Treshnish Isles Auk Ringing Group

Report for 2005

Robin M. Ward

Compiled by
Robin M. Ward

Expedition dates:
18th June – 25th June 2005

Expedition members:
Simon Walker (Leader), Andrew Carter,
Gareth Harris, George Henderson, Shaun Micklewright,
Robin Ward, Tracé Williams.

Correspondence:
Simon Walker, Park Head, Norton Downs, Bromyard, Herefordshire, HR7 4PF
e-mail: simon.walker9@btinternet.com

CONTENTS

INTRODUCTION

Since 1971, the Treshnish Isles Auk Ringing Group (TIARG) has undertaken to monitor, through ringing and census work, the breeding seabird populations of the Treshnish Isles, Argyll (Walker & Cooper 1996). This report summarises the results of the Group's 27th expedition to the Treshnish Isles during 18th June – 25th June 2005.

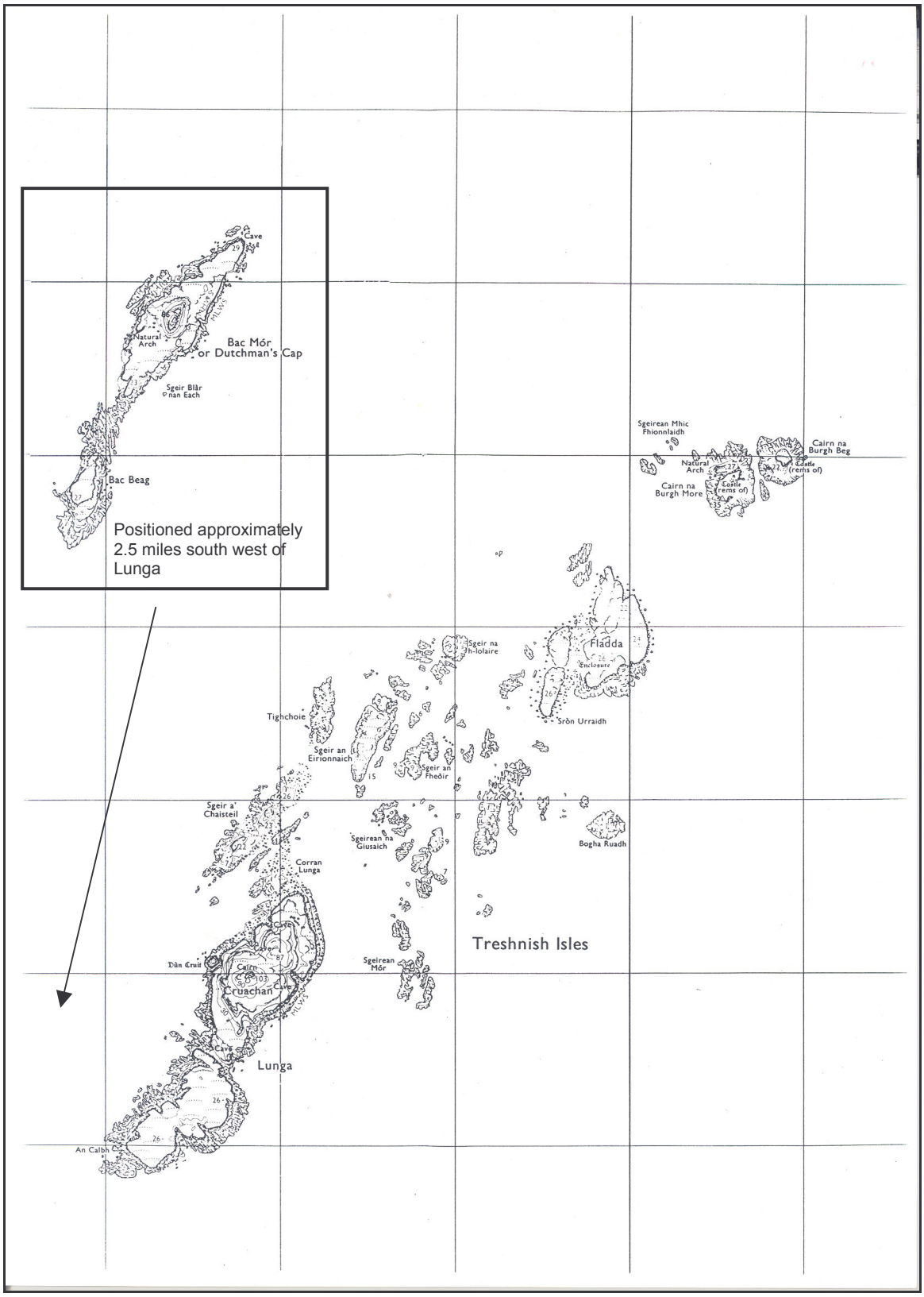
As in previous years, the expedition's base was set up around the ruined village site at the northern end of Lunga. The majority of the week's fieldwork was centred upon Lunga & Sgeir a Chaisteil where the regular annual full seabird census and the systematic ringing of specific seabird colonies was undertaken. A week dominated by unfavourable wind conditions and reduced colony attendance by auks resulted in very few of these birds being fleyged, whilst the opportunity to visit the other islands when weather conditions allowed enabled a sample of Storm Petrels to be ringed on Fladda, the first time since 2001. The unfavourable weather conditions, rain at night and unfavourable wind conditions, meant less additional census and ringing activity was achieved than hoped for. This year, the first repeat visits to six permanent and repeatable seabird monitoring plots set up in 2004 were made providing the Group with quantification of seabird productivity in addition to the perspective provide by the annual census.

All TIARG census and ringing data are fed into two national monitoring programmes, the Seabird Colony Register (J.N.C.C.) and National Ringing Database (British Trust for Ornithology), respectively. The data supplied are of great conservation value as they are the sole means by which the seabird colonies of the Treshnish Isles are currently monitored. The conservation importance of these islands is recognised by their designation as a Special Protection Area by the UK Government for the breeding colonies of seabirds they support. Financial support for the monitoring work TIARG undertook in 2005 was given by the Hebridean Trust (www.hebrideantrust.org).

Highlights of the expedition were an `on island` meet up with Hebridean Trust staff, the ability to take advantage of the weather to survey and ring on adjacent islands thanks to the Hebridean Trust RIB and the ringing of the first Corncrake and adult "Bonxie" (Great Skua) by the Group. This expedition in particular instilled in Group members the value that it's 12 years of annual ringing and census data has been to enable recognisation and quatification of the extent of the poor productivity witnessed amongst some seabird species. This was against a backdrop of casual visitation suggesting until then that all was well in the seabird colonies of Lunga.

Any comments on the report and how future editions can be improved upon for relaying information required by conservation agencies are much welcomed. We are currently in the process of developing our own web site.

MAP OF THE TRESHNISH ISLES



WEATHER

Km/hr	Beaufort wind scale	Wind Force
6-11	2	light breeze
12-19	3	gentle breeze
20-28	4	moderate breeze
29-38	5	fresh breeze
39-49	6	strong breeze
50-61	7	near gale

18th June Morning: Thick mist, calm seas, very humid, 19°C, wind force 2-3
Afternoon: Heavy showers, rain during night, Wind force 4-5, min. temperature 10°C

19th June Morning: Very misty start, still, warm, humid, lots of midges. Mist clearing by 0930
Afternoon: Very sunny, cirrus clouds, blue skies, warm, slightly humid, 23-24°C, Wind force 3 SSW. By late evening wind had dropped to Force 2, warm,

20th June Morning: Misty start, warm, bright blue skies, very sunny, 22°C max., Wind force 3-4 SW/SSW.
Afternoon: Min 9C. Clouding over, 8pm onwards, steady rain from midnight onwards.

21st June Morning: Wet start after rain all night. Warm bright, blue skies, sunny 21-22C, wind force 4 SSW/SW. Sun burned!
Afternoon: Heavy rain came in on front from 9pm onwards. Min temperature 12°C.

22nd June Morning: Horrendous rain during night. Morning still wet, cloudy, wind force 3 but warm. Max. temperature 21°C.
Afternoon: Temperature dropped, still cloudy, overcast, wind force 4 SW, rising to 5 by nightfall. Warm. Min. temperature 12°C.

23rd June Morning: Overcast start, but brightening later. Light breeze, force 2. Warm and overcast all day, occasional showers. 21°C.
Afternoon: Warm weather extended into evening, temperature dropped to 10°C

24th June Morning: Bright blue skies, sunny, wind force 2 SW, 19-20°C
Afternoon: Bright and sunny all evening, wind increasing to force 4-5 NW.

25th June Morning: Cool start but dry aside from dew! 9°C, Slightly overcast, wind force 2.
Afternoon: Brightened, blue skies, sunny, temperature rose to 17-18°C, wind force 3

Gareth Harris

SYSTEMATIC LIST OF BIRDS FOR 2005

The following systematic list is a brief account of those bird species seen whilst the Treshnish Isles Auk Ringing Group were present on the Treshnish Isles, 18th June – 25th June 2005. Unless specified, no records are available for the Cairn na Burghs and the Dutchmans. The status comments (first paragraph) refer to the species' occurrence during the breeding season as recorded by previous years expeditions.

A detailed breakdown of breeding seabird numbers on Lunga and Sgeir a Chaisteil in 2005 is provided in a subsequent section of the report. For several seabird species (Shag, Kittiwake, Guillemot) the census results for 2005 show a marked reduction in numbers from previous years on Lunga. Furthermore, for these species the majority of individuals breeding were still incubating eggs or if brooding young, most were small indicative of a late breeding season as in 2004. Late or very late breeding by these species was also reported in 2004 for colonies immediately to the north of the Treshnish Isles e.g. Canna and Handa, as well as elsewhere in Scotland and eastern England (Mavor *et al.* 2005). The breeding season of seabirds in 2004 was also the least productive on record (Mavor *et al.* 2005). As in 2004 (Mavor *et al* 2005), at the time of writing, the available evidence suggests that severe food shortage is the primary causative factor in the poor and late seabird season being reported in 2005 around north and west coast Scottish waters.

For some seabird species, average rates of population change have been calculated by linear regression of the natural logarithms of the breeding numbers year on year. The significance of the slope of the regression, equivalent to the average annual rate of increase or decrease in the population, is then assessed using the t-statistic (Fowler & Cohen 1986).

Red-throated Diver *Gavia stellata*
Rare visitor

One bird was seen flying north east of the Treshnish Isles on the 19th June.

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

Breeding was confirmed on Fladda, Lunga and Sgeir a Chaisteil. 5 apparently occupied sites were also noted on Cairn na Burgh More's north and west facing cliffs during TIARG's homeward passage on 25th June. Over the long term, 1994-2005, the average rate of change in the numbers of breeding birds on Lunga is calculated at -3.3% per annum, this trend being significant ($P<0.05$). For a similar period, 1993-2003, Mavor *et al.* (2005) reports no significant trend in the cumulative Fulmar population of colonies monitored in this region, S.W. Scotland. The breeding population for Lunga and Sgeir a Chaisteil in 2005 was estimated at 587 pairs based upon apparently occupied sites (AOS), a 7% increase from 2004 continuing the previous year's reversal in the recent long-term decline in population. Though overall no pattern could be discerned in the occurrence of recent change of the different count sectors, Sgeir a Chaisteil had substantially increased again for the second year by 62%; from 87 in 2004 to 141 AOS in 2005.

Manx Shearwater *Puffinus puffinus*
A regular 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 at night on Lunga. During the week small flocks of between 2 – 15 birds were regularly noted flying past distantly offshore. On the evening of the 18th June a raft of 250 birds fed to the south-west of Harp Rock, this number surpassed by a feeding flock of 600 birds off the east coast of Lunga on the afternoon of the 24th June.

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* (1998 – 2002).

