Chaisteil.

Rabbit *Oryctolagus cuniculus*

Resident, numbers much reduced in recent years.

No systematic monitoring took place. Casual observations on Lunga suggest that it is abundant. All sightings of black individuals were from Lunga, involving a minimum of 17 individuals at widespread localities.

No evidence was noted of animals on Sgeir a' Chaisteil.

Grey Seal *Halichoerus grypus*

A regular breeding species, contributing just under 3% of the annual UK pup production. Numbers are regularly monitored by the Sea Mammal Research Unit (NERC, St Andrews). The conservation importance of these islands as a breeding colony is recognised by their designation by the UK Government as a Special Area of Conservation.

A maximum of 91 animals were visible from Lunga hauled out on intertidal reefs to the north and east at low tide.

Pipistrelle Bat *Pipistrellus pipistrellus* (45 kHz)

Previously regarded a rare visitor. True status uncertain.

One or more animals of this species now recorded annually since 2011, were recorded over the Village on several nights and Shearwater Gully on 27th June. The species' identity was confirmed from use of a bat detector (a device used to detect the presence of bats by converting their echolocation ultrasound signals, as they are emitted by the bats, to audible frequencies).

Bottlenose Dolphin *Tursiops truncatus*

Rare visitor

A pod of at least 10 animals were seen around two passing vessels off the east coast of Lunga on 29th June. There was much leaping, somersaulting and tail slapping observed. Later that day ten or less animals were seen off Harp Rock. At least eight animals, including an immature accompanying its mother, were seen off the first gully west of the Village, Lunga, on 30st June. Once again much leaping, somersaulting and tail slapping, observed to the pleasure of tourists aboard the nearby anchored 100-passenger MS Serenissima cruise ship.



One of many confiding Rabbits at Harp Rock (Robin M. Ward)

SYSTEMATIC LIST OF LEPIDOPTERA FOR 2016

Common Blue *Polyommatus icarus*

Regular breeder

One was recorded on Lunga at Tarbet on 27th June. Further sightings on Lunga were on 29th June with one or two recorded at various localities including Shag Alley, Area 10, east of the Village and on Corran Lunga. Elsewhere two were seen on Cairn na Burgh More during a brief visit on 1st July.

Meadow Brown *Maniola jurtina*

Accidental

One was seen in the northern half of Lunga on 29th June.

OTHER NOTABLE WILDLIFE RECORDS

Oyster Plant *Mertensia maritima*

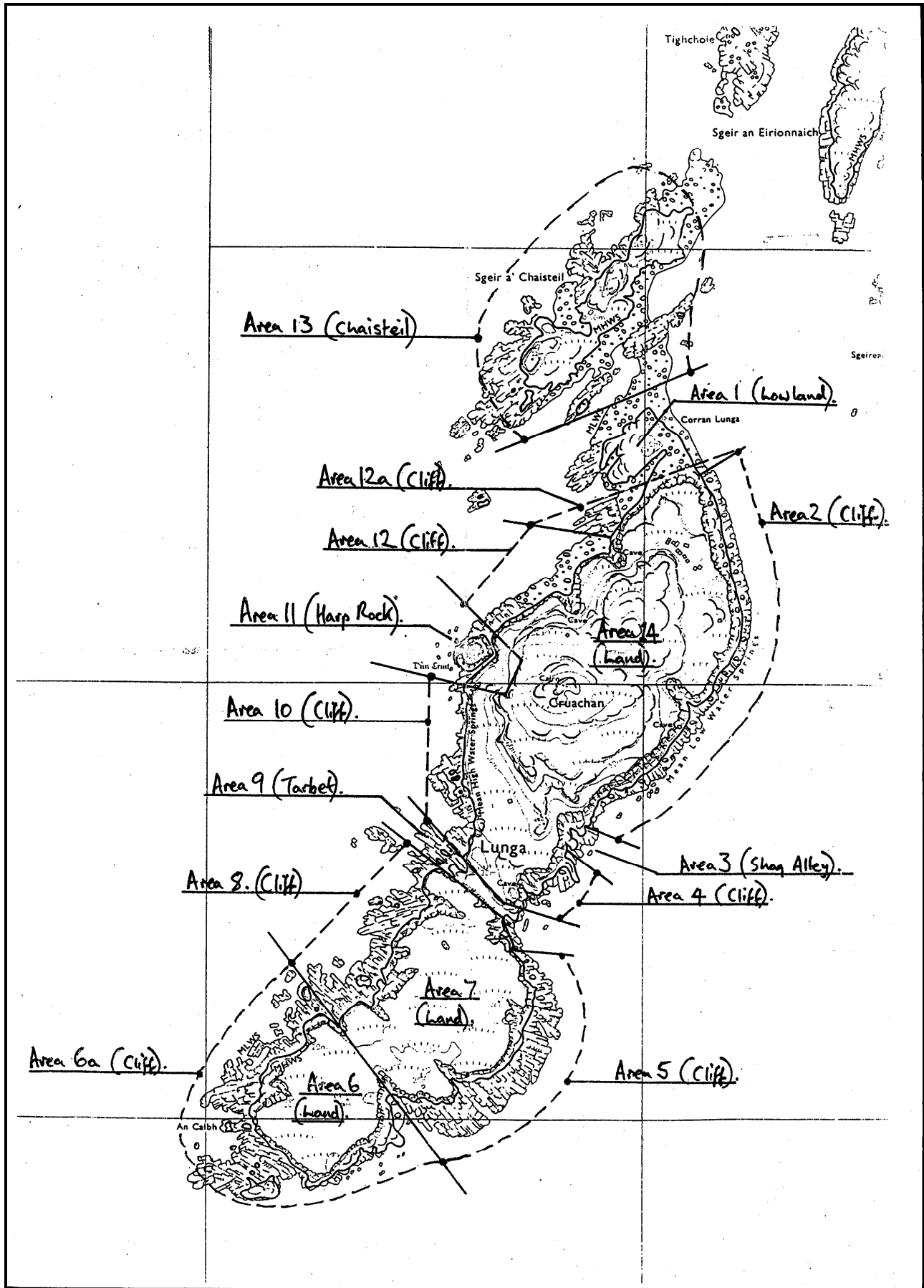
Localised species on Lunga.

At Tarbet (west) the species continues to be well established with no marked difference in abundance and extent to that of recent years.



Lousewort (Robin M. Ward)

MAP OF CENSUS ZONES – LUNGA AND SGEIR A' CHAISTEIL



2016 BREEDING SEABIRD CENSUS DATA FOR LUNGA, SGEIR A' CHAISTEIL AND ISLETS

Sector	Count unit	Lunga	Sgeir a' Chaisteil	Sgeirean na Giusaich	Sgeir an Fheoir	Sgeir an Eirionnaich	Sgeir na h-Iolaire	Cairn na Burgh More	Cairn na Burgh Beg
Fulmar	AOS	253	18					16+	
Manx Shearwater	No census	+							
Storm Petrel	No census	+							
Shag	AON	218	2			1+			
Great Skua	AOT	4							
Lesser B-b Gull	AOT	1							
Herring Gull	AOT	8	1					5	
Great B-b Gull	AOT	14	2		6	23	1	2	3
Common Gull	AOT					4			
Kittiwake	AON	423							
Arctic Tern	AON			175**		75**	18**		
Razorbill	IND	536	1						
Razorbill	AON	4							
Guillemot	IND	8627	131						
Black Guillemot	IND	5				9		8	4
Puffin	SEA	131							
Puffin	IND	583							
Puffin	AOB	2204	189					1+	

