

Population and Distribution of Taiga Bean Geese in the Slamannan Area 2015/2016

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Summary

Population and Distribution of Taiga Bean Geese in the Slamannan Area 2015/2016

Background

This report details the results of a study undertaken between September 2015 and March 2016, which aimed to monitor the population and distribution of the Central Scotland flock of taiga bean geese (*Anser fabalis*), which use the Slamannan Plateau area of Central Scotland. This is a continuation of research started in January 1990, presented elsewhere, (Simpson 1990-1993, Smith *et al.* 1994 and 1995, Simpson and Maciver 1996-2005, Maciver 2006-2010 and Maciver and Wilson 2011-2015).

Main findings

During winter 2015/2016, the first occasion that a group of taiga bean geese were recorded on the Plateau was on the 29 September, when a large flock of c.100 birds were seen arriving at Fannyside Muir at 19.30.

A further visit to Luckenburn on the 2 October recorded a flock of 77 birds. The next day saw the flock total recorded rise to 108 birds and a further influx of birds on the 5 October raised the total to 110. A further increase was observed on the 7 October when 137 birds were seen at Luckenburn. It wasn't until the 21 October that a further significant increase took the flock total to 186 birds.

From late October onwards the taiga bean geese split up into various groups as in previous years. These ranged throughout the central area of the study area, with some visits made to outlining areas to the west and north of the Plateau. This feeding pattern continued during much of November and it was not until early December that birds were found in the northern sector at Wester Lochgreen Farm.

The highest flock total for the wintering period was 263 birds. This total was not achieved until the 14 January, when coordinated daytime counts produced this figure.

Roosting birds used the Fannyside Muir / Lochs area or one of two pool areas on Darnrig Moss, as well as several less regularly used roost sites.

There was a further catch of six taiga bean geese on the 9 October 2015 at Luckenburn Farm. Four adults were fitted with GSM tags. This allowed the movements of these birds to be closely followed throughout the winter period, and beyond.

Three juveniles were also ringed and fitted with neck-collars but no live GSM tags were fitted as the parents were tagged and as such provided regular location data. One adult was a retrap from 2011 but had somehow lost its previous collar. It was given the number UCOL10.

The last sizeable flock of taiga bean geese involved 60 birds seen at 09.40 on a field north of Strathavon Farm on the 4 February. Further daytime searches on the 8, 9 and 11 February and a dusk roost visit on the 11 February produced no sightings of taiga bean geese.

However, telemetry information confirmed that taiga bean geese were still present at a roost site on the Plateau at midnight on the 9 February and left there to feed at Garbethill Muir early in the morning, before then migrating to Denmark in a strong westerly airflow. This is the earliest departure date recorded during the past 20 years.

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This report should be quoted as:

Maciver, A., and Goater, R., 2017. Population and Distribution of Taiga Bean Geese in the Slamannan Area 2015/2016. Unpublished Report to the Bean Goose Action Group.

Acknowledgements

Thanks are due to the landowners within the study area who gave monitoring officers permission to access their land for fieldwork purposes.

Thanks to Rick Goater and Brian Minshull for commenting on and editing the original draft.

Finally, a special thanks to Carl Mitchell and Larry Griffin of the Wildfowl and Wetland Trust (WWT) who continue to support the monitoring of the taiga bean geese flock.



Figure 1. Juvenile Taiga Bean Goose, October 2015 (Photograph courtesy of A. Maciver).

1. INTRODUCTION

This report describes the continuation of research into the use of the Slamannan Plateau by taiga bean geese (*Anser fabalis*)¹. It follows on from the work done from the late 1980s onwards, as reported by Simpson (1989-1995), Maciver (1993-1995), Smith *et al.* (1994-1995), Simpson and Maciver (1996-2005) and Maciver (2006-2010), and Wilson and Maciver (2011-2015) for Scottish Natural Heritage (SNH), Falkirk Council, North Lanarkshire Council and the Royal Society for the Protection of Birds (RSPB).

Other members of the Bean Goose Action Group (BGAG) who also use the information contained within this report include Forestry Commission Scotland.

In 2015/2016 the work involved again monitored daytime distribution and roost site selection, as is reported here.

¹ As of the 18 January 2018 taiga bean goose becomes a full species in its own right as opposed to being a sub-species of bean goose (*i.e.*, *Anser fabalis fabilis*). Therefore, it has been decided to adopt this nomenclature for the preparation of this and subsequent reports.

2. METHODS

2.1 Field Numbering

For continuity, the field numbering system initially devised by Smith, *et al.* (1994 and 1995) and progressively developed subsequently was again adopted.

A flooded area at Gardrum Moss was defined as Field 368 as large flocks of pink-footed geese (*A. brachyrhynchus*) use this area for roosting.

2.2 Diurnal Distribution of Taiga Bean Geese

There were approximately 65 visits to record taiga bean geese between late September and late February. A visit involves monitoring all geese species within the study area, and these take place several times each week. These routine observations can take place at any time of day, with no particular set pattern. On some occasions the taiga bean geese are seen leaving a roost area, and their direction of flight is noted. If possible, they are then re-located and observations are recorded in relation to which fields they are feeding in, *etc.*.

The duration of a visit is generally between two and six hours. When two separate visits to the Plateau and to the same location occur in one day (*e.g.*, a.m. and p.m. visits) geese are recorded in the same fields as appropriate.

The following data are recorded on each visit:

- Number of taiga bean geese and location;
- Number of other geese and location; and,
- Disturbance factors.