Many birds were heard churring from burrows on Fladda and Lunga. A repeat census of the breeding colony occupying the Village remains at Lunga's north end identified 30 apparently occupied sites an increase from 25 AOSs in 2001. A similar repeat census of the Boulder Beach colony where in 2001 450 AOS were estimated, failed to provide any birds for the previously used 8m x 18m calibration plot on two consecutive days; at least 15 responses were required during the initial playback. A complete census was impractical given the time available whilst random playing of the recording used for censusing elicited only

small numbers of birds across the Boulder Beach. It is considered rough seas earlier in the year may have inundated and structurally changed the nesting burrows. Details of both surveys are provided later in this report (Carter & Ward 2005a & b). In 2004, similar repeats of tape-play back surveys on Priest Island (north-west Scotland) and Village Bay, Hirta, St Kilda, both found marked declines in AOS compared with surveys in 1999 (Mavor *et al.* 2005). As concluded by Insley *et al.* (2004; cited by Mavor *et al.* 2005) in respect to Priest Island, it is difficult to know whether there has been a genuine reduction in the breeding populations of all three colonies, or whether poor breeding conditions in the latest survey years led to low level of burrow attendance.

Mist netting on Lunga at the Village (2 x 18m nets) and Boulder Beach (west; 2 x 18m nets), and on Fladda (1 x 18m net) provided catches of 58, 195 and 346 birds respectively. Over 80% of these birds were actively breeding as established from well developed brood patches. Further attempts to mist net on Lunga and Fladda were thwarted by rain.

Gannet *Sula bassana*
Regularly seen offshore

Up to 10 birds, all adults, were recorded daily feeding or passing offshore of Lunga.

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 Fladda, Lunga and Sgeir a Chaisteil. The breeding population for Lunga and Sgeir a Chaisteil was 164 and 20 pairs respectively, based upon a nest count. When combined, the number counted has declined by 46% from that in 2004, reversing the trend of an overall population increase noted since 1994. The population on Lunga had more than doubled over the period 1994-2004, for which the average annual rate of change was 6.0% (highly significant trend, $P<0.01$).

The vast majority of breeding Shags were incubating eggs or brooding very young chicks with few nests containing the well developed chicks most would be expected to hold by the end of June. Though this was also the case in 2004, there were proportionally more well developed chicks in the colonies than in the current year. This was reflected well by the number of broods found of a suitable size to ring. In 2004, 155 pulli were ringed (and rings used with birds left unringed) on Lunga where as in 2005 only 26 pulli could be found that were of a suitable size to ring.

No breeding pairs were noted on Sgeir an Eirionnaich. Though no counts were made on Fladda, the breeding population was considered to be much reduced in numbers with most breeders still incubating eggs and small young.

Greylag Goose *Anser anser*
Breeding noted in some years, with a moulting flock present during late summer

The late summer moult flock had built up to at least 90 birds by 19th June, typically most residing around the islands of Sgeir an Eirionnaich, Fladda and Sgeir an Fheòir. Extensive areas of vegetation heavily grazed and trampled by geese were located once again on Sgeir an Eirionnaich and at the south end of Lunga. One silver neck collared adult was recorded in the company of 3 juveniles on 23rd June at Sgeir an Fheòir; this individual is considered to have been ringed on Tiree.

Year	1998	1999	2000	2001	2002	2003	2004	2005
Peak count	25	160	240	268	79	101	316	90

Eider *Somateria mollissima*
Regularly breeds in small numbers

Only three broods were noted around Lunga comprising of 2 ducks with three ducklings in area 6, and broods of 2 and 1 ducklings at Corran Lunga where also a duck incubated. Elsewhere one recently used nest was located on Sgeir an Fheòir, whilst 2 (of 2 & 3 ducklings) and 3 broods were noted around Sgeir a Chaisteil and Fladda respectively.

The waters between Fladda and Lunga supported the usual late summer moult flock of birds, typically male-biased; 42 were counted on 19th June. 13 females were noted with the brood of 2 ducklings at Corran Lunga on 23rd June.

Buzzard *Buteo buteo*
Until recently, one pair bred in most years

Two birds of undetermined age were regularly seen frequenting the north east coast of Lunga, and

at times elsewhere. Neither individuals were seen to carry food or exhibited wing moult as breeding adults have in past years (primary moult generally begins during incubation for females (Ginn & Melville 1983)).

Kestrel *Falco tinnunculus*
Rare visitor

One bird was seen to fly across from the south end of Lunga to hover over the southern slope of Cruachan on the 21st June.

Peregrine *Falco peregrinus*
Seen most years with breeding known to occur on adjacent coasts

A male was seen stooping at Puffins at Harp Rock on 18th June. What was presumably the same male was later seen on the 22nd flying along the north-west coast of Lunga to behind Sgeir a Chaisteil.

Corncrake *Crex crex*
Probably a regular breeder in small numbers

Three, possibly four, calling males were noted during the week. One calling male showed uncharacteristically well to island visitors from beside the Well on the Boulder Beach with many close encounters and photos taken from the well trodden path. On one occasion a second smaller bird (female) was briefly seen on the path being chased by the calling male. This male and a second calling from the base of the same cliff but to the south of the path, regularly exchanged calls through to 20th June. Neither bird was then registered until the 22nd when the same presumed individuals were seen calling, later fighting, on the plateau immediately to the north of the first gully north of Harp Rock. Thereafter only one bird was regularly reported calling from this area whereas a male was then on occasions heard on 24th from below the middle column of Sgeir á Chaisteil; a bird called from this locality in 2004. Elsewhere a third calling male was in residence typically to the north and east of the Village, Lunga. This individual presented itself as a rare bycatch for ringing during a Storm Petrel mist netting session at the Village on 23rd June. Late evening and night vigils of other areas where in the past calling birds have been recorded e.g. cliff top Bracken immediately south of Shearwater Gully, registered no birds.

Robin M. Ward

Oystercatcher *Haematopus ostralegus*
Regularly breeds in small numbers

Only 7 breeding pairs were found to be holding territories on Lunga's beaches and rocky outcrops (2 in area 8, 1 at Corran Lunga, 1 in area 6, 1 in area 5, 1 at Tarbet west and 1 in area 3) with broods noted at area 5 (1 young) and Tarbet west (2 young), a clutch of 2 eggs in area 8 and a bird incubating at Corran Lunga. Visits to Fladda confirmed breeding for two pairs on the south-east coast (2 eggs & 2 youngs respectively) with single pairs alarming in South and North Haven. Elsewhere 6 breeding pairs held territory on Sgeir a' Chaisteil of which two had broods of 3, and single pairs alarmed on Sgeir an Fheòir and Sgeir an Eirionnaich. Presumed failed breeders/immatures were evident by their virtual absence, with no more than two seen at any one time, and most sightings typically from the south end of Lunga.

Ringed Plover *Charadrius hiaticula*
One or two pairs breed

One pair was successfully raising two young on the southern half of the Landing Beach, this area regularly transversed by visitors coming a shore and following the clearly demarcated footpaths. In the territory of a second pair at the northern tip of the Landing Beach a nest with two recently crushed eggs were found, this area crossed by passengers at low water from one regularly visiting vessel this season. This highlights one of the benefits of the provision and maintenance of a clear path through the Landing Beach as provided for passengers arriving with Turas Maria and the Grant's boat. Elsewhere single pairs were found incubating clutches of 4 eggs on the landing beach of Sgeir a' Chaisteil and on Fladda's south-east coast.

Dunlin *Calidris alpina schinzii*
Rare visitor

One bird was seen on several dates on the Landing Beach and Corran Lunga, presumably a bird from the *C.a.schinzii* population breeding across the Hebrides.

Snipe *Gallinago gallinago*
Regularly breeds in small numbers

Only two male birds were apparently on territory as discerned from drumming birds, at Lunga's north end, at and to the east of the Village, with often four birds in the air together noted. Singles were regularly seen or flushed from around the plateau on which the Village lies. North of Tarbet additional territories were suggested a drumming and chipping bird over the plateau south of Cruachan on the 24th June and perhaps single birds flushed above the gully north of Harp Rock. At the south end of Lunga, one drumming bird in area 7 and several singles flushed on various dates from areas 6 & 7 suggested breeding by at least one pair in area 7.

Elsewhere birds were only flushed or seen on Fladda with two in the iris bed to the east of South Haven, one on the island's west half and at least 5 birds disturbed on TIARG walking the eastern half of the island.

Whimbrel *Numenius phaeopus*
Rare visitor

Three calling birds were seen flying high south on the afternoon of the 24th June.

Common Sandpiper *Actitis hypoleucos*
One pair occasionally breeds

Two pairs were daily in attendance alarming and thus suggestive of breeding on Corran Lunga. On the other islands visited, one pair vigorously alarmed at intruders on Sgeir an Fheòir whereas on Fladda unusually no individuals were recorded during both of two visits where breeding is regularly suspected.

Arctic Skua *Stercorarius parasiticus*
Small numbers seen daily presumably from the breeding grounds on Coll where there were 12 apparently occupied territories in 2004 (Mavor *et al.* 2005)

Up to 4 birds at any one time were seen daily, generally offshore from the Harp Rock - Sgeir a' Chaisteil coast. Dark phase birds were typically more common with no more than two light phase birds being seen at any one time. 2 dark & 2 light phase birds were observed over Fladda on 19th June.

Great Skua *Stercorarius skua*
A regular but small breeding population has become established since confirmation of breeding by a pair in

1998.

No evidence of breeding was established for a pair of (unringed) birds that regularly occupied the high ground south of the Tarbet (area 6), a locality where breeding has previously been proven. When disturbed both birds would vacate the area, often not returning within half an hour. Pellets found on the hummocks regularly frequented by this pair of birds suggested a diet predominately of unidentified seabirds but also some fish.

Brief visits were made to previously held breeding territories situated on the west and east coast of Fladda where lone pairs had been observed from Lunga to regularly hold vigil. Breeding was only confirmed for the pair occupying the north-east territory where one small chick was found.

As the last hour's fleyging of the trip came upon the team at Harp Rock, a Great Skua came in direct from Coll, and amazingly, flew within reach of Simon's fleyg. Finally with the assistance of George, this powerful mean beast was securely brought under control and duly ringed, the first adult ever ringed by TIARG.

Common Gull *Larus canus*

In recent years has become established as a regular breeding species in small numbers

An estimated 9 breeding pairs (20 adults noted on site) were localised on the low-lying basalt rock outcrop of Fladda's south-east coast in a colony where breeding has been noted annually since 1998. This reduction in numbers from that of 2003 follows a period of continuing population increases since the colony's establishment in 1998.

Lesser Black-backed Gull *Larus fuscus*

Regular breeding species in small numbers

No confirmation of breeding or indeed birds was recorded on Lunga. Since the start of annual seabird censuses of Lunga and Sgeir a Chaisteil in 1994, the species breeding population has until now fluctuated between 1 and 9 pairs with no significant trend (1994-2004). Elsewhere the species was noted as present within the gullery at the north-east of Fladda.

Herring Gull *Larus argentatus*

A common 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 13 pairs), Sgeir a Chaisteil (6 pairs) and Fladda (no count available). Birds were also suggested to be breeding from the presence of paired adults on territory on Sgeir an Eirionnaich (4+ pairs), Cairn na Burg Beg (1-2 pairs) and Cairn na Burg More (26 pairs). No birds were occupying territories on Sgeirean na Guisaich, Sgeir na H-Iolaire or Sgeir an Fheòir. These data continue to show a continuation in the decline of the breeding population of Lunga and the intervening islands between there and Fladda, since the late 1990s. The average rate of change in the numbers of breeding birds on Lunga for the period 1994 – 2005, is calculated at -12.7% per annum, this trend being highly significant ($P<0.01$). In Scotland and specifically the Argyll & Bute region, the breeding population has declined between the two most recent national seabird censuses (1986 *Seabird Colony Register* and 1999-2001 Se*abird 2000*), though the situation at a colony level has been variable within the region with some stable (Mitchell *et al.* 2004) and continuing to be so (Mavor *et al.* 2005). A complete census of the Treshnish Isles is required to assess whether the decline, for which there is no obvious explanation, is real or merely a re-distribution of birds between the different islands.

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).