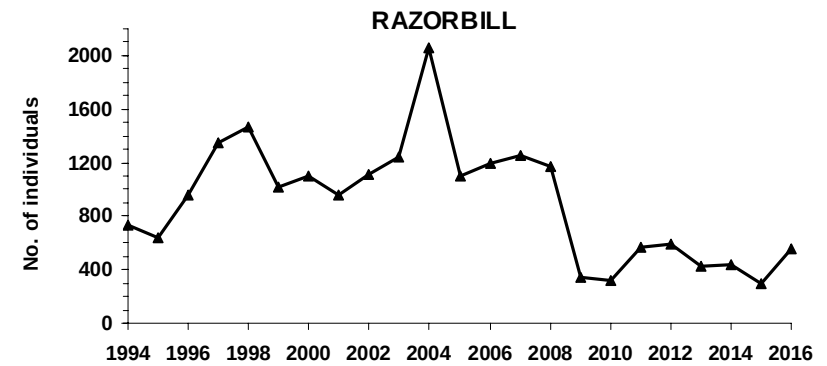
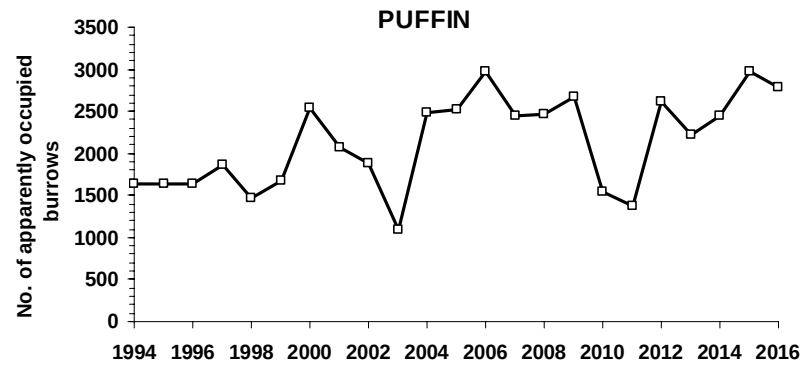
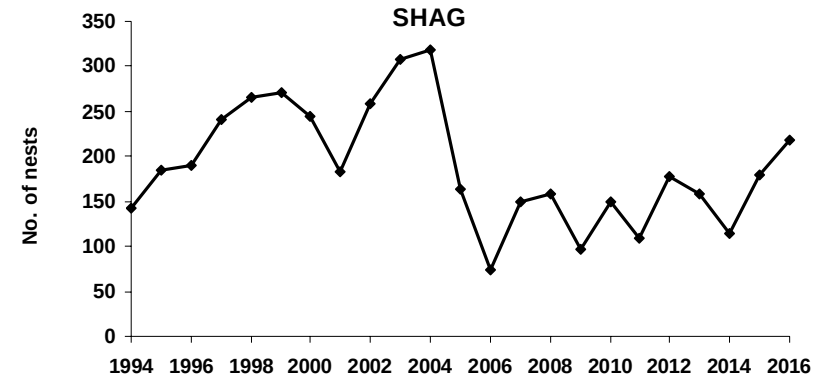
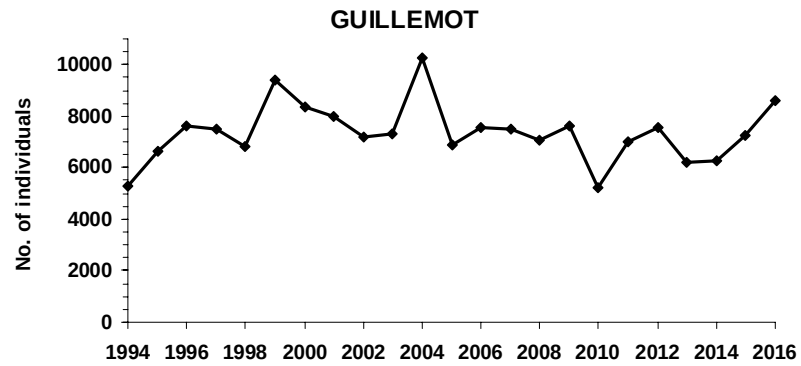
Key to count unit codes: AON/AOT/AOB = apparently occupied nest/territory/burrow IND = Individuals on land
SEA = individuals on sea within 200m of colony PRS = Pairs nc = no count + = breeders present
**Estimated from flush counts with the number of adults divided by two

Totals for each Census Zone of Lunga and Sgeir a' Chaisteil

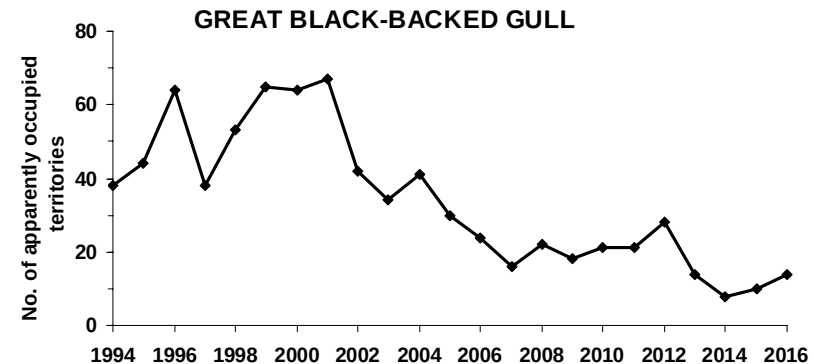
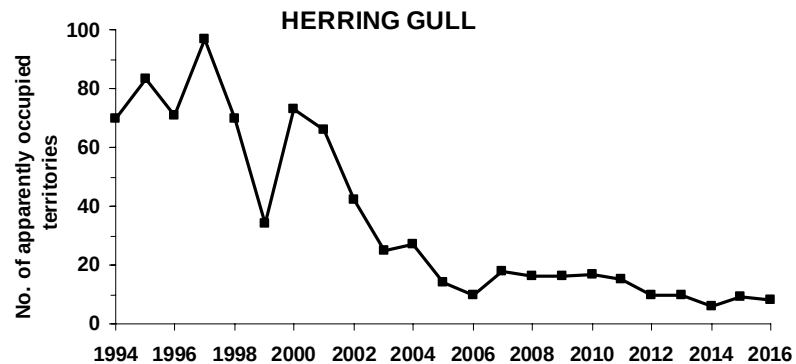
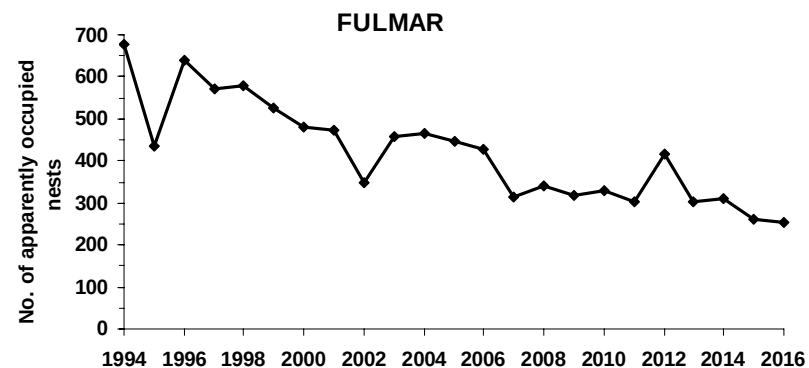
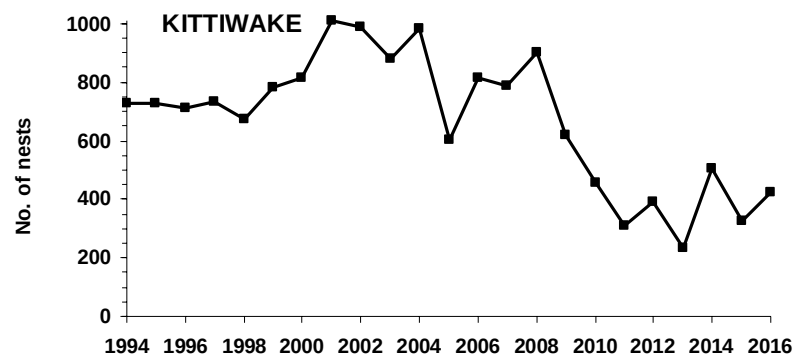
Sector	Count Unit	Count Sectors on Lunga (1 – 12a) and Sgeir a' Chaisteil (13)															Lunga & Chaisteil Totals
		1	2	3	4	5	6	6a	7	8	9	10	11	12	12a	13	
Fulmar	AOS		30	7	1	39		14		23	4	11	12	100	12	18	271
Shag	AON		12	43	8	41				16		24	16	57	1	2	220
Great Skua	AON		1				1		1			1					4
Lesser B-b Gull	AOT									1							1
Herring Gull	AOT									6				2		1	9
Great B-b Gull	AOT	1			1		6	1	5							2	16
Kittiwake	AON											11	390	22			423
Razorbill	IND		76	45	23	13						69	208	97	21	1	553
Razorbill	AON									4							4
Guillemot	IND					13						78	8319	182	35	131	8758
Black Guillemot	IND							5									5
Puffin	SEA					11								120			131
Puffin	IND		30	100		3								450			583
Puffin	AOB			115	155							197	645		1092	189	2393