2.3 Roost Sites

Roost count visits to observe roosting behaviour at the various roost sites involved visiting known roost sites in suitable circumstances to undertake roost counts. In part these were combined with other roost counts made by Angus Maciver and Brian Minshull as part of a commissioned work conducted for SNH relating to the Slamannan Plateau Site of Special Scientific Interest (SSSI) / Special Protection Area (SPA).

Roost count visits can be made either at dawn or dusk; normally they involve arriving at the roost site involved either pre- dawn or pre-dusk so that any birds leaving or arriving early are recorded.

Several roosting sites are now used. As well as the traditional sites at Fannyside (*i.e.*, West and East Fannyside Lochs and the pools on Fannyside Muir), the geese also use a site close to the source of the River Avon near Torbrev Farm, and several different pools on Darnrig Moss. In addition, some roosting probably took place this winter on areas of fields at Hillend Farm and at Dyke Farm in the Upper Avon Valley which were flooded during periods of high water levels.

This multiple use of roost sites means that at least two people have to be simultaneously involved in the counts so as a clearer picture of usage is determined.

3. RESULTS AND ANALYSIS

3.1 Population and Distribution

Searching for taiga bean geese arrivals commenced on 17 September with further visits on the 22, 23 and 28 September. No taiga bean geese were seen to be present on any of these visits.

In winter 2015/2016, the first occasion that a group of taiga bean geese were recorded on the Plateau was on the 29 September, when a large flock of c.100 birds were seen arriving at Fannyside Muir at 19.30.

The following day a visit to Luckenburn Farm was unsuccessful, with no taiga bean geese being present.

A further visit to Luckenburn on the 2 October recorded a flock of 77 birds. The next day saw the flock total recorded rise to 108 birds and a further influx of birds on the 5 October raised the total to 110. A further increase was observed on the 7 October when 137 birds were seen at Luckenburn. It wasn't until the 21 October that a further significant increase took the flock total to 186 birds.

From late October onwards the taiga bean geese split up into various groups as in previous years. These ranged throughout the central area of the study area, with some visits made to outlining areas to the west and north of the plateau. Again, no birds were seen again in the south-eastern sector around Balmitchell Farm.

This feeding pattern continued during much of November and it was not until early December that birds were found in the northern sector at Wester Lochgreen Farm.

In early December a small flock of 35 taiga bean geese utilised flooded fields at Hillend Farm for drinking and possibly for roosting. Similar fields at Strathavon Farm were used on a daily at this time too.

Birds were recorded in fields at Threiprig throughout November, December and January.

During December and January it was noted that improved grassland on Garbethill Muir attracted up to 30 birds. However, numbers of geese using this area may have been higher as telemetry data showed consistent use of this feeding area by tagged taiga bean geese during this period.

As in previous winters fields at Bandominie were again used; birds were recorded here from late November onwards.

The highest flock total for the wintering period was 263 birds. This total was not achieved until the 14 January, when coordinated daytime counts produced this figure.

The last sizeable flock of taiga bean geese involved 60 birds seen at 09.40 on a field north of Strathavon Farm on the 4 February.

3.1.1 Recording of Juvenile Geese

In October 2015 two independently conducted ageing assessment counts produced counts which involved just seven juvenile birds. One, made by Carl Mitchell and Angus Maciver on the 8 October involved a sample of 137 birds, and the other, made by Larry Griffin, on the 24 October, involved a sample of 152 birds.

At just 4.6%, the proportion of juvenile birds counted in the sample parts of the wintering flock examined in winter 2015/2016 was again extremely low; the corresponding figure for winter 2014/2015 was just 4%.

However, conversely, that for winter 2013/2014 was 34.5% (the highest of the previous five years) whilst that for winter 2012/2013 was 18% (the next lowest of the past five years). Whilst breeding success and survival of juveniles obviously varies each year, the evidence obtained from what is typically just one ageing assessment count of what is necessarily only ever a sample of the overall wintering population can only ever be indicative. However, despite the seemingly very low productivity in the 2015 breeding season, the peak number counted increased significantly compared to winter 2014/2015. Intriguingly, over the past six winters, the proportion of juveniles estimated in any one autumn seems to have little influence over the winter maximum count obtained in the same winter. That is, the number of juveniles the wintering flock includes is only of some relevance in determining the overall size of the flock wintering on the Plateau each winter. To at least some extent, it would seem that this is determined more by the number of birds from the breeding population / sub-populations opting to migrate on to Central Scotland each winter from staging / wintering areas in the flyway.

The SNH commissioned reports (e.g., Minshull, 2016, Minshull, 2013a and 2013b, BCM Environmental Services Limited, 2011) have intimated that there is apparently no reason to have any concerns about the seemingly low productivity of the population of taiga bean geese that winters on the Slamannan Plateau. Further, they have suggested that although the ageing assessment counts involved can only ever be regarded as indicative, there does not appear to be any adverse trends. However, for the second autumn running the ageing assessment count would seem to indicate that recent productivity has been very low. Whilst the longevity of bean geese is probably high (the oldest known bird based on ringing studies was 25.6 years old when found dead) and, certainly whilst on the Plateau (and also seemingly elsewhere in the flyway – a factor which is now being substantiated by the ongoing sightings of many of the marked birds over a series of years) it would seem mortality is very low, such low rates of productivity can surely not be sustainable over a long run of breeding seasons.

Whether there is some problem (e.g., predation, habitat degradation, etc.) causing such apparently low rates of breeding success is unknown, and obviously only studies carried out on the breeding grounds could begin to ascertain this.