Breeding was confirmed on Fladda (most in north-east gullery; no count available), Lunga (30 pairs), Sgeir a' Chaisteil (1 pair), Sgeir an Eirionnaich (18+ pairs; 35+ adults) and Sgeir an Fheòir (2-3 pairs with 2 broods located). Scanned from adjacent land or a boat, breeding was considered to have occurred on Sgeirean na Guisaich (north 1 pair, south 1 pair), Cairn na Burgh More (2 pairs) and Cairn na Burgh Beg (1-2 pairs). During the period 1994-2005 the population of Lunga has fluctuated widely (30-67 pairs, no significant trend) though the population has now reached a new low since when annual monitoring of Lunga and Sgeir a' Chaisteil began in 1994.

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 only confirmed on Lunga where the main colony is situated around Harp Rock. The

numbers of apparently occupied nests on Lunga totalled 604 which excludes any nests in the part of sector 11 for which access to was obstructed by recent rockfall; 76 nests were counted there in 2004. Irrespective of the absence of data from the latter area, the breeding population in 2005 is at or close to it's lowest level since annual monitoring of Lunga began in 1994. To put it into context, this count is only 66% of the 909 nests counted in 2004 (with the omission of counts from the area not surveyed in 2005). Previous to 2005, the population had undergone an overall increase following a period of stability at c.725 pairs during the mid 1990s. The average rate of change in the numbers of breeding birds on Lunga for the period 1994 – 2004 was calculated at 3.8% per annum, this trend being highly significant ($P<0.01$). This is comparable to the overall trend reported for the seabird colonies monitored over a similar period (1991 – 2004; 4.5% p.a.) in S.W.Scotland (Maver *et al.* 2005); these include Lunga.

In common with several other breeding seabirds on Lunga, the vast majority of pairs were breeding late some brooding young chicks but most still incubating eggs.

Typically a flock of up to 450 adults and including the occasional 1st summer bird, was noted daily on rocks between Lunga and Sgeir a Chaisteil.

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).

A ternery was present for the third consecutive year, though in smaller numbers, on the islet immediately adjacent to Sgeir an Eirionnaich. Approximately 70 birds took flight from the ternery on TIARG's arrival upon Sgeir an Eirionnaich on 20th June. No evidence of breeding was found elsewhere.

Arctic Tern *Sterna paradisaea*

Irregular breeding species

Only four adults were noted amongst the Common Terns *Sterna hirundo* put to flight at the ternery whilst TIARG members visited the adjacent island of Sgeir an Eirionnaich.

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 only confirmed on Lunga and Sgeir a Chaisteil, the main concentration typically located within the vicinity of Harp Rock with 6757 adult birds estimated. The numbers of individuals counted on Lunga and Sgeir a Chaisteil totalled 6943, a 33% decrease from 2004. Though a marked decrease, this does follow a similarly marked increase from the previous year (42%). Furthermore the resultant count for 2005 still just falls within the range of variability exhibited from counts made since annual monitoring began in 1994 of Lunga and Sgeir a' Chaisteil. This inherent variability is in part a consequence of only a proportion of birds present on cliffs at a given time are actually incubating an egg or brooding a chick. Others present will be off-duty partners, failed breeders, or non-breeders, and their attendance can change according to time of day, weather and feeding conditions. Though counts are standardised to allow for time of day and to some extent the weather, they can not take into account fluctuations between years in prey abundance, which if scarce or distant from the colony may force birds to spend more time foraging and allow less time loafing in the colony.

The average annual rate of change for the population of Lunga is calculated at 2.5% p.a. for the period 1994-2005; the trend is not significant.

Closer inspection of the birds present in the colony revealed few brooding young and of those chicks seen most were not as well developed as would be expected, suggesting a late breeding season. Indeed a greater of proportion of breeding birds were apparently incubating eggs whilst many birds on the ledges would appear not to have bred or failed. This can obviously be modified following the outcome of the monitoring plots. Comparatively few adults returning from the sea were observed to be carrying fish, as in 2004, this perhaps related to fewer young requiring feeding but also poor food availability at that time for this species.

Usually the first chicks fledge during the expedition, these chicks seen in the evening to be led down and off the cliff by the parents thereafter being taken out to sea by the male. A characteristic call is given by the chick as it attempts to follow the adults through the colony. Neither chicks fledging nor the characteristic call were registered during this expedition, as also in 2004. When laying dates are late and food supply poor, chicks may fledge considerably younger than in a normal season as witnessed in 2004 at a monitoring plot in Shetland (Heubeck & Mellor 2005).

Overall these observations point to the 2005 breeding season being late and poor, probably on account of poor food availability as witnessed in 2004 and 2005 at colonies in northern Scotland in particular. Current understanding is that a warmer of the north-east Atlantic by 2c since the 1970s, has reduced

plankton productivity resulting in poor survival of sandeels at some spawning grounds. Though unusually large shoals of Sandeels and other fish were reported during the early summer in the waters surrounding the Treshnish Isles, these may have not necessarily been of the size classes available to or suitable for Guillemots and their chicks.

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. Birds were also seen at suitable breeding sites on Fladda.

The number of individuals counted on Lunga and Sgeir a Chaisteil totalled 1127, a 44% decrease from 2004 with this change reflected across all major count sectors for the species. In common with Guillemot, comparatively fewer adults were observed returning to the colony carrying fish than would be expected for late June. As most Razorbills nest within inaccessible crevices, it was not possible to ascertain the proportion of birds incubating, brooding or loafing. Amongst the few small boulder colonies accessible, young were heard, and when seen, these were small whilst as many birds were still incubating eggs.

The average annual rate of change for Lunga's population is calculated at 5.4% p.a. for the period 1994 – 2005; the trend is not significant. Within the past decade, however there was apparently a real significant period of increase (+24% p.a. 1994-1998; $P<0.05$) to a count of 1400 individuals followed by counts fluctuating between approximately 950 and 2000 birds thereafter (1999-2005; no significant trend).

Black Guillemot *Cepphus 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).

Adult birds were seen around Fladda (12 birds), Sgeir an Eirionnaich - Sgeir an Fheòir sea area (16) and Lunga's south end (11; area 6a). One bird was observed exiting a nest site halfway along the west facing cliffs of area 6a.

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 were occupying burrows on Lunga and Sgeir a' Chaisteil. Birds were also seen on suitable breeding sites at Fladda.

The estimated breeding population on Lunga and Sgeir a' Chaisteil totalled 2,841 AOBs, a 2% increase from 2004; where for counts of birds, one bird is taken to represent one AOB (Lloyd *et al*. 1991, Mitchell *et al.* 2004). For Lunga alone the estimate (2,526 AOB) is virtually the same as the maximum recorded since annual monitoring began in 1994 (2,549 in 2000) with the mean estimate for the same period being 1,875 AOBs (range 1,472 – 2,549, n=12). The average annual rate of change for Lunga's population is calculated at 2.5% p.a. for the period 1994 – 2005; the trend is not significant.

Much of this short-term variability ("noise") in the annual population estimate is to be expected due to the difficulties of censusing a burrowing nesting species. This is the case whether it is active burrows you are censusing when confusion at a distance is likely with other burrowing species present in the vicinity of the colonies i.e. Rabbits and Manx Shearwaters, or where burrows are hidden by vegetation or the viewing perspective necessitating counts of birds. The latter will include an unknown number loafing immatures and failed breeders with attendance of birds at a colony changing according to time of day, weather and feeding conditions. Though counts are taken when colony attendance by non-breeders is minimal i.e. mid-day, they can not take into account fluctuations between years in prey abundance, which if scarce or distant from the colony may force breeding birds to spend more time foraging and allow less time loafing in the colony.

In contrast to the other common species auks, Guillemot and Razorbill, Puffins were regularly seen to arrive at the colonies carrying beak fulls of small fish. What we were not able to be determined was the state of development of the chicks and whether the breeding season had been delayed as observed for some other seabird species.

Rock Dove *Columba livia*
Regular breeding species in very small numbers

One pair with nest was found in the cave of the gully to the south of Corran Lunga. On the east coast of Lunga another cave, south of Shearwater Gully, was being used by four birds seen leaving and entering it. Elsewhere on Lunga, a minimum of two birds were regularly noted along the east coast south of Tarbet.

Swift *Apus apus*
Irregular visitor

Following six birds foraging over the Village, Lunga, during the latter half of 22nd June, 1-2 birds were thereafter noted on occasions daily over the north end of Lunga.

Skylark *Alauda arvensis*
Regular breeding species in small numbers

The presence of at least five singing males on Lunga in 2005 reaffirms the encouraging situation noted in 2004 that followed a period of population decline since the 1990s that culminated in only one singing bird in 2003. Territories were over the north slope of Cruachan immediately above the Village, on the saddle of Cruachan above Shearwater Gully, in sector 7 and two in sector 6. 3 birds were noted during a brief visit to Fladda.

Swallow *Hirundo rustica*
An irregular visitor

A single bird was noted over the Village, Lunga, on the 19th, 22nd and 24th June.

House Martin *Delichon urbica*
A rare visitor

A single bird was noted over the north-east end of Lunga on the 19th and 21st June.

Meadow Pipit *Anthus pratensis*
Regular breeding species in small numbers

Widespread breeding species on Lunga and Fladda. Along the eastern side of Lunga between the Village and Tarbet, territory mapping estimated the presence of 16 pairs. From casual observations the species was considered equally abundant on the opposite side of Lunga with perhaps smaller numbers at the south end.

Rock Pipit *Anthus petrosus*
Regular breeding species in small numbers

Common breeding species along the coast of Lunga, with birds also noted on Fladda, Sgeir an Eirionnaich (4 pairs), Sgeir a Chaisteil (4+ pairs) and Sgeir an Fheòir (1 pair). On Lunga from Tarbet southwards and along the east coast between the Village and Tarbet, a minimum five and three pairs respectively were considered to be breeding. Food carrying, alarming and recently fledged young also confirmed breeding for several pairs along Lunga's west coast and on Corran Lunga.

Pied Wagtail *Motacilla alba yarrelli*
Irregular breeding species

Single adults were regularly seen around the Village, the Boulder Beach area and in the general vicinity of Harp Rock. The only confirmation of breeding on Lunga was the finding of a female incubating 4 eggs in nest in a cliff crevice between Shag Alley and Tarbet. Elsewhere single birds were noted on Fladda and Sgeir a Chaisteil, the latter individual aged as an adult.

Wren *Troglodytes troglodytes*
Regular breeding species, quite common where habitat suitable.

As in previous years, the vast majority of records of the species 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. Casual observations identified a minimum of four territories between the Village and Tarbet on Lunga, five on the west coast south of Tarbet, Lunga and three on Sgeir a Chaisteil. Several adults seen carrying food and faecal sacs indicated perhaps most broods had still to fledge with only two very recently fledged broods noted; one at the north end of Corran Lunga on 25th June. Mist netting at the Village caught two adult males and females each, one of the latter with active brood patch.

During a brief visit to Fladda, 3 birds were noted on the low lying "waist".

Dunnock *Prunella modularis*
Irregular breeding species

One bird was noted during a visit to Fladda on 24th June.

Wheatear *Oenanthe oenanthe*
Regular breeding species in small numbers

A minimum of 12 breeding pairs were considered to be breeding on Lunga, all north of Tarbet, with some broods fledging during the expedition and others still to do so. Seven families of dependent and presumed locally bred young were finally noted on Lunga.

Two family parties were noted during a brief visit to Fladda.

Song Thrush *Turdus philomelos*
Rare visitor

One bird was seen foraging near the Village, Lunga on the 24th June and probably the previous day. There have only been two previous records by TIARG, both in 2001 which included a bird on territory at the Village, Lunga.

Sedge Warbler *Acrocephalus schoenobaenus*
Scarce visitor

The sole visit made to the reedbed at the south-east end of Lunga, found no birds. Previous records have referred to a single singing individual at the same locality during late June in five of the last eight years.

Hooded Crow *Corvus corone cornix*
Regular breeding species in small numbers

Two pairs would appear to have bred on Lunga. A pair of moulting adults accompanied two non-moulting juveniles centred upon the cliff south of Tarbet (area 5) foraging around Cruachan and the South end. A second pair was found with two barely fledged juveniles in the cave to the south of Corran Lunga; the fate of these young were from their condition considered poor with no further sightings. Single un-aged birds were seen from the Village over the north end of Sgeir a' Chaisteil on several occasions.