Key to count unit codes: AON/AOT/AOB = apparently occupied nest/territory/burrow IND = Individuals on land
SEA = individuals on sea within 200m of colony PRS = Pairs nc = no count + = breeders present

POPULATION CHANGES FOR A SELECTION OF BREEDING SPECIES ON LUNGA, 1994 – 2016



POPULATION CHANGES FOR A SELECTION OF BREEDING SPECIES ON LUNGA, 1994 – 2016 (con't)



TRESHNISH RINGING TOTALS FOR 2016

Site	Species	New birds			Recaptures		Total
		Adult	Juvenile	Pulli	Retraps	Controls	
Lunga	Manx Shearwater	5			1		6
	Storm Petrel	258			80	14	352
	Shag	21		144	92*		257
	Oystercatcher			2			2
	Great Black-backed Gull			4			4
	Herring Gull			6			6
	Lesser Black-backed Gull			1			1
	Kittiwake	14			4		18
	Guillemot	161			16		177
	Razorbill	17			13		30
	Puffin	260			37		297
	Dunnock	1	1				2
	Wheatear		3		1		4
	Rock Pipit		1				1
	Wren	1	2				3
Sgeirean na Guisaich	Arctic Tern			8			8
H-lolaire	Oystercatcher			1			1
	Great Black-backed Gull			3			3
	Arctic Tern			2			2
Sgeir an Eirionnaich	Oystercatcher			1			1
	Great Black-backed Gull			4			4
	Common Gull			1			1
	Arctic Tern			6			6
Cairn na Burgh More	Herring Gull			2			2
Treshnish Isles	Grand total for 2016	738	7	185	244	14	1188

*85 of 92 Shag 'retraps' were colour-ringed birds of which the majority were sighted and not captured.

Note: All rings used in 2016 were registered to *Treshnish Auk Ringing Group* with the exception of 16 rings used on Arctic Tern that were registered to Robin Ward.



A BTO ringed Great black-backed Gull...that evaded the ring readers! (Andrew Carter)

RETRAPPING ADULTS FOR SURVIVAL PROJECT

1. Introduction

Breeding adult Storm Petrels and Shags are ringed annually by TIARG in specific sections of the colonies on Lunga. The conservation value of this aspect of TIARG's ringing programme has since 2006 been much increased with its inclusion into the British Trust for Ornithology's Retrap Adult Survival (RAS) monitoring programme. Adult Shags are now fitted with a uniquely numbered colour ring; many of these birds have been metal ringed already as pulli by TIARG. Over 300 Shags are now individually identifiable in the field without the need for recapture. Adult Storm Petrels continue to be BTO metal ringed only.

2. What is RAS

RAS aims to provide information on adult survival. RAS uses re-sightings of colour-marked individuals and captures of adult birds to calculate what proportion survive each year. The aim of a RAS project is to re-capture (or re-sight, Shag only) within a defined area, a minimum of 30 adult birds from previous years. TIARG try to avoid big changes in effort between years and keep a record of their catching effort (number of visits made and number of hours spent re-capturing and / or re-sighting). This means that survival can be calculated by the British Trust for Ornithology (BTO) more precisely from the information collected.

3. Study area and Method

3.1. Shag RAS

TIARG's Shag RAS study areas extend along Lunga's north-west coast and section of the east coast.

All adults are caught by hand in the colonies and usually at the nest. A single engraved darvic colour-ring is placed on the bird's left leg. The colour-ring is either:

- 1) lime (light green) with a black engraved number between 100 to 299, read from top to bottom and repeated twice on the ring; or
- 2) dark green with a white engraved number between 300 to 499, read from top to bottom and repeated twice on the ring

During the annual one week visit to Lunga by TIARG at the end of June, expedition members record the details of any colour-ringed Shags seen, both during targeted searches of the colonies for marked birds, and at all other times.

3.2. Storm Petrel RAS

TIARG operate two Storm Petrel RAS on the north-east corner of Lunga. All adults are mist netted (without tape lure) in colonies. The study area of one RAS is the Village where a survey visit uses a line of three 18 m four shelf mist nets erected adjacent to the south side of the Cottages. The study area of the second RAS is the Boulder Beach. Here a survey visit comprises of using two or three 18 m nets positioned at the northern end or alternatively one 18 m or two 12 m nets towards the colony's southern end (below the 'latrine').

During the annual one week visit to Lunga by TIARG at the end of June, expedition members attempt one night of mist netting at each of the three netting locations, or more if required to meet the sample of Storm Petrels required.

4. Results

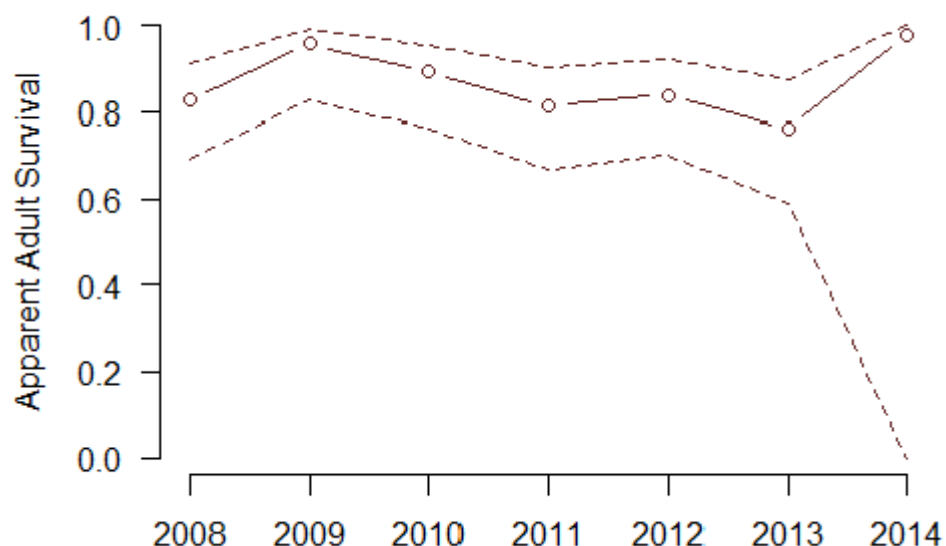
The BTO has provided TIARG with project specific feedback on the results of the three RAS studies up to and including 2015. The results are presented here alongside the latest national trend for comparison. National survival trends are published as part of the BirdTrends report (www.bto.org/birdtrends) and on the RAS website (www.bto.org/ras-results).