3.2 Diurnal Distribution

Routine recording of the distribution of feeding flocks of taiga bean geese during the day was again made during winter 2015/2016. This pattern of distribution is summarised in the map prepared as usual by SNH for winter 2015/2016 on the basis of this data (please refer to this map for the details of diurnal distribution during winter 2015/2016 available from SNH for the locations of the field numbers and farms, etc., referred to throughout this report).

3.3 Other Geese Species

3.3.1 Greylag Geese

Greylag geese (*A. anser*) were only recorded on one occasion this winter; a small group of 11 were noted at Hillend Farm on the 29 October (see Annex 2).

3.3.2 Pink-footed Geese

These were again the most numerous of the grey geese frequenting the Slamannan Plateau this winter.

The largest flock seen (2,000) occurred on Gardrum Moss, which is strictly just outside the current study area but is part of the Plateau which Angus Maciver monitors for geese species (see Annex 3).

3.3.3 *European White-fronted Geese*

No European white-fronted geese (*A. albifrons*) were recorded this winter (see Annex 4).

3.3.4 *Canada Geese*

Canada geese (*Branta canadensis*) are now quite widespread on the Slamannan Plateau; in summer there is a breeding population of some 6 pairs.

The highest counts were of 24 at Grangeneuk on the 29 October and 26 near Loch Elrig on the 10 December (see Annex 5).

3.3.5 *Barnacle Geese*

No barnacle geese (*B. leucopsis*) were recorded this winter (see Annex 6).

3.4 **Roost Sites**

Roost count visits to known roost sites were made on eleven occasions.

East Fannyside Loch was seen to be used on two occasions, West Fannyside Loch on one occasion, the pools at Fannyside Muir on five occasions and the pools at Darnrig Moss on three occasions.

In addition, on the 19 November a small group of 30 taiga bean geese were seen using a flooded area of Field 134A to roost following a period of high rainfall. This field is adjacent to the River Avon at Slamannan.

Again, the satellite tagged birds provided good information on which roost sites were being used, and to what extent, during winter 2015/2016.

4 DISTURBANCE

Again, in winter 2015/2016, little disturbance was noted. One accidental instance of disturbance occurred at the Fannyside Muir roost site on the 5 October. In addition, minor disturbance was also noted involving instances where a farmer was attending to stock and someone was discharging a shotgun.

No bird watchers were seen entering fields or disturbing the flock.

5 MARKED GEESE

A further six birds were trapped and ringed and fitted with neck-collars. The three adults were fitted with GSM Tags.

Many of the marked geese were again recorded during winter 2015/2016. The following list includes all the neck-collared birds which were observed during fieldwork:

- 6X, 6Z, 7U, 6S, 7P, 6Y, 7V, 3Y, 6U, 7T, 7Y, 7Z, 7X and V6.

6 DISCUSSION

The Slamannan Plateau wintering population of taiga bean geese continues to be the principal one in the UK.

The highest number of birds counted in winter 2015/2016 was 263; the highest count earlier in the winter was 165 birds but on the 14 January coordinated field counts produced this new high count of 263 birds. It was considered that a late influx of geese may have occurred which was related to cold weather conditions in the Low Countries making feeding difficult and resulting in a movement to warmer climes.

The first group of birds recorded were c.100 which was seen at the roost site at Fannyside Muir at 19.30 on the 29 September. It was presumed they had just arrived on the Plateau.

Unlike in more recent winters, the preferred feeding fields of the Slamannan Plateau taiga bean goose flock in the initial period of the winter reverted to the more usual pattern of earlier winters. Specifically, the feeding flock largely concentrated on exploiting the rich pastures at Luckenburn Farm during the October-November period.

Consistent use of the Luckenburn fields allowed a further cannon-netting attempt to be made in October. As a result, a further six geese were successfully captured and marked. These birds involved a family group of two adults and three juveniles plus a further adult male and adult female. Each of the adults was fitted with a GSM tags and all of the birds were marked and ringed as normal. However, of note was the intriguing situation whereby one of the adult male birds had been previously trapped and marked and ringed it was no longer neck-collared. It was still ringed and colour-ringed and indeed the green colour ring enabled the bird to be readily identified. In the hand examination of the neck feathering, *etc.*, of this bird indicated no damage had occurred as a result of it being neck-collared for presumably much of the preceding four years.

Later in the winter preferred feeding fields again followed a reasonably typical pattern, involving use of areas north of Slamannan itself, as well as fields near each of Strathavon Farm, Bandominie Farm and Wester Lochgreen Farm.

Tracking data allied with field observations and roost count visits indicate that several roosting sites were used; as well as the traditional sites at Fannyside (*i.e.*, West and East Fannyside Lochs and the pools on Fannyside Muir), the geese also use a site close to the source of the River Avon near Torbrex Farm, and several different pools on Darnrig Moss. In addition, some roosting probably took place this winter on areas of fields at Hillend Farm and at Dyke Farm in the Upper Avon Valley which were flooded during periods of high water levels.

As in previous years tracking data demonstrated that the spring migration followed the now established pattern. This involved the birds staging initially in North Jutland, Denmark for a few weeks before at least part of the population continued north and staging on the Glomma River north-east of Oslo before finally continuing on to the breeding grounds in south central Sweden, close to the Norwegian border.

However, the timing of departure of the taiga bean geese was unusual in that it was the earliest departure during the past 20 years.