Elsewhere 2 moulting adults accompanying two young were noted during a brief visit to Fladda.

Raven *Corvus corax*
At least one pair breeds in most years

Several birds were seen daily on Lunga with initially three non-moulting birds frequenting the east coast and south end. On the 22nd June a flock of six birds were over Shag Alley of which one appeared to have dropped it's innermost primary; adults start moulting flight feathers by mid June (Ratcliffe 1997). From Lunga three birds were seen over Fladda on 19th June with visits by the expedition to this island recording 2 adults and 3 young. No nest sites were located.

Starling *Sturnus vulgaris*
Regular breeding species in small numbers

Family parties (of 1 to 4 juveniles) and small flocks of up to 10 birds (with 6 juveniles) were noted daily on Lunga. Breeding sites found on Lunga included in the cliff below the Village, either side of Tarbet east whilst birds carrying food were also seen heading up onto the cliff. Elsewhere birds were noted on Sgeir a' Chaisteil (2 adults with 4 juveniles), Sgeir an Eirionnaich (flock of 25) and Fladda (a flock of 25 juveniles).

Twite *Carduelis flavirostris*
Regular breeding species in small numbers

Only two family parties (of 5 & 3 birds) were noted on Lunga, these birds centred upon the north end. All other records on Lunga referred to one or two birds suggesting some broods had yet to fledge with most around Shearwater Gully and the south west coast.

During a brief visit to Fladda, 2 birds were noted one of which was colour-ringed individual the original ringing details of which are awaited (yellow on left leg, black on right leg).

SYSTEMATIC LIST OF MAMMALS FOR 2005

Otter *Lutra lutra*
Evidence of presence regularly noted

Fresh spraint and prey remains on Lunga confirmed that the species bred locally. Teeth marks from 12 freshly predated seabird eggs adjacent to fresh spraint, identified the recent presence of both adult and cub(s) in east Tarbet. Elsewhere on Lunga, fresh spraint was found in area 5 and together with prey remains and foot prints in the first cave north of Harp Rock.

House Mouse *Mus musculus*

Resident

At least one animal was present indoors at the expedition base, the Village at the north end of Lunga.

Rabbit *Oryctolagus cuniculus*

Resident, numbers much reduced in recent years.

Though no systematic monitoring of this species occurred, casual observations on Lunga continued to suggest fewer visible animals than in the years immediately prior to 2002. Amongst the animals regularly observed were up to four individuals between the Village and Harp Rock, 3 on the Boulder Beach, 3 in the vicinity of Harp Rock and 3 at the base of the southern slope of Cruachan. In addition on single dates two animals were noted at the Well and one in area 6 whilst much evidence of the species presence was also noted at the summit of Cruachan and in Shag Alley. All sightings of black individuals were from Lunga with 2 regularly noted at the Puffin terraces (area 12a) and a single in the vicinity of the Boulder Beach whilst a lone sighting of two were noted between Harp Rock and the Village.

No evidence of animals on the other islands visited was noted.

Grey Seal *Halichoerus grypus*

Regular breeding species whose numbers are regularly monitored by the Sea Mammal Research Unit (NERC, St Andrews)

Up to 23 animals regularly hauled out on intertidal reefs north and north-east of Lunga. Two animals were also noted off the south end of Lunga.

SYSTEMATIC LIST OF BUTTERFLIES FOR 2005

Common Blue *Polyommatus icarus*

Regular breeder

Sightings of two individuals at Shearwater Gully and a single at Shag Alley coincided with fine weather on 21st June.

Red Admiral *Vanessa atalanta*

Migrant

Singles were seen on four dates around the village on Lunga. Brief visits to Sgeir a Chaisteil and Sgeir an Fheòir on the 20th June found a single and two individuals in flight respectively.

OTHER SPECIES RECORDED SYSTEMATICALLY

Oyster Plant *Mertensia maritima*

Localised species known only from “colonies” at Tarbet (west), Lunga and the north end of Sgeir a Chaisteil.

The absence of plants from what was a well established “colony” at the north end of Sgeir a Chaisteil, can be accredited to a particularly strong gale ripping out the previous season’s 117 plants (I. Morrison pers comm.). The gale’s impact was also evident at the larger second “colony” on the beach at Tarbet (west), Lunga, where only 174 plants were to be found, these small with only five having reached sufficient maturity to flower.

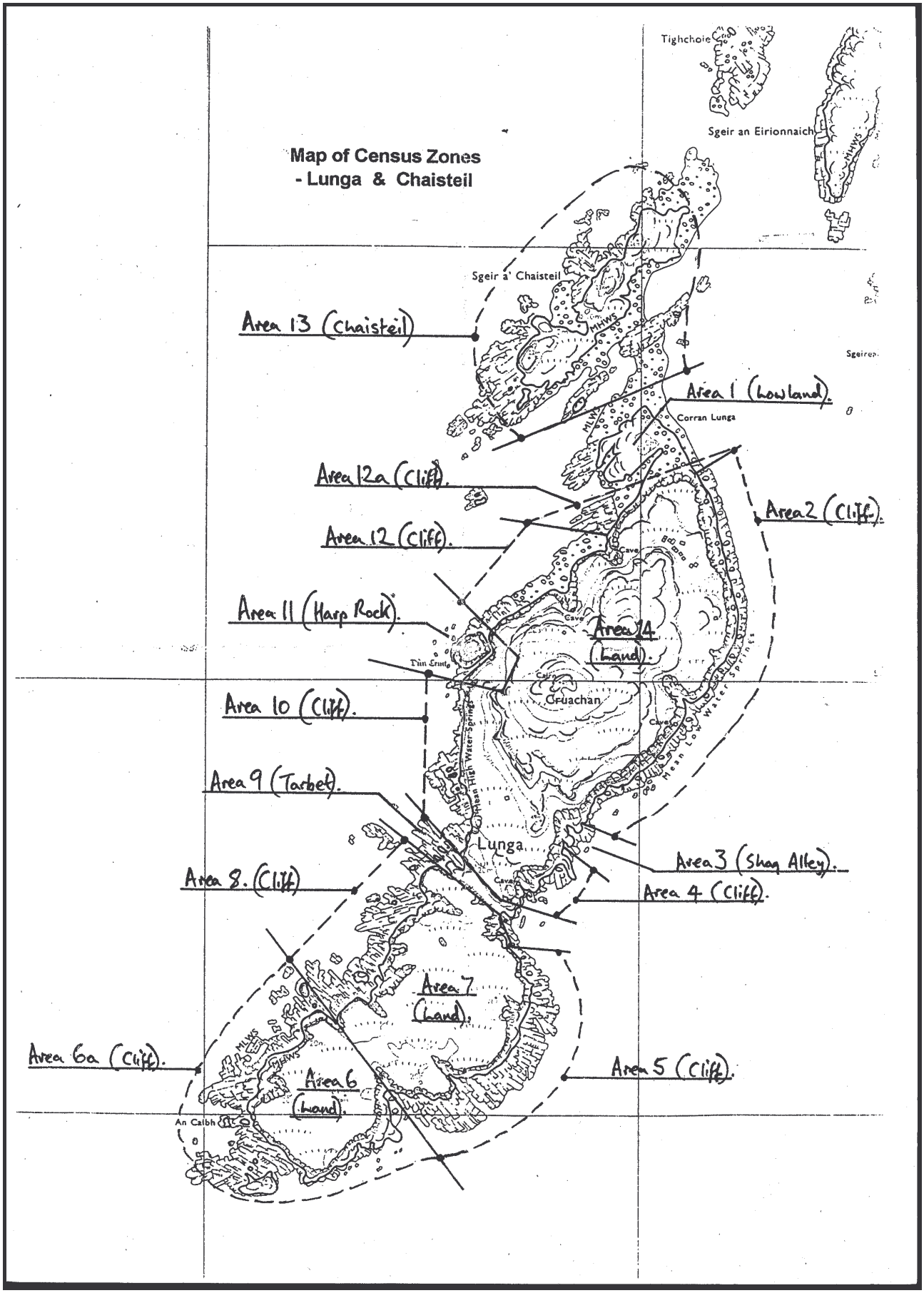
Garden Tiger *Arctica caja*

Two caterpillars of this species were noted around the Village, Lunga.

Emperor Moth *Saturna pavonia*

One caterpillar of this species was noted on Fladda.

MAP OF CENSUS ZONES – LUNGA AND CHAISTEIL



2005 BREEDING SEABIRD CENSUS DATA FOR LUNGA AND SGEIR A' CHAISTEIL

Totals for each Sub Colony Zones of Lunga and Sgeir a Chaisteil

Sector	Count	Count Sectors on Lunga (1 - 12) and Sgeir a' Chaisteil (13)															Lunga & Chaisteil
	unit	1	2	3	4	5	6	6a	7	8	9	10	11*	12	12a	13	Totals*
Fulmar	AON		34	6	20	69		53		47	9	18	35	122	33	141	587
Shag	AON		27	17	9	32		7		17		14	21	20		20	184
Lesser B-b Gull	PRS																0
Herring Gull	PRS	1								13						6	20
Great B-b Gull	PRS	1		1			19		9							1	31
Kittiwake	AON											14	568	12	10		604
Bonxie	AON																0
Razorbill	IND		23	30	45	52		14		32		59	686	131	33	22	1127
Guillemot	IND			9	3	9				1		69	6757		13	82	6943
Black Guillemot	PRS							6									6
Puffin	IND		232	304	90	18						115					759
Puffin	AOB												340	831	596	315	2082

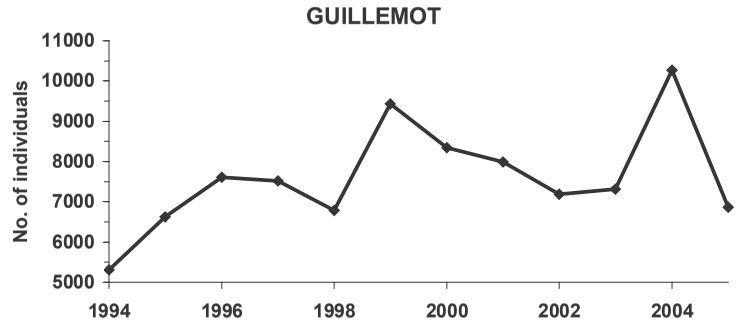
Key to count unit codes:

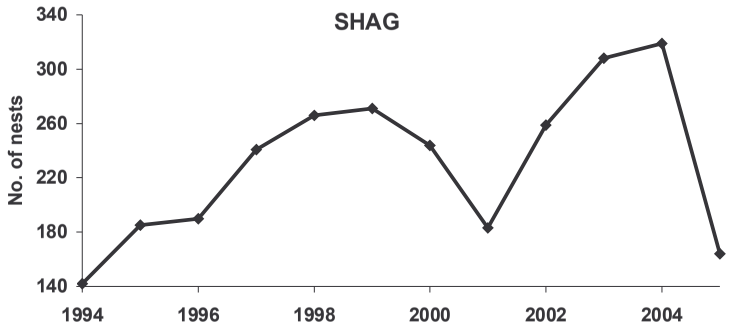
AON = Apparently occupied nest
IND = Individuals
PRS = Pairs
AOB = Apparently occupied burrow

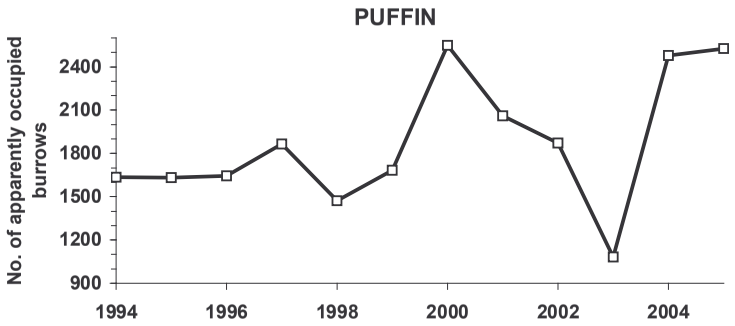
* Rock fall prevented access to a wave cut platform that had previously provided a vantage point for viewing one section of cliff in Area 11. In 2004 this section of cliff held 2 Shag AONs, 76 Kittiwake AONs, 22 Razorbills (IND) and 28 Guillemots.