4.1. Storm Petrel RAS

4.1.1.National trend

TIARG's RASs are two of three active projects for Storm Petrel in the UK. The national trend is generated from two historical and three current projects (Figure 1). The quality of the national trend is considered to be 'Good'. Following a prolonged, gradual decline, Storm Petrel survival rates exhibited a sharp increase in survival between 2013 and 2014 but declined again slightly between 2014 and 2015.

Figure 1. The RAS programme national trend in the apparent adult survival of Storm Petrel



On viewing the graphs in this paper, the following three points should be noted:

- That the graphs end at 2014; this is because the RAS programmes calculate survival between years, so the last point is the survival from 2014 to 2015.
- The graphs show "Apparent Adult Survival", defined as the probability that an adult bird alive in the previous year survives and returns to the study area. The analysis accounts for the fact that birds which are present may not be seen every season, but birds permanently emigrating from the study area will be presumed dead, thus the true survival rate may be slightly higher than the figures presented here.
- The dotted lines show the upper and lower 95% Confidence Limits around the average estimate (solid line and points). The closer these lines are to the solid line, the more confidence we have in the accuracy of the survival rates.

4.1.2.Boulder Beach RAS

Unlike the national trend, the results from the Boulder Beach RAS (Figure 2) suggest that the population is increasing. The modelling programmes were unable to calculate a survival rate estimate for 2007 (as there were no birds caught that year) or for 2015. The reason for the latter is unclear but may be due to the high number of birds caught and the proportionally smaller number of adult-adult retraps caught; this blip may disappear when the 2016 data are analysed. The range of recapture probabilities across the active projects is between 8% and 18%.

4.1.3.The Village RAS

Although fluctuating, the trend appears to show a slight decline in the survival rate of the population; however, the decline is less steep than the national decline and the survival rate estimate is higher than the national estimate. The increase in the width of the confidence limits over the last couple of seasons is likely due to the proportionally smaller number of adult-adult retraps caught in relation to the numbers of birds caught. The range of recapture probabilities across the active projects is between 8% and 18%. The results indicate that TIARG have a well-designed project that is working well.

Figure 2. The trend in the apparent adult survival of Storm Petrel at Boulder Beach RAS study

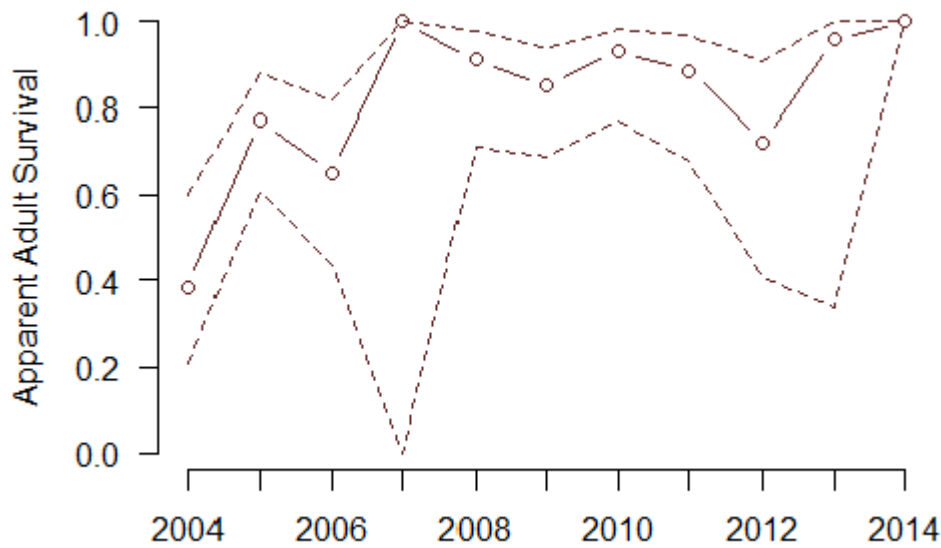


Figure 3. The trend in the apparent adult survival of Storm Petrel at the Village RAS study



A summary of the results for the TIARG Storm Petrel RAS studies are presented in Table 1. On viewing the summary results tabulations, the following three points should be noted:

- The 'mean survival rate' is the probability that an individual bird alive in one breeding season will survive to the next averaged across all years and sites; and,
- The 'mean re-encounter rate' is the probability that an individual (which is alive and living in the study area) will be either recaptured or resighted.

Table 1: Summary results for the two Storm Petrel RAS studies

	Boulder Beach RAS	The Village RAS
Estimate of average annual adult survival across all projects	78%	78%
Estimate of average annual adult survival from TIARG project	82%	82%
Estimate of TIARG project's average annual recapture probability	8%	18%

4.2. Shag RAS

4.2.1. National trend

TIARG's RAS is one of two active projects for Shag. The national trend is generated from two historical projects and your project. The quality of the national trend is considered to be 'Uncertain'. As one project began the year after the previous two ended, it has been difficult to calculate appropriate confidence limits for the last few years. The long-term trend (1998-2015) is stable.

4.2.2. TIARG RAS

The results of TIARG's RAS show the population has declined in recent years; however, it is encouraging to see that the survival rate is higher than the national rate. For some reason, the modelling programme was unable to calculate a survival rate for this past season hence the 100% survival rate and very wide confidence limits. This is not a reflection on the number of adult-adult retraps achieved as TIARG have been getting just over 50 for the last few years. Ignoring this last season, the narrow confidence limits around the trend and the high recapture probabilities indicate that TIARG have a well-designed project that is working well.

A summary of the results for the TIARG Shag RAS study are presented in Table 2.

Table 2: Summary results for the Shag RAS studies for the two sexes

	Shag RAS	
	Males	Females
Estimate of average annual adult survival across all projects	78%	79%
Estimate of average annual adult survival from TIARG project	81%	86%
Estimate of TIARG project's average annual recapture probability	63%	58%

Figure 4. The RAS programme national trend in the apparent adult survival of Shag

Figure 5. The trend in the apparent adult survival of Shag for the RAS study on Lunga



5. Acknowledgements

RAS is supported by a partnership between the BTO and the Joint Nature Conservation Committee (JNCC) on behalf of the country agencies (Natural England, Natural Resources Wales, Scottish Natural Heritage and the Department of Agriculture, Environment and Rural Affairs, Northern Ireland). It is also part of the BTO Ringing Scheme which is funded by the BTO/JNCC Partnership, The National Parks and Wildlife Service (Ireland) and the ringers themselves.