The last sizeable flock of taiga bean geese involved 60 birds seen at 09.40 on a field north of Strathavon Farm on the 4 February. Further daytime searches on the 8, 9 and 11 February and a dusk roost visit on the 11 February produced no sightings of taiga bean geese.

However, telemetry data demonstrated that some taiga bean geese were still present on the Plateau at midnight on the 9 February but after flying to Garbethill Muir in the early morning of the 10 February and feeding in fields there they then were recorded flying direct to northern Denmark aided by a strong westerly airflow.

Finally, a variety of other activities were undertaken, including, for example, giving a PowerPoint presentation on the taiga bean geese to a class at Slamannan Primary School in November 2015.

7 CONCLUSIONS AND RECOMENDATIONS

Winter 2015/2016 marked the twentieth successive winter during which the taiga bean goose population associated with the Slamannan Plateau was monitored broadly the same way outlined herein, before being duly reported in reports similar to this one (the first such report being for winter 1995/1996).

Prior to this, broadly similar work was undertaken for SNH by the RSPB in winters 1994/1995 and 1993/1994 (Smith *et al.*, 1995 and 1994), and as part of unpublished studies completed by John Simpson in winters 1992/1993, 1991/1992, 1990/1991 and 1989/1990 (Simpson, 1993, 1992, 1991 and 1990).

During the past 20 years Angus Maciver has been central to this monitoring effort, undertaking the monitoring involved with John Simpson in the first ten years and with Brian Minshull and others in the second ten years of the two decades involved.

Between 1995/1996 and 2004/2005 Angus Maciver and John Simpson also jointly prepared the annual reports. Between 2005/2006 and 2009/2010 Angus Maciver solely took responsibility for the same, whilst in the preceding five winters Toby Wilson of the RSPB assisted with this task.

The work involved has been completed on behalf of the BGAG, which is a voluntary body charged with delivering the aims of the Bean Goose Biodiversity Plans of both Falkirk and North Lanarkshire Councils.

Certain member organisations of the BGAG have provided funding during this period to facilitate the monitoring efforts involved, mainly in the form of money to help cover the mileage of the Bean Goose Monitoring Officer, Angus Maciver.

However, whilst being supported by the BGAG, the monitoring work has always entirely relied on voluntary effort.

As such, the work involved can perhaps be considered as a very good example of 'citizen science'. It has generated an uninterrupted run of invaluable data for a period of more than two decades; this data was fundamental to the creation of the Slamannan Plateau SSSI / SPA aimed at providing protection to vital feeding and roosting habitats of the geese and is central to the consideration of proposed developments on the Plateau.

In the past few winters other work on the geese has been funded by SNH and others.

In each of autumns 2011, 2012, 2013 and 2015 a total of some 42 taiga bean geese were captured and marked to facilitate more detailed studies of the birds, finally realising a long held objective of the BGAG. The marking of the birds included fitting some of them with tracking devices, which has generated a wealth of detailed data on the daily movements of the birds involved, both on the Plateau during winter, as well as elsewhere during their migrations in spring and autumn and during the summer. Whilst this data has been revelatory in terms of what it has revealed about the staging areas used on migration and the breeding grounds when the birds are in Scandinavia, it has been largely confirmatory of the findings of the routine monitoring work completed by Angus Maciver and others. It has though, very much provided a focus for ongoing monitoring, acting as an invaluable source of 'intelligence' about the whereabouts of the marked birds.

In addition, winter 2015/2016 marked the last of six successive winters during which other monitoring work was completed by Brian Minshull and Angus Maciver on behalf of SNH involving five roost counts and one ageing assessment count aimed at providing data on the

flock size, *etc.*, for the purposes of Site Condition Monitoring (SCM) in relation to the SSSI / SPA. Although completed and reported separately, this monitoring work was undertaken in close conjunction with the BGAG monitoring work (see for example, SNH Commissioned Reports 487, 607 and 608).

Although very welcome, the recent additions (*i.e.*, the SNH Commissioned Reports) and innovations (*e.g.*, the satellite and radio-tagging of birds) have merely complemented the monitoring work commenced more than twenty years ago.

Whilst this work is not without its shortcomings due to, for example, the difficulty of generating an accurate highest count for the winter, undertaking coordinated roost counts at multiple, difficult to access sites, locating feeding flocks at certain times of the winter or recording data relating to certain key feeding areas, in overall terms the data produced continues to be invaluable.

Further, whilst the future of the Slamannan Plateau population of wintering taiga bean geese may ultimately be in some doubt due to factors beyond the control of the bodies which comprise the BGAG (it, like the Norfolk population, which has dwindled to very small numbers which are only present for a very short period each winter due to the trend towards milder winters, could no longer come to the Slamannan Plateau in future decades) it remains highly significant in terms of both Scottish and British nature conservation.

As such, good monitoring data is crucial, and will continue to be so.

Therefore, it is very strongly advocated that the good work which has been completed over the past two or three decades is continued, and continued on much the same basis as described herein, supported by the members of the BGAG and facilitated by tracking data.

Further, it is advocated that the data generated is made available for use by all (*e.g.*, members of the BGAG for development control purposes, SNH for SCM purposes, as well as other parties, possibly also involving uploading this and other reports on Scotlands' Bean Geese website, <http://scotlandsbeangeese.wikispaces.com/home> to make them more widely accessible), whether they are actively contributing to the monitoring or not.

8 REFERENCES AND BIBLIOGRAPHY

It is intended that this listing provides a reasonably comprehensive bibliography of reports, *etc.*, relating to the Slamannan Plateau taiga bean geese.