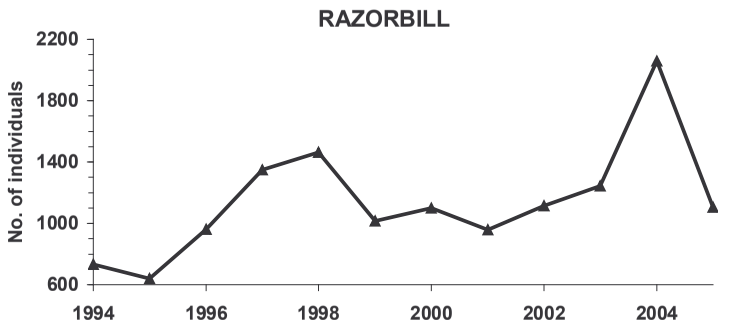
Erratum to 2004 data: 140 of the Puffin AOBs accredited to sector 12a were in fact in sector 12.

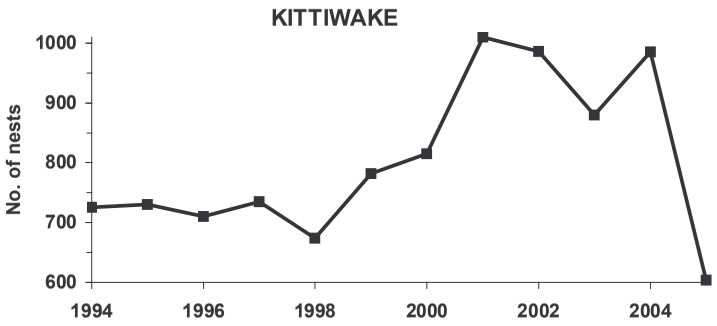
POPULATION CHANGES IN A SELECTION OF BREEDING SPECIES ON LUNGA, 1994 – 2005

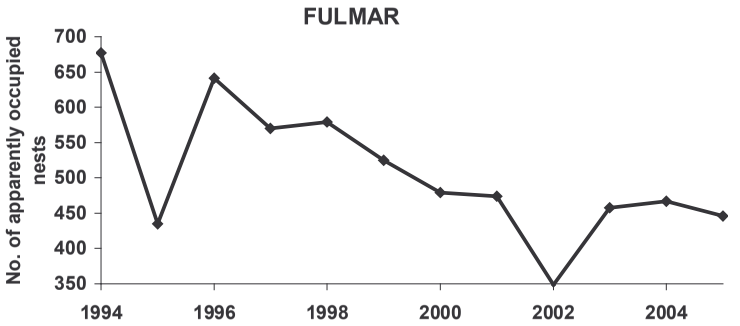












COMPARSION OF SEABIRD MONITORING PLOT DATA FROM LUNGA IN 2004 AND 2005

		Plot 1		Plot 2		Plot 3		Plot 4		Plot 5		Plot 6	
		2004	2005	2004	2005	2004	2005	2004	2005	2004	2005	2004	2005
Kittiwake	Adult birds present	28	nc	36	nc			103	60				
	Good nest	11	6	18	14			61	35				
	Trace nest	4		1	5			14	4				
	Clutch of 1												
	Clutch of 2												
	Clutch of 3			1				4					
	Clutch of 4												
	Brood of 1												
	Brood of 2							5					
	Brood of 3												
	Brood of 4							1					
Fulmar	Adult birds present	15	nc	21	nc							30	nc
	AOS	10	4	16	20							22	29
Guillemot	Adult birds present	54	28			412	419			711	720		
	Apparently incubating or brooding	8				138	16			344	28		
	Eggs seen	1				21	6			46	21		
	Young seen					34	7			39	18		
Razorbill	Adult birds present	13	27	2	12	8	13			8	8		
	Apparently incubating or brooding											1	
	Eggs seen												
	Young seen												
Shag	Nests			5	4				1	3			

nc = not counted

Note: Details as to the methodology, location of plots etc will be provided in the report for 2006

TRESHNISH RINGING TOTALS FOR 2005

Site	Species	Adults	Pulli	Retraps	Controls	Total
Lunga	Fulmar	14		9		23
	Manx Shearwater	1				1
	Storm Petrel	191		64	15	270
	Shag	9	26	2		37
	Corncrake	1				1
	Ringed Plover		1			1
	Great Skua	1				1
	Herring Gull		8			8
	Great Black-backed Gull		1			1
	Kittiwake	15		7		22
	Guillemot	141		36	1	178
	Razorbill	36	1	10		47
	Puffin	151		16		167
	Meadow Pipit	5				5
	Wren	4				4
	Wheatear	7				7
Sgeir an Fheòir	Great Black-backed Gull		3			3
Fladda	Storm Petrel	300		30	16	346
	Shag	3	32			35
	Common Gull		16			16
Sgeir an Eirionnaich	Great Black-backed Gull		8			8
Treshnish Isles	Grand total for 2005	879	96	174	32	1181

Note: Rings used in 2005 were registered under *Treshnish Auk Ringing Group* and *Robin M. Ward*.
Retraps: No retraps of birds ringed earlier during the 2005 expedition are included.

AN ASSESSMENT OF TIARG'S CONTRIBUTION TO THE BRITISH AND IRISH RINGING SCHEME

The Treshnish Isles Auk Ringing Group (TIARG) has ringed over 27,000 seabirds between the years 1971 - 2005, a substantial proportion of the national ringing total for some species and years. Tabulated below is TIARG's contribution to the National Ringing totals in 2003 (Clark *et al.* 2004)*.

	Juv/ad ringed 2003			Pulli ringed 2003			Ringing Totals to & incl 2003		
	UK & Eire	TIARG	% UK & Eire	UK & Eire	TIARG	% UK & Eire	UK & Eire	TIARG	% UK & Eire
Fulmar	458	25	5.5	1,264	0	0	110,368	338	0.3
Storm Petrel	8,583	360	4.2	52	0	0	402,900	9,127	2.3
Shag	258	14	5.4	5,298	85	1.6	207,570	1,347	0.7
Great Skua	102	0	0	560	1	0.2	73,175	3	0.004
Common Gull	94	0	0	2,177	6	0.3	79,710	37	0.05
Herring Gull	343	0	0	3,074	8	0.3	304,548	426	0.1
Great black-backed Gull	15	0	0	1,398		21	71,497	318	0.5
Kittiwake	540	2	0.4	1,634	0	0	125,253	171	0.1
Guillemot	1,677	261	15.6	9,535	0	0	292,294	5,999	2.1
Razorbill	539	46	8.5	2,150	10	0.5	101,752	2,309	2.3
Puffin	10,691	244	2.3	548	0	0	239,513	5,012	2.1

* 2003 is the most recent British & Irish annual ringing totals available at the time of publication.

TRESHNISH RINGING TOTALS 1971 - 2005

SPECIES	1971	1974	1976	1977	1978	1980	1982	1984	1986	1989	1991	1993	1994
Fulmar	17	6	4		8	21	14	18	7	21	15		4
Manx Shearwater		2	13		4	4	1	8					9
Storm Petrel		254	22		1	283		203	800	411	975	75	440
Shag	150	7	10	10	24	80	50	160		40	10		10
Eider													
Buzzard						1	2						
Oystercatcher		1				1	4	2					
Common Sandpiper													
Great Skua													
Black headed Gull													
Common Gull													
Herring Gull	6	1			14	46	35	56	4	4	3		5
Great Black-b. Gull	3	6	3	7	6	22	14	35		22	15		6
Kittiwake						1	1	1	2	2	4		6
Guillemot	32	20	14		66	502	137	364	180	250	306		109
Razorbill	65	72	90		115	266	218	236	151	103	64		81
Black Guillemot													
Puffin	70	198	271		203	200	208	182	174	160	114		358
Meadow Pipit													
Rock Pipit									5	1			
Pied Wagtail													1
Wren													
Wheatear			12					1	3				
Willow Warbler													
Twite													
TOTAL	343	558	439	17	441	1427	684	1266	1326	1014	1506	75	1029

NOTES:

- Data for 1971 - 1995 extracted from Walker & Cooper (1996).
- Ringing data for a three day visit in 1972 was not available.

TRESHNISH RINGING TOTALS 1971 – 2005 (con't)

SPECIES	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	**Total**
Fulmar	27	38	7	24	23	12	25	22	25	47	14	399
Manx Shearwater	1		2	1	4	4			2		1	56
Storm Petrel	536	331	1104	741	732	814	1030	15	360	83	491	9701
Shag	59	96	99	150	100	59	37	97	99	200	70	1617
Eider										1	0	1
Buzzard											0	3
Oystercatcher					2		1				0	11
Common Sandpiper				1							0	1
Ringed Plover											1	2
Great Skua				1				1	1		1	5
Common Gull				4		5	11	11	6		16	53
Herring Gull	24	19	52	73	39	15	11	11	8	11	8	445
Great Black-b. Gull	25	16	48	19	16	2	27	5	21	18	12	348
Kittiwake	10	1	50	41	23	13	11	3	2	21	15	207
Guillemot	498	349	472	503	507	892	312	425	261	800	141	6940
Razorbill	101	105	98	112	102	133	31	110	56	147	37	2493
Black Guillemot			1				1				0	2
Puffin	236	301	267	398	274	389	214	351	244	226	151	5389
Meadow Pipit	4		1			12	1	4	1	3	5	31
Rock Pipit	2	4	2		2	1	2	2	2	2	0	25
Pied Wagtail	3	2									0	6
Wren	3						1			2	4	10
Wheatear		5	24	37	22	50	24	2	2	2	7	191
Willow Warbler	1										0	1
Twite			2					1			0	3
TOTAL	1530	1230	2130	2109	1844	2401	1739	1060	1090	1563	974	27940

NOTES:

- In 2003 wind speed and in particular direction was unfavourable for the fleyging of large numbers of auks usually ringed at Harp Rock. Likewise wind was a factor in the reduced Storm Petrel catch of 2002-04.

RECENT RINGING RECOVERIES

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
- XL - Found long dead
- SR - Sick or injured, released with ring
- VV - alive and probably healthy, ring read in field by non-ringer
- // - condition on finding wholly unknown

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

Storm Petrel

2560401	6	21/06/2004	Lunga
	R	07/08/2004	Sheepland Harbour, Ardglass, Co.Down, N.I.
			251km 168 degrees 47 days

Remarks: This one of only 52 Storm Petrels ringed at a Treshnish colony (with no tape lure) and recovered elsewhere. The vast majority of recoveries of this species (361), as with those that follow, refer to birds tape lured elsewhere when ringed to be subsequently controlled in a Treshnish colony. The vast majority of birds caught at the Treshnish Isles are breeding adults faithful to the one colony and rarely lured in by tape to other sites as are prospecting immature. The species begins breeding from its 4th calendar year arriving at northern latitude colonies from May whereas the prospecting immatures arrive mostly from July and August.

Storm Petrel

2229900	4	17/08/1990	Calf of Man, Isle of Man
	R	21/06/2004	Lunga
			290km 340 degrees 5057 days

Remarks: There has been 51 recaptures of birds moving between the Isle of Man and the Treshnish Isles.

Storm Petrel

2543467	4	22/07/2002	Calf of Man, Isle of Man
	R	21/06/2004	Lunga
			290km 340 degrees 700 days

Storm Petrel

2295342	4	03/07/1994	Strumble Head, Dyfed, Wales
	R	21/06/2004	Lunga
			503km 350 degrees 3641 days

Storm Petrel

2501089	4	23/08/1999	Faraidh Head, Highland Region
	R	21/06/2004	Lunga
			255km 203 degrees 1764 days

Storm Petrel

2556475	4	08/08/2003	Sanda Island, Kintyre, Strathclyde
	R	24/06/2004	Lunga
			146km 339 degrees 321 days

Remarks: There has been 127 recaptures of birds moving between the Sanda Island and the Treshnish Isles.