Colour-ringed Shag '153' (Andrew Carter)

TRESHNISH RINGING TOTALS 1971 – 2016

SPECIES	1971	1974	1976	1977	1978	1980	1982	1984	1986	1989	1991	1993	1994	1995	1996	1997	1998	1999
Eider																		
Fulmar	17	6	4		8	21	14	18	7	21	15		4	27	38	7	24	23
Manx Shearwater		2	13		4	4	1	8					9	1		2	1	4
Storm Petrel		254	22		1	283		203	800	411	975	75	440	536	331	1104	741	732
Shag	150	7	10	10	24	80	50	160		40	10		10	59	96	99	150	100
Buzzard						1	2											
Corncrake																		
Oystercatcher		1				1	4	2										2
Ringed Plover																		
Common Sandpiper																	1	
Great Skua																	1	
Kittiwake						1	1	1	2	2	4		6	10	1	50	41	23
Common Gull																	4	
Lesser Black-b Gull																		
Herring Gull	6	1			14	46	35	56	4	4	3		5	24	19	52	73	39
Great Black-b. Gull	3	6	3	7	6	22	14	35		22	15		6	25	16	48	19	16
Guillemot	32	20	14		66	502	137	364	180	250	306		109	498	349	472	503	507
Razorbill	65	72	90		115	266	218	236	151	103	64		81	101	105	98	112	102
Black Guillemot																1		
Puffin	70	198	271		203	200	208	182	174	160	114		358	236	301	267	398	274
Hooded Crow																		
Willow Warbler														1				
Wren														3				
Starling																		
Stonechat																		
Wheatear			12					1	3						5	24	37	22
Pied Wagtail													1	3	2			
Meadow Pipit														4		1		
Rock Pipit									5	1				2	4	2	4	2
Twite																2		
TOTAL	343	567	439	17	441	1427	684	1266	1326	1014	1506	75	1029	1530	1267	2229	2109	1846

NOTES: (1) Data for 1971 - 1995 extracted from Walker & Cooper (1996). This may not include all rings used.
(2) Ringing data for a three day visit in 1972 are not available.

TRESHNISH RINGING TOTALS 1971 – 2016 (continued)

SPECIES	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
Eider					1													1
Fulmar	12	25	22	25	47	14	15	8						1		1		424
Manx Shearwater	4			2		1	1	2		4	9	3	18	3	13	13	5	127
Storm Petrel	814	1030	15	360	83	491	962	21	118	403	293	202	212	191	448	978	258	13787
Shag	59	37	97	99	200	77	35	141	124	53	116	67	120	115	90	148	165	2823
Buzzard																		3
Corncrake						1						2						3
Oystercatcher		1						4				2	2	1	2	1	4	27
Ringed Plover						1		1										2
Common Sandpiper							1	1	1									4
Great Skua			1	1		1			2	4		2			2			14
Kittiwake	13	11	3	2	21	15	14	16	3	4	3	8			16	12	14	296
Common Gull	5	11	11	6		16	8								4	1	1	68
Lesser Black-b Gull									1		2	2				4	1	10
Herring Gull	15	11	11	8	11	8	1	11	7	20	11	8	7	3	4	3	8	528
Great Black-b. Gull	2	27	5	21	18	12	3	4	13	12	15	10	4	1	2	15	11	438
Common Tern							1											1
Arctic Tern															44	104	16	164
Guillemot	892	312	425	261	800	141	172	123	1	51	53	169	46	8	145	154	161	8225
Razorbill	133	31	110	56	147	37	33	34	5	6	7	8	2	2	32	23	17	2666
Black Guillemot		1																2
Puffin	389	214	351	244	226	151	272	195	327	32	38	68	301	71	128	239	260	7138
Hooded Crow								1										1
Willow Warbler												1						2
Whitethroat												1						1
Sedge Warbler												2						2
Wren		1			2	4	2		2	1	1	2	6		2	1	3	26
Starling								3								1		4
Stonechat							2		1									3
Wheatear	50	24	2	2	2	7	1	2	4	2	4	5	10	4	7	11	3	244
Dunnock												1		1	1		2	5
Pied Wagtail								4				3	1			4		18
Meadow Pipit	12	1	4	1	3	5	1		4		1	2	15	3	1	5		63
Rock Pipit	1	2	2	2	2		3	21	10	1	2	4	3	1	2	11	1	88
Twite			1					1	1	1		3	1					10
TOTAL	2401	1739	1060	1090	1563	982	1527	593	624	594	555	575	748	405	943	1730	930	35446

RECENT RINGING RECOVERIES

STORM PETREL

TIARG have in the past year received details of 38 recoveries of birds ringed within Britain and Ireland in the months July - September and controlled by TIARG on Lunga in June - July 2015. These recoveries are summarised in the table below; all birds were ringed as adults (Euring code 4) with the exception of the bird from Mousa, Shetland, ringed as a chick.

Ringing Site	No. of controls at:		Time interval (years, days)		Distance Km	Direction (degrees)
	Fladda	Lunga	min	Max		
Mousa, Shetland		1		3 yr 323 d	495	219
Fair Isle, Shetland		1		314 d	441	220
Twinyess, North Ronaldsay		1		6 yr 344 d	396	217
Annagh Head, Bellmullet, Mayo,		3	348 d	4 yr 329 d	342	043
Seahouses, Northumberland		1		14 yr 362 d	314	289
Inner Farne, Northumberland		1		337 d	312	289
Calf of Man, Isle of Man	1	2	3 yr 335 d	17 yr 349 d	290	340
Cove Bay, Aberdeen		1		1 yr 341 d	273	256
Eilean nan Ron, Highland	1	3	336 d	7 yr 353 d	262	209
Faraid Head, Highland		1	310 d	6 yr 363 d	255	203
Sheepand Harbour, Ardglass		3	354 d	2 yr 298 d	251	348
Isle of May, Fife Region		1		9 yr 320 d	240	278
Fife Ness, Fife	1	3	1 yr 337 d	10 yr 341 d	235	276
Ailsa Craig, South Ayrshire		1		8 yr 319 d	160	330
Rinagree Point, Londonderry		1	12 yr 356 d	2 yr 356 d	147	008
Sanda Island, Kintyre		3	5 yr 332 d	18 yr 339 d	146	339
Ballyreagh, Londonderry	1	5	354 d	3 yr 356 d	146	007
Tullagh Point, Donegal	2		10 yr 349 d	17 yr 344 d	148	27

STORM PETREL RECOVERIES

Details are given below of four birds originally ringed on the Treshnish Isles and recovered elsewhere.

Abbreviations used:

Age 1 - Pullus
 4 - Hatched before this calendar year, exact year unknown
 6 - Hatched before previous calendar year, exact year unknown
 8 - Hatched more than two calendar years before year of ringing

Manner of recovery
 R - Caught and released by a ringer
 X - Found dead
 XF - Found freshly dead or dying

Storm Petrel

2679452 6 01/7/2015 Lunga
 R 06/8/2015 High Island, Galway, Eire
 409 km 217 degs 36 days

Storm Petrel

2679811 6 03/7/2015 Fladda
 R 16/7/2015 Calf of Man, Isle of Man
 291 km 160 degs 13 days

Storm Petrel

2664348 6 03/7/2015 Lunga
 R 11/8/2015 Eilean Nan Ron, Highland Region
 262 km 29 degs 39 days

Storm Petrel

2664348 6 29/6/2015 Lunga
 R 19/6/2016 Priest Island, Summer Isles, Highland Region
 173 km 19 degs 356 days

Storm Petrel recoveries relating to the Treshnish Isles as either birds ringed or controlled there, now number 651 (relating to 610 birds) of which many have been of birds from the Isle of Man & Sanda (70 & 155 respectively). The above retraps of birds ringed on the Treshnish Isles, were attracted in by tape lure on recapture and are therefore likely to have been wandering immatures (up to 4 years old) or failed breeders. Only 78 birds ringed on the Treshnish Isles have been recaptured elsewhere, 12.8% of all recoveries. This figure is remarkably close to the overall probability of 15% that Ratcliffe *et al.* (1998) found for non-breeder colony attendance in late June/early July.