For example, for reference purposes, the full details of each of the various commensurate preceding reports prepared for the BGAG and others is included in reverse chronological order here, as follows (it is not intended to include this listing in full in future such reports; rather this listing will be cross-referenced):

Winter 2014/2015

Maciver, A., and Wilson, T., 2015. Population and Distribution of Bean Geese in the Slamannan Area, 2014/2015. Unpublished Report to the Bean Goose Action Group.

Winter 2013/2014

Maciver, A., and Wilson, T., 2014. Population and Distribution of Bean Geese in the Slamannan Area, 2013/2014. Unpublished Report to the Bean Goose Action Group.

Winter 2012/2013

Maciver, A., and Wilson, T., 2013. Population and Distribution of Bean Geese in the Slamannan Area, 2012/2013.

Winter 2011/2012

Maciver, A., and Wilson, T., 2012. Population and Distribution of Bean Geese in the Slamannan Area, 2011/2012. Unpublished Report to the Bean Goose Action Group.

Winter 2010/2011

Maciver, A., and Wilson, T., 2011. Population and Distribution of Bean Geese in the Slamannan Area 2010/2011. Unpublished Report to the Bean Goose Action Group.

Winter 2009/2010

Maciver, A. 2010. Population and Distribution of Bean Geese in the Slamannan Area 2009 /2010, Unpublished Report to the Bean Goose Action Group.

Winter 2008/2009

Maciver, A. 2009. Population and Distribution of Bean Geese in the Slamannan Area 2008/2009, Unpublished Report to the Bean Goose Action Group.

Winter 2007/2008

Maciver, A. 2008. Population and Distribution of Bean Geese in the Slamannan Area 2007/2008, Unpublished Report to the Bean Goose Action Group.

Winter 2006/2007

Maciver, A. 2007. Population and Distribution of Bean Geese in the Slamannan Area 2006/2007, Unpublished Report to the Bean Goose Action Group.

Winter 2005/2006

Maciver, A. 2006. Population and Distribution of Bean Geese in the Slamannan Area 2005/2006, Unpublished Report to the Bean Goose Action Group.

Winter 2004/2005

Simpson, J., & Maciver, A., 2005. Population and Distribution of Bean Geese in the Slamannan Area 2004/2005. Unpublished Report to the Bean Goose Action Group.

Winter 2003/2004

Simpson, J., & Maciver, A., 2004. Population and Distribution of Bean Geese in the Slamannan Area 2003/2004. Unpublished Report to the Bean Goose Action Group.

Winter 2002/2003

Simpson, J., & Maciver, A., 2003. Population and Distribution of Bean Geese in the Slamannan Area 2002/2003. Unpublished Report to the Bean Goose Action Group.

Winter 2001/2002

Simpson, J., & Maciver, A., 2002. Population and Distribution of Bean Geese in the Slamannan Area 2001/2002. Unpublished Report to the Bean Goose Action Group.

Winter 2000/2001

Simpson, J., & Maciver, A., 2001. Population and Distribution of Bean Geese in the Slamannan Area 2000/2001. Unpublished Report to the Bean Goose Action Group.

Winter 1999/2000

Simpson, J., & Maciver, A., 2000. Population and Distribution of Bean Geese in the Slamannan Area 1999/2000. Unpublished Report to the Bean Goose Action Group.

Winter 1998/1999

Simpson, J., & Maciver, A., 1999. Population and Distribution of Bean Geese in the Slamannan Area 1998/1998. Unpublished Report to the Bean Goose Action Group.

Winter 1997/1998

Simpson, J., & Maciver, A., 1998, Population and Distribution of Bean Geese in the Slamannan Area 1997/1998. Unpublished Report to the Bean Goose Action Group.

Winter 1996/1997

Simpson, J., & Maciver, A., 1997. Population and Distribution of Bean Geese in the Slamannan Area 1996/1997. Unpublished Report to the Bean Goose Action Group.

Winter 1995/1996

Simpson, J., & Maciver, A., 1996. Population and Distribution of Bean Geese in the Slamannan Area 1995/1996. Unpublished Report to the Bean Goose Action Group.

Winter 1994/1995

Smith, T., Bainbridge, I. & O'Brien, M., 1995. Distribution and Habitat Use by Bean Geese in the Slamannan Area. Second Year 1994/95. Unpublished Report to SNH. RSPB.

Winter 1993/1994

Smith, T., Bainbridge, I. & O'Brien, M., 1994. Distribution and Habitat Use by Bean Geese in the Slamannan Area. Unpublished Report to SNH. RSPB. (Not entitled as such but relates to the first year, *i.e.* 1993/1994).

Winter 1992/1993

Simpson, J., 1993. Bean Geese Winter Reports. Unpublished Report. (Not entitled as such but assumed to relate to 1992/1993).

Winter 1991/1992

Simpson, J., 1992. Bean Geese Winter Reports. Unpublished Report. (Not entitled as such but assumed to relate to 1991/1992).

Winter 1990/1991

Simpson, J., 1991. Bean Geese Winter Reports. Unpublished Report. (Not entitled as such but assumed to relate to 1990/1991).

Winter 1989/1990

Simpson, J., 1990. Bean Geese Winter Reports. Unpublished Report. (Not entitled as such but assumed to relate to 1989/1990).

Other relevant reports, *etc.*

Minshull, B. 2016. Report on the delivery of a monitoring programme for bean goose on the Slamannan Plateau 2013/2014. Scottish Natural Heritage Commissioned Report No. 889.