Shag

1399629	1	24/06/2003	Lunga
	XF	20/02/2005	Sandaig, Tiree, Strathclyde
		3km	267 degrees 607 days

Remarks: Bird found freshly dead on beach

Shag

1408383	1	22/06/2004	Lunga
	X	20/02/2005	Sandaig, Tiree, Strathclyde
		3km	267 degrees 243 days

Remarks: Bird found dead on beach

Shag

1408488	1	24/06/2004	Lunga
	XF	20/02/2005	Sandaig, Tiree, Strathclyde
		3km	267 degrees 241 days

Remarks: Bird found freshly dead on beach

Shag

1408495	1	24/06/2004	Lunga
	XL	18/10/2004	West Hynish, Tiree, Strathcylde
		32km	260 degrees 116 days

Guillemot

19540	4	25/06/2000	Lunga
	X	29/11/2004	Culleenamore Strand, Strandhill, Sligo, Eire
		284km	210 degrees 1618 days

Remarks: Bird found dead

Guillemot

GJ76369	4	02/06/1984	Lunga
	XF	13/10/2004	Ardmair Beach, Ullapool, Highland Region
		178km	26 degrees 7438 days

Remarks: Bird found freshly dead on beach

Guillemot

R24026	6	24/06/2001	Lunga
	X	25/10/2004	Knock, Mull, Strathclyde
		26km	91 degrees 1219 days

Remarks: Bird found dead on beach

Guillemot

R24072	6	26/06/2001	Lunga
	XF	11/12/2004	Harris, Isle of Rhum, Highland Region
		54km	4 degrees 1267 days

Remarks: Bird found freshly dead on beach

Guillemot

R24294	6	28/06/2001	Lunga
	X	28/10/2004	near Reiff, Wester Ross, Highland Region
		185km	20 degrees 1218 days

Remarks: Bird found dead

Guillemot

R31610	6	24/06/2003	Lunga
	XL	31/10/2004	Ose, Isle of Skye, Higland Region
		99km	359 degrees 495 days

Remarks: Dead, not fresh, bird found

Guillemot

R51544	6	21/06/2004	Lunga
	XF	06/11/2004	Welcombe Mouth, Welcombe, Devon
			631km 169 degrees 138 days

Guillemot

R51570	6	22/04/2004	Lunga
	XF	01/04/2005	Lower Porthpean, St Austell
			694km 171 degrees 283 days

Remarks: Bird found freshly dead on beach

Guillemot

R51925	6	21/06/2004	Lunga
	XF	07/09/2004	Gruinard Bay, Highland Region
			163km 20 degrees 75 days

Remarks: Found on shore in poor condition, died same day

Guillemot

T14881	4	29/06/1989	Lunga
	XF	11/09/2004	Armadale Bay, Highland Region
			32km 270 degrees 5553 days

Remarks: Bird found freshly dead on beach

Guillemot

T14973	4	24/06/1991	Lunga
	X	05/10/2004	Loch Glendhu, nr Kylestrome, Highland Region
			216km 25 degrees 4852 days

Remarks: Bird found dead

Guillemot

T83525	6	03/07/1991	Isle of Canna, Highland Region
	R	21/06/2004	Lunga
			64km 174 degrees 4737 days

Guillemot

X56054	1	07/07/1996	Isle of Canna, Highland Region
	R	24/06/2004	Lunga
			64km 174 degrees 2909 days

Guillemot

X65297	1	07/07/1998	Isle of Canna, Highland Region
	R	20/06/2004	Lunga
			64km 174 degrees 2175 days

Guillemot

X66365	1	04/07/1999	Isle of Canna, Highland Region
	R	21/06/2004	Lunga
			64km 174 degrees 1814 days

Remarks: These four recaptures of birds from the Isle of Canna breeding colonies brings the total to 23 with only one bird ringed on Treshnish being recaptured on Canna. This is a consequence of TIARG fleyging adult birds (including immatures) in the colonies where as on Canna pulli and known breeding adults are largely ringed.

Guillemot

X56653	6	28/06/1995	Lunga
	XL	02/10/2004	Loch Sunart, Ardnamurchan
			34km 53 degrees 3384 days

Remarks: Bird found not fresh on tideline

Guillemot

X63333	6	24/06/1996	Lunga
	X	28/02/2003	Biscarrosse Plage, Landes, France
			1388km 165 degrees 2440 days

Remarks: Oil victim, found dead on beach

Guillemot

X67796	6	29/06/1997	Lunga
	XF	05/10/2004	Scapa Bay, St Ola, Orkney
			343km 37 degrees 2655 days

Remarks: Bird found freshly dead on beach

Guillemot

X79760	6	29/06/1998	Lunga
	XL	09/10/2004	between Portmahomack and Inver, Highland Region
			213km 47 degrees 2294 days

Remarks: Bird found not fresh on beach

Guillemot

X79886	6	30/06/1998	Lunga
	XF	05/09/2004	Camas Fhionnairigh, Isle of Skye, Highland Region
			81km 14 degrees 2259 days

Remarks: Bird found freshly dead on beach amongst other auks

Guillemot

X93875	6	03/07/2001	Faraidh Head, Highland Region
	R	19/06/2004	Lunga
			255km 203 degrees 1082 days

Guillemot

X99125	6	17/06/1999	Lunga
	XF	25/10/2004	Kinghorn, Fife Region
			206km 104 degrees 1957 days

Remarks: Bird found freshly dead on beach

Razorbill

M85739	6	24/06/1999	Lunga
	XL	15/01/2005	Southport, Merseyside
			382km 146 degrees 2032 days

Remarks: Bird found not fresh on beach

Razorbill

M88005	6	21/06/1999	Lunga
	XF	21/09/2004	Crosby, Liverpool, Merseyside
			400km 148 degrees 1919 days

Remarks: Poor condition freshly dead emaciated

Puffin

EK29802	4	29/06/1989	Lunga
		01/08/2004	Lunga
			0km 0 degrees 5512 days

Remarks: Freshly dead taken by Peregrine

Puffin

EL24148	6	24/07/2003	Sule Skerry, Orkney
	R	22/06/2004	Lunga
			313km 203 degrees 334 days

Remarks: Sule Skerry supports a colony of over 59,000 pairs of Puffin

REFERENCES

Clark, J.A., Robertson, R.A., Balmer, D.E., Adams, S.Y., Collier, M.P., Grantham, M.J., Blackburn, J.R. & Griffin, B.M. (2004) Bird Ringing in Britain and Ireland in 2003. *Ringing & Migration* 22: 85 - 127.

Ginn, H.B. & Melville, D.S. (1983) *Moult in birds*. British Trust for Ornithology, Tring.

Heubeck, M. & Mellor, M. (2005) *SOTEAG Ornithological Monitoring Programme: 2004 Summary Report.* Unpublished Report, University of Aberdeen.

Lloyd, C., Tasker, M.L. & Partridge, K. (1991) *The status of seabirds in Britain and Ireland,* T. and A.D. Poyser, London.

Mavor, R.A., Parsons, M., Heubeck, M. & Schmitt, S. (2005) *Seabird numbers and breeding success in Britain and Ireland, 2004.* Joint Nature Conservation Committee, Peterborough. (UK Nature Conservation No. 29.)

Mitchell, P.I., Newton, S.F., Ratcliffe, N. & Dunn, T.E. (2004) *Seabird populations of Britain and Ireland: results of the Seabird 2000 census.* T. & A.D. Poyser, London.

Ratcliffe, D. (1997) *The Raven.* T. & A.D. Poyser, London.

THE EXPEDITIONS 1971 – 2005

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 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, Chaisteil and Fladda.
Chris Redfern *et al.*
Storm Petrel ringing.

1994 Simon Walker, Mike Smith, Dennis Cooper, Jan Densham, Danny Lenain.
Full census Lunga and Chaisteil and ringing.

THE EXPEDITIONS 1971 – 2005 (con't)

1995 Simon Walker, Mike Smith, Dennis Cooper, Jan Densham, Fergus Henderson.
Full census Lunga and Chaisteil and ringing.

1996 Simon Walker, Mike Smith, Dennis Cooper, Danny Lenain, Robin Ward
Full census of Lunga and 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, 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, 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, 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, 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, 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, Chaisteil and the islands between Lunga – Fladda. Ringing.

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
1080101 – 110	2010581 – 583	EF75001 – 500	FB22601 – 700**	GH21301 - 350	HT09001 - 004	K10701 – 1000**	R07001 - 100	1F4094 - 097
1087111 – 120	2101991 – 2000	EG23501 – 700	FC52551 – 558	GN85301 – 400#	HT17871 - 890	M46501 – 800	R19401 - 20200	C331894 - 900
1105561 – 570	2121401 – 500	EG23721 – 780	FC52571	GJ35401 – 500	HT17931 - 940	M55001 – 500	R24001 – 26350**	E196501 - 520
1123541 – 550	2167051 – 068	EG23801 – 999	FR13606 – 636	GJ76001 – 800**	HT34021 - 030	M72451 – 800	R31601 - 900	JB44316 ('94)
1123671 – 690	2170201 – 203	EG61000 – 500	FR14401 – 500	GJ99081 - 082	HT68201 - 210	M85501 – 800	R51501 - 2000	K039209 - 230
1123961 – 970	2238501 – 600	EG88501 – 9000**	FR56351 – 400	GK34351 - 354	HT68221 - 226	M88001 – 300	R65501 – 6000**	K419290 - 295
1159651 – 700	2261001 – 500	EH33377 – 380	FS51016 – 500	GK50214 - 220	HT80301 - 400	M92501 – 700**	T14001 – 5000#	NA84296 - 299
1163701 – 740	2284001 – 5000	EH54501 – 55000	FS87001 – 100	GK50551 - 570	HW05351 - 360		T82001 – 300	KX83101 - 106
1168001 – 100	2309901 – 10000	EH89256	FV10611 – 620	GK62985 - 990	HW06951 - 7000		X39501 - 40000	KX83116 - 118
1170601 – 700	2311301 – 400	EH89260	FV10646 – 650	GK90821 - 840	HW08994 - 09000		X56501 - 57000	
1187901 – 950	2311501 – 2000	EH98001 – 300	FV54446 – 460	GK91471 - 490	HW37361		X63001 - 500	
1237401 – 450	2348001 – 500	EK29501 – 900	FV62410	GP13416 - 450	HW68101 - 110		X67501 - 68000	
1322951 – 960	2369301 – 400	EK72657 – 660	FV62416 – 226	GP62201 - 207	HW68161 - 170		X79501 - 80000	
1328481 – 490	2405001 – 6000	EK91471 – 490	FV96681 – 684	GP74501 - 75000	HW74971 - 990		X99001 - 500	
1350801 – 900	2430701 – 900	EL52501 – 3000**	SS96101 – 300		HW87211 - 225			
1357901 - 8000	2436501 – 7000	EN22001 – 500			HW94907 - 913			
1366901 - 7000	2444501 – 5000#	EP85608 – 612			MA12551 – 600**			
1373751 – 3900	2446201 – 300	EP85687 – 700						
1378401 – 8500	2455501 – 6000	ER03701 – 800						
1399601 – 700	2480001 – 500	ES64018 – 189						
1408301 – 500	2513501 – 4000	ET19501 – 700						
1414301 – 400**	2538001 – 800	ET52501 – 3000						
	2542001 – 3000	ET80001 – 500						
	2554001 – 500							
	2560001 – 1000**							
	2579001 – 80000*	*						

*All rings series known (to TIARG) to have been used on the Treshnish Isles are documented irrespective of to whom they were issued to by the BTO.
** Ring series still in use
# Ring series yet to be used

A SURVEY OF STORM PETRELS IN THE NORTH VILLAGE, LUNGA IN 2005

Andrew Carter & Robin M. Ward

Introduction

The colonies of breeding Storm Petrel *Hydrobates pelagicus* on the Treshnish Isles are one feature of conservation importance that led to the islands designation as a Special Protection Area in 1994 under the EC Wild Birds Directive. The total population of breeding pairs of Storm Petrels on the Treshnish Isles in 1996 was estimated to be 5,040 by Gilbert *et al* (1998b). Boyd (2001) in the Hebridean Trust's draft management plan for the Treshnish Isles, identifies a potential conflict may exist between the necessity to preserve some of the current archaeology and conservation of Storm Petrels, some of which use the old walls as nesting habitat. Gilbert & Hemsley (1996) estimated 11 breeding pairs of Storm Petrels to be occupying the walls of the Village ruins at Lunga's north end in 1996. Details of occupancy by Storm Petrels for individual dwellings was not provided by Gilbert & Hemsley (1996). This colony was re-surveyed by Treshnish Isles Auk Ringing Group (TIARG) in June 2001 when 25 AOSs distributed amongst six of the eight building remains were identifying and the location of each Apparently Occupied Site documented (Ward & Carter 2001). Following concerns regarding an apparent reduction of calling birds noted during more recent visits, this paper reports on a repeat survey that was undertaken in 2005. This repeat survey also allows the likely impact of any restoration work in the Village to be more accurately assessed in respect to breeding Storm Petrels.