Summated below is the age since ringing of birds captured in 2015 with connectivity to Treshnish Isles, having either been where originally ringed and/or in 2015 recaptured. As all birds were with one exception, originally ringed as adults i.e. at least one year old, the oldest birds are a minimum of 25 years old. Up until the end of 2015, of all Storm Petrels ever ringed and/or recaptured on the Treshnish Isles, the maximum age since ringing is 27 years and 338 days with the next at 24 years 267 days and a further four birds at 24 years. The UK record of age since ringing for this species is 37 years 11 days set in 2011 (Robinson *et al.* 2016).

Years since ringing	1	2	3	4	5	6	7	8	9	10	11	12
No. of birds	53	22	10	19	13	9	6	1	13	9	4	2
Years since ringing	13	14	15	16	17	18	19	20	21	22	23	24
No. of birds	2	3	5	4	1	2	1	2	0	0	0	3

RECOVERIES OF OTHER SPECIES

All other recoveries relating to the Treshnish Isles received since the previous TIARG report are listed below.

Shag

1445800 8 26/6/2013 Lunga
 X 06/6/2016 Rubha Boraig Moire, Isle of Tiree
 33 km 277 degs 1076 days
 Found dead for more than a week on shore

Herring Gull

GJ76798 1 02/7/2010 Lunga
 X 19/7/2015 Coroghon, Isle of Canna, Highland
 64 km 357 degs 1843 days
 Found dead for more than a week on high tide line

Guillemot

R31605	6	24/6/2003	Lunga
	R	15/6/2015	Port Ban, Isle of Colonsay, Argyll and Bute
			1247 km 163 degs 2074 days

Guillemot

X25610	1	06/7/1994	Isle of Canna, near Mallaig, Highland
	R	28/6/2015	Lunga
			64 km 174 degs 7662 days

Guillemot

R66718	1	05/7/2006	Isle of Canna, near Mallaig, Highland
	R	28/6/2015	Lunga
			64 km 174 degs 3280 days

Guillemot

R06572	1	09/7/2002	Isle of Canna, near Mallaig, Highland
	R	28/6/2015	Lunga
			64 km 174 degs 4737 days

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JNCC 2013. *Seabird Population Trends and Causes of Change: 1986-2012 Report* (<http://www.jncc.defra.gov.uk/page-3201>). Joint Nature Conservation Committee. Updated July 2013. Accessed 04/09/13.

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ACKNOWLEDGEMENTS

Firstly we would like to express our appreciation to the owners of the Treshnish Isles, THE HEBRIDEAN TRUST (www.hebrideantrust.org) for permission and funding to allow our continuing studies to be made on these fascinating islands.

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We thank Iain Morrison and his family, for providing our transportation between Mull and Lunga (<http://www.turusmara.com/>), and are grateful for his continuing advice, co-operation and help.

Any comments on this report, and suggestions for improvements for relaying information required by conservation agencies, are much welcomed.



Robin Ward being interviewed about breeding Puffins on Lunga by Liz Bonin for ITV Countrywise, May 2016 (Andrew Carter)

THE EXPEDITIONS 1971 – 2016

A list of participants through the years, with brief notes on the work performed

- 1971** Barry Lawson, Peter Deans, John Eatough, Shiela Anderson, Dick Hansford.
Full census and ringing.
This was the first trip and the Treshnish Isles were included in a “mopping up” of islands not fully covered during the 1969/70 “Operation Seafarer” National Seabird Census.
- 1972** Barry Lawson, Geoff Ward, Bevan Craddock.
Part census and ringing
Forced to leave after three days due to bad weather.
- 1973** Barry Lawson, Peter Deans, John Hodson, Geoff Cope.
Trip abandoned – unable to land due to rough seas
- 1974** Barry Lawson, Peter Deans, Geoff Ward, John Hodson, Geoff Cope, Tom Pool.
Census of Lunga and ringing
An RAF Helicopter landed a photographer onto Harp Rock, causing many bird casualties.
- 1976** Barry Lawson, Peter Deans, Geoff Ward, John Hodson, Geoff Cope, Tony Kilgallen.
Full census Lunga – Fladda and ringing.
Very hot summer.
- 1977** Barry Lawson, John Hodson.
Ringing only.
Called in on “Corryvreckan” boat cruise.
- 1978** Barry Lawson, Peter Deans, John Hodson, Simon Walker.
Full census Lunga and Sgeir a’ Chaisteil and ringing.
- 1980** Barry Lawson, Peter Deans, John Hodson, Simon Walker, David Lawson.
Ringing only
- 1981** Geoff Ward, Geoff Cope.
Part census and photography
- 1982** Barry Lawson, Peter Deans, John Hodson, Simon Walker, Andrew Lawson.
Ringing only.
- 1984** Barry Lawson, Peter Deans, John Hodson, Simon Walker.
Ringing only.
- 1986** Barry Lawson, Peter Deans, Geoff Ward, John Hodson, Simon Walker, Andrew Lawson.
Full census with ringing
- 1989** Barry Lawson, Peter Deans, John Hodson, Simon Walker.
Ringing only.
- 1991** Barry Lawson, Peter Deans, Simon Walker, David & Andrew Lawson, Jan Densham.
Ringing only.
- 1993** Roger Broad *et al.* (Scottish Natural Heritage charter)
Full census of The Dutchman’s, Lunga, Sgeir a’ Chaisteil and Fladda.
Chris Redfern *et al.*
Storm Petrel ringing.

THE EXPEDITIONS 1971 – 2016 (continued)

- 1994** Simon Walker, Mike Smith, Dennis Cooper, Jan Densham, Danny Lenain.
Full census Lunga and Sgeir a' Chaisteil and ringing.
Chris Redfern *et al.*
Storm Petrel ringing.
- 1995** Simon Walker, Mike Smith, Dennis Cooper, Jan Densham, Fergus Henderson.
Full census of Lunga and Sgeir a' Chaisteil and ringing.
- 1996** Simon Walker, Mike Smith, Dennis Cooper, Danny Lenain, Robin Ward
Full census of Lunga and Sgeir a' Chaisteil and ringing.
- 1997** Simon Walker, Dennis Cooper, Robin Ward, Damian Offer, Steve Willis, Chris Spray
Full census of Lunga – Fladda and ringing.
- 1998** Simon Walker, John Hodson, Dennis Cooper, Robin Ward, Damian Offer, Steve Willis,
Steve Worwood
Full census of Lunga – Fladda and ringing.
- 1999**
Week 1 Simon Walker, Dennis Cooper, Steve Willis, John Osbourne.
Week 2 Simon Walker, John Hodson, Dennis Cooper, Robin Ward, Damian Offer, Jan
Densham
Full census of the Treshnish Isles for *Seabird 2000* and ringing
- 2000**
Week 1 John Hodson, Dennis Cooper, Damian Offer
Full census of Manx Shearwater on Lunga for *Seabird 2000*. Limited passerine ringing. (May).
Week 2 Simon Walker, John Hodson, Dennis Cooper, Robin Ward, Steve Willis, Andrew Carter,
Steve Woodward
Full census of Lunga, Sgeir a' Chaisteil and the islands between Lunga – Fladda. Tern census for
Seabird 2000. Ringing.
- 2001** Simon Walker, John Hodson, Dennis Cooper, Robin Ward, Damian Offer, Andrew Carter
Completion of census for *Seabird 2000*. Full census of Lunga, Sgeir a' Chaisteil and the islands
between Lunga – Fladda. Ringing.
- 2002** Simon Walker, Robin Ward, Andrew Carter, Phil Bone, Sara Brown, Jackie Hay.
Full census of Lunga, Sgeir a' Chaisteil and the islands between Lunga – Fladda. Ringing.
- 2003** Simon Walker, John Hodson, Dennis Cooper, Robin Ward, Andrew Carter, Jackie Hay, Matt
Smith.
Full census of Lunga, Sgeir a' Chaisteil and the islands between Lunga – Fladda. Ringing.
- 2004** Simon Walker, Robin Ward, Andrew Carter, John Calladine, Tim Dixon, Shaun Micklewright,
Tina Wiffen.
Full census of Lunga, Sgeir a' Chaisteil and the islands between Lunga – Fladda. Ringing.
- 2005** Simon Walker, Robin Ward, Andrew Carter, Shaun Micklewright, Gareth Harris, George
Henderson, Tracé Williams.
Full census of Lunga, Sgeir a' Chaisteil and the islands between Lunga – Fladda. Ringing.
- 2006** Simon Walker, Dennis Cooper, Robin Ward, Andrew Carter, Shaun Micklewright, John
Calladine, Tim Dixon, George Henderson.
Full census of Lunga, Sgeir a' Chaisteil, Cairn na Burgh More, Cairn na Burgh Beg and the islands
between Lunga – Fladda. Ringing.