Minshull, B. 2013b. Report on the delivery of a monitoring programme for bean goose on the Slamannan Plateau 2012/2013. Scottish Natural Heritage Commissioned Report No. 608.

Minshull, B. 2013a. Report on the delivery of a monitoring programme for bean goose on the Slamannan Plateau 2011/2012. Scottish Natural Heritage Commissioned Report No. 607.

BCM Environmental Services Limited. 2011. Report on the delivery of a monitoring programme for bean goose on the Slamannan Plateau 2010/2011. Scottish Natural Heritage Commissioned Report No. 487.

Minshull, B. C., Mitchell, C., Maciver, A., & Griffin, L. 2014. Report on the collation of field use data relating to wintering bean geese on the Slamannan Plateau. Scottish Natural Heritage Commissioned Report No. 711.

Note: As at 8th April 2017, the equivalent commissioned reports for winters 2014/2015 and 2015/2016 have seemingly still to be published by SNH.

ANNEX 1: TAIGA BEAN GEESE SURVEY DATA 2015/2016

Table A1.1 – Taiga Bean Geese Survey Data 2015/2016 (Bird Days / Month)

Field Number	Total Number of Greylag Geese						Total	Average Monthly Bird Days	No. of Positive Visits
	September	October	November	December	January	February			
285A	0	99	596	198	227	73	1193	199	21
9	0	743	299	0	0	0	1042	174	8
305	0	0	113	819	0	0	932	155	9
120	0	135	0	210	78	140	563	94	5
77	0	115	210	88	0	30	443	74	7
166D	0	0	340	50	0	0	390	65	4
264	0	135	0	0	230	0	365	61	3
251	0	0	47	244	0	0	291	49	7
401	100	171	0	0	0	0	271	45	4
166F	0	0	93	30	120	0	243	41	3
358	0	0	55	60	60	40	215	36	3
166G	0	0	0	180	0	0	180	30	2
117	0	0	60	60	56	0	176	29	3
279	0	0	51	101	0	0	152	25	3
264A	0	77	0	0	67	0	144	24	2
260	0	0	113	17	0	0	130	22	3
166B	0	0	0	0	0	60	60	10	1
342	0	0	0	11	43	0	54	9	2
93A	0	0	0	11	41	0	52	9	3
255	0	0	0	43	0	0	43	7	1
134A	0	0	30	0	0	0	30	5	1
166E	0	0	0	30	0	0	30	5	1
306	0	20	0	0	0	0	20	3	1
400	0	14	0	0	0	0	14	2	1

ANNEX 2: GREYLAG GEESE SURVEY DATA 2015/2016 (BIRD-DAYS / MONTH)

Table A2.1 – Greylag Geese Survey Data 2015/2016 (Bird Days / Month)

Field Number	Total Number of Greylag Geese						Total	Average
	October	November	December	January	February	March		
251	33	0	0	0	0	0	33	6

ANNEX 3: PINK-FOOTED GEESE SURVEY DATA 2015/2016 (BIRD-DAYS / MONTH)

Table A3.1 – Pink-footed Geese Survey Data 2015/2016 (Bird Days / Month)

Field Number	Total Number of Pink-footed Geese						Total	Average
	October	November	December	January	February	March		
9	0	1	0	0	0	0	1	0.2
100	0	0	0	250	0	0	250	42
101	0	0	0	0	100	0	100	17
117	60	0	0	0	0	0	60	10
120	100	0	600	0	612	0	1312	219
121	0	0	0	0	700	0	700	117
126	0	0	400	0	0	0	400	67
133	0	0	800	0	700	0	1500	250
144	800	0	0	0	0	0	800	133
251	0	0	0	4	47	0	51	9
255	0	0	10	0	0	0	10	2
261	0	0	0	0	55	0	55	9
368	5,000	0	0	0	0	0	5,000	833
134A	0	222	0	0	0	0	222	37
166F	0	0	300	0	0	0	300	50
166G	0	0	0	0	153	0	153	26
285A		0	0	0	2	0	2	0.3

ANNEX 4: EUROPEAN WHITE-FRONTED GEESE SURVEY DATA 2015/2016 (BIRD-DAYS / MONTH)

No European white-fronted geese were recorded during winter 2015/2016.

ANNEX 5: CANADA GEESE SURVEY DATA 2015/2015 (BIRD-DAYS / MONTH)

Table A5.1 – Canada Geese Survey Data 2015/2016 (Bird Days / Month)

Field Number	Total Number of Canada Geese						Total	Average
	September	October	November	December	January	February		
42	0	24	0	0	0	0	24	4
77	17	0	0	0	0	0	17	3
117	0	0	0	0	0	3	3	1
180	0	0	0	26	0	0	26	4
287A	0	0	7	0	0	0	7	1
93A	0	0	0	0	6	4	10	2

ANNEX 6: BARNACLE GEESE SURVEY DATA 2015/2015 (BIRD-DAYS / MONTH)

No barnacle geese were recorded during winter 2015/2016.