Methods

All eight dwellings of the Village at Lunga's northern end were surveyed between 19th - 25th June using the complete census methodology detailed for Storm Petrel in Gilbert *et al* (1998a). A recording of the male Storm Petrel purr call was used to elicit the call-back from birds in apparently occupied sites (AOS). The recording was played on a mini-disc connected to computer desk top speakers,. All walls were divided into 2m sections and the recording of the purr call played for 10 seconds in the middle of each 2m section. All walls were surveyed once every day between 08.00 - 20.00. On the first visit, squares of outdoor tape were stuck on the wall beside a given response on which a unique number was written. On the second day any new sites were marked up as above whilst a note made of whether those recorded previously responded or not. This was repeated for the subsequent 5 days.

Gilbert *et al* (1998a) instructs surveyors to continue the survey until the number of new sites found during a visit becomes consistently small, e.g. less than 5% of the total found on two previous consecutive visits. This is likely to involve seven or more days surveying (Gilbert *et al* 1998a). For the present survey, it was not possible to continue the survey beyond seven days.

Approximate dimensions of all dwelling remains were taken as well as a note of the vegetation adjacent to each wall surface. The position of all AOSs identified by the census was mapped in terms of distance along a given wall.

Results

The frequency of response during the current census from the 30 AOS identified is presented in table 1. The number of new sites detected on the seventh day was more than 5% of the total found on two previous consecutive visits (17%). The number of AOSs identified may therefore be an underestimate. The approximate dimensions of all buildings are provided in Figure 1 with notes on the vegetation adjacent to each wall surface given in table 3. The position each of the 30 AOS in the Village walls as shown in figure 2, are flagged by site numbers corresponding with those in table 1.

The greatest number of AOSs were recorded from B, the only building whose walls were not largely intact but essentially rubble. No responses were recorded from the walls of buildings

F & G. Though not tested statistically, no discernible relationship was apparent between vegetation type adjacent to a wall and the presence or absence of AOSs. With the exception of C & H, the interiors of the completely walled buildings were nettlebeds, where as the former had a bracken edged interior in part/all respectively with an other wise open grass, sorrel & bluebell mix. The rubble of building B had the most open environment.

Table 1 The frequency of response from each AOS as identified by the 7 day survey

AOSs*	Visits						
	1	2	3	4	5	6	7
1	1	0	1	0	0	0	0
2	1	0	0	0	0	0	0
3	1	0	0	0	0	0	0
4	1	1	0	0	0	0	0
5	1	0	0	0	0	0	0
6	0	1	0	0	0	0	0
7	0	1	0	1	1	0	0
8	0	1	1	0	0	0	0
9	0	1	0	0	0	0	1
10	0	0	1	0	0	0	0
11	0	0	1	0	0	0	0
12	0	0	1	0	0	0	0
13	0	0	1	0	0	0	0
14	0	0	1	0	0	0	0
15	0	0	1	0	0	0	0
16	0	0	0	1	0	0	0
17	0	0	0	1	0	0	0
18	0	0	0	1	0	0	0
19	0	0	0	1	0	1	0
20	0	0	0	1	0	0	0
21	0	0	0	1	0	0	0
22	0	0	0	1	0	0	0
23	0	0	0	1	0	0	0
24	0	0	0	0	1	0	0
25	0	0	0	0	1	0	0
26	0	0	0	0	0	1	0
27	0	0	0	0	0	1	0
28	0	0	0	0	0	1	0
29	0	0	0	0	0	1	0
30	0	0	0	0	0	0	1
Total	5	5	8	9	3	5	2

*AOS numbers equates to those used Figure 2.

Discussion

The low occurrence of sites in the Village walls from which a response was elicited on more than one of the seven survey days could be interpreted as most of the occupants being non-breeders. However, Ratcliffe *et al* (1998) determined that non-breeders are unlikely to constitute a serious bias in estimation of breeding population during diurnal playback given a 0.004 probability for a site detected holding a non-breeder. Furthermore, the probability of a site being occupied by a non-breeder was 15% (*Ratcliffe et al* 1998; n = 415). For all occupants, Ratcliffe *et* al (1998) also determined the probability of eliciting call back was only 0.2 or less for 50% of the birds with approximately 70% of adults in nest attendance by late June. Thus the available evidence would indicate the current census result of 30 AOS is more likely to be an underestimate of the breeding population. This concurs with the survey's cessation before the number of new sites detected had become consistently small, e.g. less than 5% of the total found on the two previous consecutive visits.

The disparity between Gilbert & Hemsley's (1996) and two TIARG surveys population estimates for the Village ruins at Lunga's north end may be attributed to the former being a less intensive survey. Ratcliffe *et al* (1998) however has also found substantial differences in colony size estimates between years, a consequence perhaps of large inter-year variation in breeding numbers or colony location. Such variation the literature would suggest can not be attributed to birds skipping a breeding season, a feature reserved to other petrel species for accommodating the energetic costs of reproduction (Warham 1996).

The similarity between the 2001 and 2005 surveys was not only found in the number of Storm Petrel AOS registrations but also their distribution around the Village buildings. These surveys provide no evidence was suspected of a decline the occupancy of the Village buildings by breeding Storm Petrels.

In most years one night's mist netting is undertaken by TIARG along the Village's south western edge using three 18 metre four shelf nets; in 2005 only two such nets were used. Catching success is in part determined on the darkness of the night, the impression being the darker the night the greater number of birds that visit nest sites under the cover of darkness. No overall trend is evident from the tabulation of known catch totals between 1984 and 2005 (see table 2) at the Village, Lunga. However, the variability in catching success and effort, and that the sample draws upon breeding birds from natural sites within the vicinity of the Village, may be expected to mask any localised change with respect to the Village walls colony itself.

Table 2 The catch totals of Storm Petrels from a single night's mist netting in The Village

Year	1984	1997	1999	2000	2001	2003	2004	2005
Peak count	43	149	219	159	57	97	121	58

Conclusion

The present survey estimates a breeding storm petrel population within the Village walls at the northern end of Lunga of 30 AOSs distributed amongst six of the eight building remains. There is no suggestion of decline in occupancy of the site since the last survey in 2001.

References

Boyd, I.L. (2001) *Treshnish Isles. Management Plan 2001-2011.* Version 1.3. Hebridean Trust.

Gilbert, G. & Helmsley, D. (1996) *A survey of Storm Petrels (Hydrobates pelagicus) on the Treshnish Isles 1996*. Unpublished RSPB report, September 1996.

Gilbert, G., Gibbons, D.W. & Evans, J. (1998a) *Bird monitoring methods.* RSPB, Sandy.

Gilbert, G., Helmsley, D. & Shepherd, M. (1998b) A survey of Storm Petrels *Hydrobates pelagicus* on the Treshnish Isles 1996. *Scottish Birds*, 19, 145 - 153.

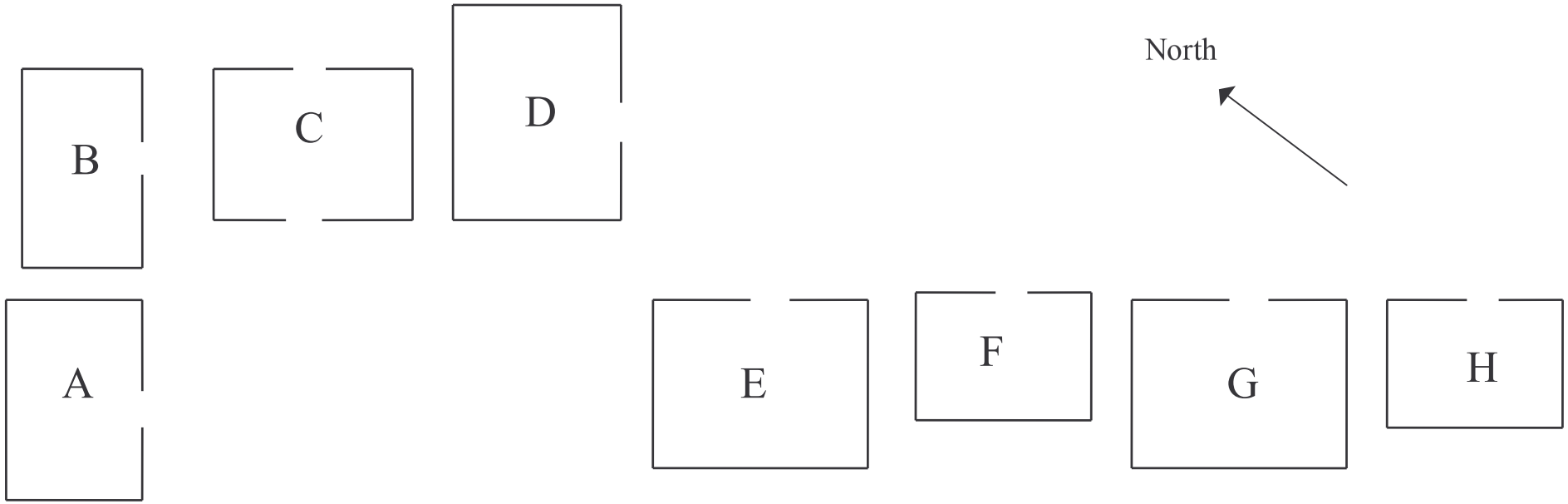
Ratcliffe, N., Vaughan, D., Whyte, C. & Shepherd, M. (1998) Development of playback census methods for Storm Petrels *Hydrobates pelagicus*. *Bird Study* 45, 302 - 312.

Ward, R.M. & Carter, A. (2001) A survey of Storm Petrels in the North Village, Lunga in 2001. In *Treshnish Isles Auk Ringing Group Report for 2001* (R.M.Ward) pp18-22. Unpublished report.

Warham, J. (1996) *The Behaviour, Population Biology and Physiology of the Petrels.* Academic Press, London.