THE EXPEDITIONS 1971 – 2016 (continued)

- 2007** Simon Walker, Robin Ward, Andrew Carter, Shaun Micklewright, George Henderson, Tim Dixon, Tracé Williams.
Full census of Lunga, Sgeir a' Chaisteil and the islands between Lunga – Fladda. Ringing.
- 2008** Simon Walker, John Hodson, Robin Ward, Andrew Carter, Shaun Micklewright, George Henderson, Tim Dixon, John Calladine.
Full census of Lunga, Sgeir a' Chaisteil and the islands between Lunga – Fladda. Ringing.
- 2009** John Hodson, Robin Ward, Dennis Cooper, Andrew Carter, Shaun Micklewright, Tim Dixon, Jurjen Annen, Claire Dovey.
Full census of Lunga, Sgeir a' Chaisteil and the islands between Lunga – Fladda. Ringing.
- 2010** John Hodson, Robin Ward, Andrew Carter, Shaun Micklewright, Tim Dixon, Tracé Williams, Jurjen Annen, Claire Dovey.
Full census of Lunga, Sgeir a' Chaisteil and the islands between Lunga – Fladda. Ringing.
- 2011** John Hodson, Robin Ward, Andrew Carter, Shaun Micklewright, Tim Dixon, George Henderson, Jurjen Annen, Claire Dovey.
Full census of Lunga and Sgeir a' Chaisteil. Ringing.
- 2012** John Hodson, Robin Ward, Dennis Cooper, Tim Dixon, Steve Willis, Jurjen Annen, Claire Dovey, Richard Barnes, Simon Roberts.
Full census of Lunga and Sgeir a' Chaisteil. Ringing.
- 2013** John Hodson, Robin Ward, Dennis Cooper, Andrew Carter, Tim Dixon, Shaun Micklewright, Jurjen Annen, George Henderson.
Full census of Lunga and Sgeir a' Chaisteil. Ringing.
- 2014** John Hodson, Robin Ward, Andrew Carter, Tim Dixon, Shaun Micklewright, Jurjen Annen, Claire Dovey, Cerian Thomas.
Full census of Lunga and Sgeir a' Chaisteil. Ringing.
- 2015** Robin Ward, Andrew Carter, Tim Dixon, Shaun Micklewright, John Calladine, Stuart Brown, Chris Heward, Daniel Plunkett.
Full census of Lunga and Sgeir a' Chaisteil and the islands between Lunga – Fladda. Ringing.
- 2015** Robin Ward, Andrew Carter, Tim Dixon, Jurjen Annen, Chris Heward, Daniel Plunkett, Matt Smith, Lila Buckingham.
Full census of Lunga, Sgeir a' Chaisteil, Cairn na Burgh More, Cairn na Burgh Beg and the islands between Lunga – Fladda. Ringing.



TIARG team on the return trip home (Robin M. Ward)

RING SERIES USED ON THE TRESHNISH ISLES SINCE 1927*

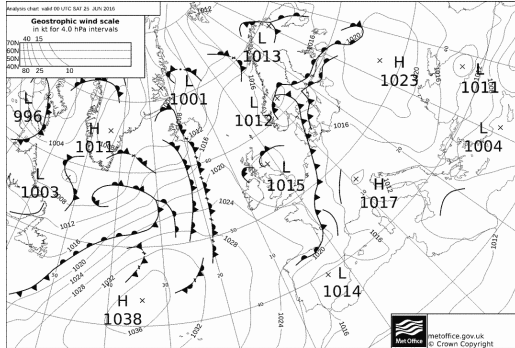
SHAG RINGS	A2 RINGS	E RINGS	F RINGS	G RINGS	H RINGS	RAZORBILL RINGS	GUILLEMOT RINGS	MISC. RINGS
1078761 – 800	2010581 – 583	EF75001 – 500	FB22601 – 700	GH21301 – 350	HT03619	K10701 – 1000	R07001 – 100	1F4094 - 097
1080101 – 110	2101991 – 2000	EG23501 – 700	FB23401 – 500	GN85301 – 400	HT09001 – 004	K13001 – 300	R19401 – 20200	C331894 - 900
1087111 – 120	2121401 – 500	EG23721 – 780	FC52551 – 558	GJ35401 – 500	HT17871 – 890	M36341 – 350	R24001 – 26350	E196501 - 520
1105561 – 570	2167051 – 068	EG23801 – 999	FC52571	GJ76001 – 800	HT17931 – 940	M46501 – 800	R31601 – 900	JB44316
1123531 – 540	2170201 – 203	EG61000 – 500	FC74501	GJ99081 – 082	HT34021 – 030	M55001 – 500	R51501 – 2000	K039209 - 230
1123541 – 550	2238501 – 600	EG88501 – 9000	FH36101 – 200	GK34351 – 354	HT68201 – 210	M72451 – 800	R65501 – 6000	K419290 - 295
1123671 – 690	2261001 – 2350	EH33377 – 380	FR13606 – 636	GK50214 – 220	HT68221 – 226	M85501 – 800	R72501 – 4000	NA84296 - 299
1123961 – 970	2284001 – 5000	EH54501 – 55000	FR14401 – 500	GK50551 – 570	HT80301 – 400	M88001 – 300	T14001 – 5000	KX83101 - 106
1159651 – 700	2309901 – 10000	EH89256	FR51201 – 300	GK62985 – 990	HW05351 – 360	M92501 – 700	R73001 – 4000	KX83116 - 118
1163701 – 740	2311301 – 400	EH89260	FR56351 – 400	GK90821 – 840	HW06951 – 7000		T82001 – 300	RF10011-020
1168001 – 100	2311501 – 2000	EH98001 – 300	FS21478	GK91471 – 490	HW08994 – 09000		X39501 – 40000	LA59201-300
1170601 – 700	2348001 – 500	EK29501 – 900	FS51016 – 500	GM78756	HW37361		X56501 – 57000	DD90261-270
1187901 – 950	2236801 – 7000	EK72657 – 660	FS87001 – 100	GP13416 – 450	HW42996 - 3000		X63001 – 500	CBV601-700
1237401 – 450	2369301 – 400	EK91471 – 490	FV10611 – 620	GP47917	HW68101 – 110		X67501 – 68000	V711401-500
1322951 – 960	2405001 – 6000	EL19801 – 276	FV10646 – 650	GP62201 – 207	HW68161 – 170		X79501 – 80000	TJ18901-9000
1328481 – 490	2430701 – 900	EL52501 – 3000	FV54446 – 460	GP74501 – 75000	HW74971 – 990		X99001 – 500	BT09481-490
1350801 – 900	2436501 – 7000	EN22001 – 500	FV62410	GR44201 – 250	HW87211 – 225		Y09403 – 405	NV42851-860
1357901 – 8000	2444501 – 5000	EP85608 – 612	FV62416 – 226		HW96181 - 200			SR49601-700
1366901 – 7000	2446202 – 233	EP85687 – 700	FV96681 – 684		HW94907 – 913			A297482-500
1373751 – 3900	2455501 – 6000	ER03701 – 800	SS96101 – 300		MA12551 – 600			B229951-992
1378401 – 8500	2480001 – 500	ER48401 – 404			MA15801 – 900			BV70669
1399601 – 700	2513501 – 4000	ES64018 – 189	A2 RINGS		MA44251 – 900			SV58551-600
1408301 – 500	2538001 – 800	ET19501 – 700	(cont)					BV28661-670
1414301 – 500	2542001 – 3000	ET52501 – 3000	2664001 – 5000					SV58601-616
1421701 – 800	2554001 – 500	ET80001 – 500	2679001 – 80000					
1417001 – 7100	2560001 – 1000	EX12501 – 3000	2725001 – 6000					
1445601 – 800	2579001-80000	EW18001 – 500	640801 – 640900					
1491001 – 100	2605001 – 5500	EW50001 – 500						
1497001 – 100	2624001 – 5000	EZ30001 – 1000						
	2650101 – 61000							