ANNEX 6: TAIGA BEAN GEESE SURVEY DATA 2015/2016

Date	Time	Place	Field No	Grid Ref.	Habitat Type	Stock	Stock No.	No. of Taiga Bean Geese	No. of Juveniles	Disturbance Type	Observation	Observer(s)
17-Sep-15	1220	Luckenburn	9	819722	OIP			0			Routine	AM
22-Sep-15	0940	Luckenburn	9	819722	OIP			0			Routine	AM
23-Sep-15	1130	Luckenburn	9	819722	OIP			0			Routine	AM
23-Sep-15	1945	Fannyside Muir	77	804740	Muir Pool			0			Roost	AM
23-Sep-15	2015	Darnrig Pools	117	865754	Muir Pool			0			Roost	AM
28-Sep-15	1200	Luckenburn	9	819722	OIP			0			Routine	AM
29-Sep-15	1930	E. Fannyside Loch	401	807736	OW			100			Roost	AM
30-Sep-15	1405	Luckenburn	9	819722	OIP			0			Routine	AM
02-Oct-15	1530	Luckenburn	9	819722	OIP			8			Routine	BCM
02-Oct-15	1544	Wester Jaw	264A	849744	OIP			77			Routine	BCM
03-Oct-15	1215	Luckenburn	306	824722	OIP			20			Routine	AM
04-Oct-15	1130	Luckenburn	305	822722	OIP			108			Routine	AM
05-Oct-15	1839	Fannyside Muir	77	804740	Muir Pool			5			Roost	AM
05-Oct-15	1850	Fannyside Muir	77	804740	Muir Pool			110			Roost	AM
05-Oct-15	1030	Luckenburn	305	822722	OIP			76			Routine	AM
05-Oct-15	1839	E. Fannyside Loch	401	807736	OW			105		Accidental	Roost	AM
06-Oct-15	1015	Luckenburn	305	822722	OIP			90			Routine	AM
07-Oct-15	1135	Luckenburn	305	822722	OIP			134			Routine	AM,CM
07-Oct-15	1530	Luckenburn	305	822722	OIP			137			Routine	AM,CM,LG
08-Oct-15	1345	Luckenburn	9	819722	OIP			137			Routine	AM,DV,CM,LG
08-Oct-15	0700	Luckenburn	305	822722	OIP			137			Routine	AM,CM,LG
09-Oct-15	0730	Luckenburn	305	822722	OIP			137	3		Routine	CM,LG
19-Oct-15	1445	Luckenburn	305	822722	OIP			0			Routine	AM
21-Oct-15	1350	Luckenburn	9	819722	OIP			186			Routine	AM,CM
23-Oct-15	1000	Luckenburn	9	819722	OIP			97			Routine	AM
24-Oct-15	1200	Luckenburn	9	819722	OIP			152	7		Routine	LG
25-Oct-15	1200	Luckenburn	9	819722	OIP			163			Routine	AM
25-Oct-15	1135	Threiprig	285A	834763	IJ			25			Routine	AM
29-Oct-15	1645	Easter Jawcraig	120	847746	IJ	Sheep/cow	60/1	135			Routine	BCM
29-Oct-15	1405	Wester Jaw	264	847762	IJ			135			Routine	AM,BCM
29-Oct-15	1730	W. Fannyside Loch	400	800735	OW			14			Roost	BCM
29-Oct-15	1708	E. Fannyside Loch	401	807736	OW			16			Roost	BCM
29-Oct-15	1714	E. Fannyside Loch	401	807736	OW			50			Roost	BCM
29-Oct-15	1435	Threiprig	285A	834763	IJ			74			Routine	AM,BCM
01-Nov-15	1400	Luckenburn	9	819722	OIP			165			Routine	AM,RG
01-Nov-15	1320	Threiprig	285A	834763	IJ			52			Routine	AM,RG
01-Nov-15	1615	Threiprig	285A	834763	IJ			119			Routine	AM

Date	Time	Place	Field No	Grid Ref.	Habitat Type	Stock	Stock No.	No. of Taiga Bean Geese	No. of Juveniles	Disturbance Type	Observation	Observer(s)
03-Nov-15	1200	Luckenburn	305	822722	OIP			100		Farming	Routine	AM
03-Nov-15	1210	Luckenburn	305	822722	OIP			13			Routine	AM
03-Nov-15	1410	Threiprig	285A	834763	IJ			70		Shooting	Routine	AM
05-Nov-15	1650	Fannyside Muir	77	804740	Muir Pool			100			Roost	AM
05-Nov-15	1710	Fannyside Muir	77	804740	Muir Pool			110			Roost	AM
05-Nov-15	1610	Threiprig	285A	834763	IJ			70			Routine	AM
09-Nov-15	1210	Luckenburn	9	819722	OIP			134			Routine	AM
09-Nov-15	1155	Threiprig	285A	834763	IJ			49			Routine	AM
10-Nov-15	1600	Threiprig	285A	834763	IJ			68			Routine	MT
11-Nov-15	1120	Threiprig	285A	834763	IJ			72			Routine	AM
13-Nov-15	1110	Hillend	251	850734	OIP			47			Routine	AM
13-Nov-15	1132	Threiprig	285A	834763	IJ			39			Routine	AM
16-Nov-15	1115	Wester Jaw	260	851737	OIP			56			Routine	AM
16-Nov-15	1205	Threiprig	285A	834763	IJ			51			Routine	AM
19-Nov-15	1650	Fannyside Muir	77	804740	Muir Pool			0			Roost	BCM
19-Nov-15	1716	Darnrig Pools	117	865754	OW			60			Roost	AM
19-Nov-15	1500	Wester Jaw	260	851737	OIP			57			Routine	BCM
19-Nov-15	1534	Threiprig	279	838745	IJ			51			Routine	AM
19-Nov-15	1715	Dyke Farm	134A	862739	IJ			30			Roost	AM
19-Nov-15	1515	Strathavon	166F	858748	OIP			93			Routine	BCM
20-Nov-15	1350	Strathavon	166D	861747	IJ			90			Routine	AM
23-Nov-15	1430	Threiprig	285A	834763	IJ			6			Routine	AM,BCM,DRM
24-Nov-15	1430	Strathavon	166D	861747	IJ			100			Routine	AM
30-Nov-15	1347	Bandominie	358	799763	IJ			55			Routine	AM
30-Nov-15	1416	Strathavon	166D	861747	IJ			150			Routine	AM
02-Dec-15	1030	Easter Jawcraig	120	847746	IJ			150			Routine	AM
04-Dec-15	1300	Wester Lochgreen	342	813771	IJ			11			Routine	AM
07-Dec-15	1120	Hillend	251	850734	OIP			34			Routine	AM
08-Dec-15	1130	Hillend	251	850734	OIP			35			Routine	AM
08-Dec-15	1235	Threiprig	279	838745	OIP			50			Routine	AM
08-Dec-15	1130	Strathavon	166G	859750	IJ			90			Routine	AM
08-Dec-15	1220	Garbethill	93A	834758	RIP			11			Routine	AM
10-Dec-15	1230	Hillend	251	850734	OIP			38			Routine	AM
10-Dec-15	1310	Threiprig	279	838745	OIP			51			Routine	AM
10-Dec-15	1245	Strathavon	166G	859750	IJ			90			Routine	AM
15-Dec-15	1234	Hillend	255	848736	OIP			43			Routine	AM
15-Dec-15	1200	Strathavon	166D	861747	IJ	Sheep	23	50			Routine	AM
15-Dec-15	1300	Strathavon	166E	859746	IJ			33			Routine	AM
17-Dec-15	1640	Fannyside Muir	77	804740	Muir Pool			80			Roost	BCM
17-Dec-15	1658	Fannyside Muir	77	804740	Muir Pool			8			Roost	BCM