Figure 1 Sketch Plan of Village at Lunga's north end with approximate dimensions (cm) tabulated

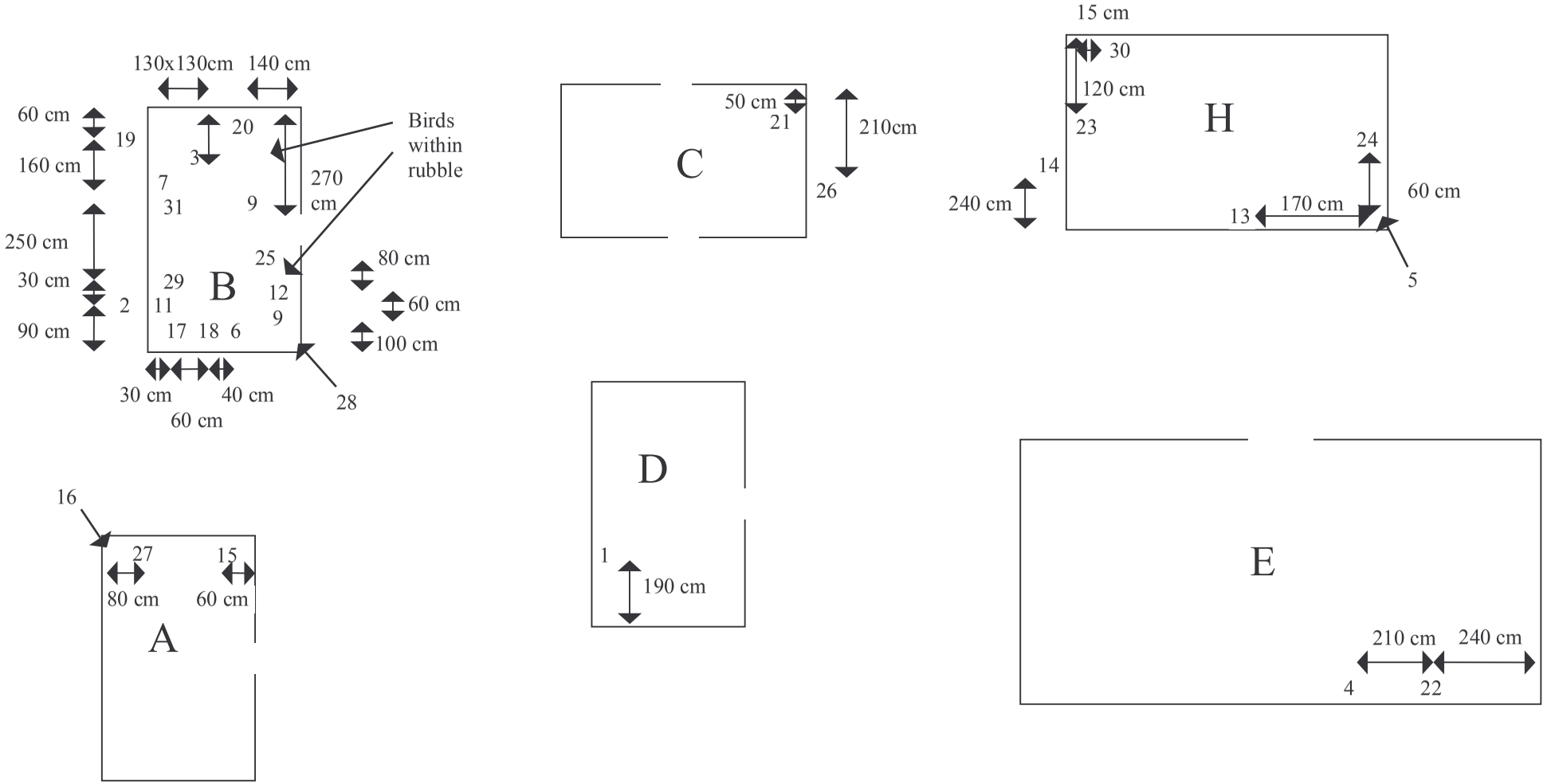
(not drawn to scale)



Cottage	Length	Width	Wall Depth	Max. hieght	Min. height	Door width	Total Wall length	Recording positions
A	777	465	66	160	160	?	2484 - door	11
B	760	450	100	95	0	60	2360	10 & 1 inside
C	690	430	60	145	60	60	2120	11
D	995	560	80	150	45	80	3030	17
E	1012	582	77	190	140	76	3112	15
F	603	468	71	140	90	77	2065	10
G	952	520	60	163	103	77	2867	14
H	599	406	70	130	84	66	1944	10

Figure 2 Locations of Storm Petrel Apparently Occupied Sites

(not drawn to scale; AOS number relates to Table 1)



A SURVEY ATTEMPT OF STORM PETRELS IN THE BOULDER BEACH, LUNGA 2005

Andrew Carter & Robin M. Ward

Introduction

The colonies of breeding Storm Petrel *Hydrobates pelagicus* on the Treshnish Isles are one feature of conservation importance that led to the islands designation as a Special Protection Area in 1994 under the EC Wild Birds Directive. The total population of breeding pairs of Storm Petrels on the Treshnish Isles in 1996 was estimated to be 5,040 by Gilbert *et al* (1998b). The validity of this estimate has been questioned (Willis 2000), with disparity in population estimates for one of the Treshnish Isles colonies surveyed on three separate years, using different surveyors and methodologies. Population estimates from a playback census in June 2000 and 2001, suggested a colony size within the Lunga boulder beach as 1,200 pairs (Willis 2000) and 450 pairs (Ward *et al.* 2001) respectively. This compares to an earlier playback census estimate of 350 pairs as part of Gilbert *et al* (1998b) full census of the Treshnish Isles in 1996, and a crude initial survey of 1,700 pairs by Walker & Cooper (1996). This paper details an attempt to repeat the census of Lunga's Boulder Beach colony during June 2005, as undertaken by Willis (2000), thus enabling a direct between year comparison.

Method

The method employed was the same as in 2000 and 2001 (Willis 2000, Ward *et al.* 2001). The call back technique relies on the response from the adult birds present at the nest to the playback of a recording of calling birds made at a colony. The estimate of population relies on establishing a population of 50 apparently occupied breeding sites for a measured area (the calibration quadrat) over a period of 7 days. The resulting density is then applied to the colony as a whole via a co-efficient based on a single days expected result. The actual recording used for the present survey differed from that used previously, the recording used on this occasion having being that of a bird on Lunga in 2004. Play back was via a mini-disc player connected to computer desk top speakers, with a 10 second segment of call used for repeatability. For full details of the survey method used see Gilbert *et al* (1998a).

Results

In common to the most recent two surveys (Willis 2000, Ward *et al* 2001), the calibration quadrat (8m x 18m) was marked up on the northern end of the boulder beach. The presence of marked stones from the two survey's calibration plots suggested that this had been immediately adjacent to one used for the present survey. The previous two surveys (2000, 2001) had on the first day elicited 14 and 16 responses from calibration quadrat respectively. The present survey produced no responses at all on either day one or two. When the recording was played at many random locations across what had previously comprised of the Boulder Beach colony, very few birds were elicited to call. Some responses were elicited on the inner edges of the beach and at the far south end indicating some level of occupancy, but apparently very much reduced from that found during the previous three surveys of the Boulder Beach. As a consequence it was considered highly unlikely that a sufficiently largely calibration quadrat within the time available to the authors could feasibly be established to fulfil the minimum requirements necessary for the technique; at least 15 responses during the initial day's playback are required (Ratcliffe *et al* 1998). This attempt at quantitatively surveying the Boulder Beach colony area was therefore abandoned. Furthermore, the lack of time available for surveying likewise prevented the use of the complete census methodology (see Gilbert 1999) to survey the entire Boulder Beach colony as it was previously.

Discussion

Although the playback response was so pitiful, a single night's mist netting with 36 metres of net immediately adjacent to the areas of the calibration quadrats resulted in the capture of 195 birds. This is comparable to previous catches at this site which has been mist netted almost annually by TIARG; totals have ranged from 128 – 235 and 381 – 427 birds with 36 and 54 metres of net respectively. These data provide no evidence of a substantial decline in

the breeding colonies within the catchment area of these nets but they may be sampling birds from a much wider area than the immediate vicinity of the Boulder Beach. No evidence of change is also shown in the percentage of recaptures within the catch, 26%, which equates to the mean of recent years (range 22 - 30%) with all but one of the 35 recaptures having previously been caught at the Boulder Beach. The exception was previously handled at the Village, the only other site at which Storm Petrels are regularly ringed on Lunga. The real extent of the catchment area of these nets in terms of the local breeding colonies sampled remains to be ascertained before much meaningful interpretation can be given to capture/recapture rates and the surrounding colony size of the Boulder Beach. What is certain is that the vast majority of birds handled are local breeders on the basis of well developed brood patches.

Though the results of ringing did not corroborate with the findings of the present survey, when walking the Boulder Beach at night substantially fewer birds were considered to be calling from the Boulder beach than in recent years. In 2004, similar repeats of tape-play back surveys on Priest Island (north-west Scotland) and Village Bay, Hirta, St Kilda, both found marked declines in AOS compared with surveys in 1999 (Mavor *et al.* 2005). As concluded by Insley *et al.* (2004; cited by Mavor *et al.* 2005) in respect to Priest Island, it is difficult to know whether there has been a genuine reduction in the breeding populations of all three colonies, or whether poor breeding conditions in the latest survey years led to low level of burrow attendance. What is clear is that a wide diversity of breeding seabirds on the Treshnish Isles and elsewhere in Scotland have suffered food shortages during 2005 that has led to a poor breeding season. It is unknown whether this is also common to the Storm Petrel as being nocturnal and occupying nesting burrows out of human reach, makes it is impossible for TIARG to ascertain.

The use of a different recording for the present survey to previous ones is not thought to have led to a poor response in the Boulder Beach colony as the same equipment and recording where successfully used when surveying the North Village colony at the same time (see previous paper). At the latter colony no change in the small population was noted. This fact together with no obvious difference from previous years in the bird mist netted at both these colonies, may suggest that the reduction in the size of the Boulder Beach colony is a localised event. In one important respect the Boulder Beach does differ from most other colonies elsewhere on Lunga, in that rough seas can inundate and structurally change the nesting burrows. The impact of such gales during the non-breeding season upon occupancy and breeding success of Storm Petrels in the breeding season that follows is unknown. However the 2005 breeding season was preceded by a particularly damaging on shore gale, the seas of which relocated large boulders and ripped up shoreline vegetation e.g. Oyster Plants (I.Morrsion *pers comm.*). Resultant changes in the Boulder Beach by the gale may therefore have led to the site being less attractive for occupancy by prospective Storm Petrels. This in turn may have led to some redistribution to adjacent areas assuming breeding sites were not already limiting, with such a change not expected necessarily to be reflected in the numbers of birds mist netted. It is pertinent to note that most of those few birds from which play-back elicited a call where occupying burrows at the upper most edges of the Boulder Beach colony where the storm may have had least impact.

Conclusion

A quantitative survey of the breeding storm petrel population within the Boulder Beach, Lunga, in June 2005, failed to achieve its objective as a consequence of a marked decline in the population since the previous survey estimated 450 pairs in 2001. Attempts to establish a calibration quadrat within the colony where previously around 15 birds would by day response back to a male Storm Petrel recording, found none with few encountered elsewhere across the colony. This was supported by night visits. It is suggested that the scale of this reduction which was not reflected in a survey of a much smaller colony or ringing, was the result of a particular storm event with rough seas that inundated and structurally changed the nesting burrows. In the forthcoming years attempts to re-survey the Boulder Beach is recommended in order to monitor the extent of any re-colonisation.

References

Gilbert, G., Gibbons, D.W. & Evans, J. (1998a) *Bird monitoring methods.* RSPB, Sandy.
Gilbert, G. & Helmsley, D. (1996) *A survey of Storm Petrels (Hydrobates pelagicus) on the Treshnish Isles 1996.* Unpublished RSPB report, September 1996.
Gilbert, G., Helmsley, D. & Shepherd, M. (1998b) A survey of Storm Petrels *Hydrobates pelagicus* on the Treshnish Isles 1996. *Scottish Birds*, **19**, 145 - 153.
Insley *et al.*2004
Mavor, R.A., Parsons, M., Heubeck, M. & Schmitt, S. (2005) *Seabird numbers and breeding success in Britain and Ireland, 2004.* Joint Nature Conservation Committee, Peterborough. (UK Nature Conservation No. 29.)
Ratcliffe, N., Vaughan, D., Whyte, C. & Shepherd, M. (1998a) Development of playback census methods for Storm Petrels *Hydrobates pelagicus*. *Bird Study* **45**, 302 - 312.
Ward, R.M., Carter, A. & Cooper, D. (2001) A survey of Storm Petrels in the Boulder Beach, Lunga in 2001. In *Treshnish Isles Auk Ringing Group Report for 2001* (R.M.Ward) pp 23-26. Unpublished report.
Willis, S.G. (2000) The Storm Petrel *Hydrobates pelagicus* on the Treshnish Isles: population estimates and movement of birds. In *Treshnish Isles Auk Ringing Group Report for 2000* (R.M.Ward) pp 50-61. Unpublished report.

Photograph of the Sgeir a Chaisteil north-east shore (in part) where the previous season's 117 Oyster Plants *Mertensia maritima* were completely removed by a winter storm. The Boulder Beach, Lunga, is in the background. (*Andrew Carter*)