*All rings series known (to TIARG) to have been used on the Treshnish Isles are documented irrespective of ring ownership.

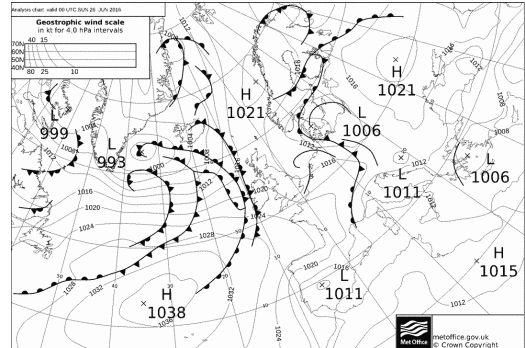
Appendix 1

Fig 1. (A-H). Synoptic charts showing the United Kingdom, 25 June to 2 July 2016. The weather over NW Scotland during the period was dominated by low pressure centres and fronts moving in from the Atlantic.

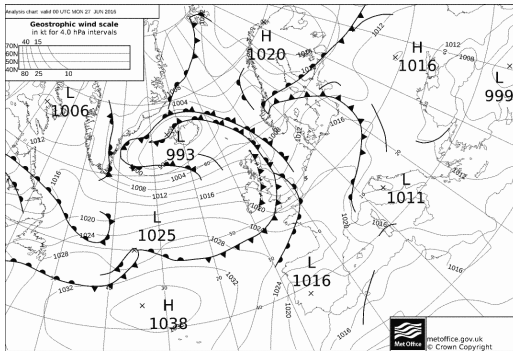
(A)



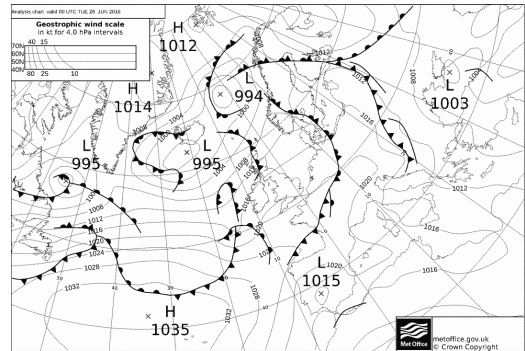
(B)



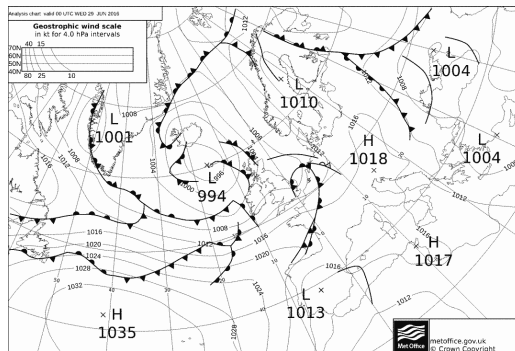
(C)



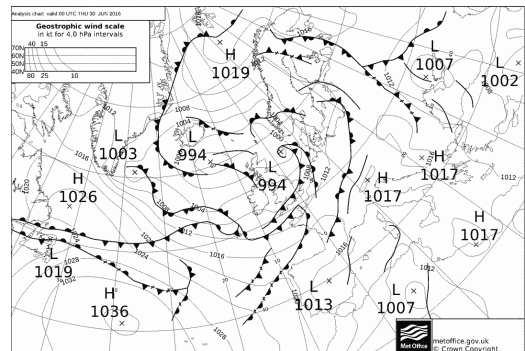
(D)



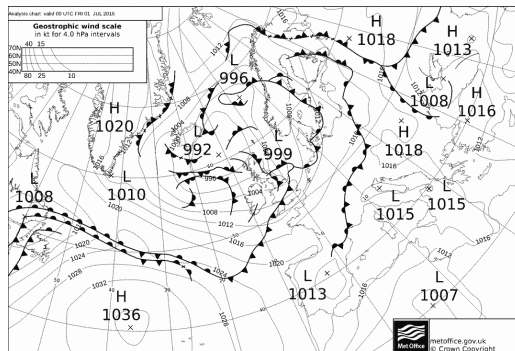
(E)



(F)



(G)



(H)

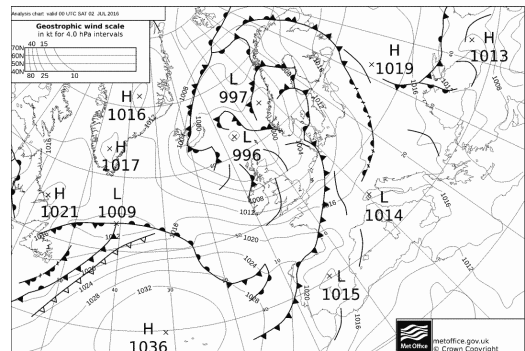


Table 1. Selected meteorological data recorded at Tiree during the period 25 June to 2 July 2016. Maximum daily temperature (MaxT), minimum daily temperature (MinT), and mean daily temperature (MeanT). Wind direction, pressure and significant weather recorded at 12:00 h (<https://data.gov.uk/metoffice-data-archive>).

Date	MaxT °C	MinT °C	MeanT °C	Wind Direction	Pressure hPa	Significant Weather
20160625	15.1	10.0	12.8	N	1018	Sunny intervals
20160626	14.2	7.7	12.2	S	1011	Mist
20160627	14.1	9.7	12.4	W	1013	(Black) Low-level cloud
20160628	13.0	10.0	12.1	S	1007	(White) Medium-level cloud
20160629	15.0	10.0	12.2	S	998	(Black) Low-level cloud
20160630	13.1	9.9	11.7	SW	1000	(Black) Low-level cloud
20160701	14.0	9.6	11.3	W	998	Sunny intervals
20160702	14.1	9.4	12.1	WNW	1003	(White) Medium-level cloud