Date	Time	Place	Field No	Grid Ref.	Habitat Type	Stock	Stock No.	No. of Taiga Bean Geese	No. of Juveniles	Disturbance Type	Observation	Observer(s)
17-Dec-15	1645	Darnrig Pools	117	865754	Muir Pool			60			Roost	AM
17-Dec-15	1520	Easter Jawcraig	120	847746	IJ			60			Routine	AM,BCM
17-Dec-15	1442	Threiprig	285A	834763	IJ			56			Routine	AM,BCM
18-Dec-15	1300	Hillend	251	850734	OIP			15			Routine	AM
18-Dec-15	1200	Strathavon	166F	858748	IJ			30			Routine	AM
18-Dec-15	1230	Threiprig	285A	834763	IJ			40			Routine	AM
21-Dec-15	1429	Hillend	251	850734	OIP			42			Routine	AM
21-Dec-15	1355	Threiprig	285A	834763	IJ			53			Routine	AM
22-Dec-15	1115	Hillend	251	850734	OIP			37			Routine	AM
22-Dec-15	1115	Wester Jaw	260	851737	IJ			17			Routine	AM
22-Dec-15	1142	Threiprig	285A	834763	IJ			49			Routine	AM
06-Jan-16	1330	Bandominie	358	799763	IJ			60			Routine	AM
10-Jan-16	1225	Threiprig	285A	834763	IJ			58			Routine	AM
11-Jan-16	1330	Threiprig	285A	834763	IJ			51			Routine	AM
11-Jan-16	1300	Garbethill	93A	834758	RIP			11			Routine	AM
14-Jan-16	1730	Fannyside Muir	77	804740	Muir Pools			0			Roost	BCM, RG
14-Jan-16	1725	Darnrig Moss	117	865754	Muir Pools			56			Roost	AM, LG
14-Jan-16	1450	Jawcraig	264	847762	IJ	Sheep	40	110			Routine	AM, BCM
14-Jan-16	1450	Jawcraig	264A	849744	IJ			67			Routine	AM, BCM
14-Jan-16	1530	Threiprig	285A	834763	IJ			56			Routine	AM
14-Jan-16	1420	Garbethill	93A	834758	RIP			30			Routine	AM, BCM
19-Jan-16	1215	Wester Lochgreen	342	813771	IJ			43			Routine	AM
19-Jan-16	1015	Strathavon	166F	858758	OIP			120			Routine	AM
21-Jan-16	1200	Jawcraig	264	847762	IJ			120			Routine	JN, JS, CB
25-Jan-16	1425	Threiprig	285A	834763	IJ			62			Routine	AM
29-Jan-16	1440	Easter Jawcraig	120	847746	IJ			78			Routine	AM
01-Feb-16	1035	Easter Jawcraig	120	847746	IJ			140			Routine	AM
01-Feb-16	1115	Threiprig	285A	834763	IJ			73			Routine	AM
03-Feb-16	1200	Bandominie	358	799764	IJ			40			Routine	AM
04-Feb-16	0725am	Fannyside Muir	77	804740	Muir Pools			30			Roost	AM
04-Feb-16	0940am	Strathavon	166B	862750	OIP			60			Routine	AM
08-Feb-16	Midday	Plateau						Nil			Routine	AM
09-Feb-16	Midday	Plateau						Nil			Routine	AM
11-Feb-16	Daytime	Plateau						Nil			Routine	AM,BCM,LG
11-Feb-16	Dusk	Fannyside/Darnrig						Nil			Roost	AM,BCM,LG,RG

M– Muir, OW – Open water, OIP – Old Improved pasture, RIP - Recently improved pasture, IJ – Improved pasture with some *Juncus*, J – *Juncus* dominated pasture.

