



BTO Research Report No. 694A

**Assessing the habitat use of
Lesser Black-backed Gulls (*Larus fuscus*)
from the Bowland Fells SPA
ANNEX 1 – 2017 update**

Authors

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on behalf of Natural England

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EXECUTIVE SUMMARY

1. This annex to BTO Research Report 694 (Clewley *et al.* 2016) presents a summary update for 2017 on the results of a GPS tracking study of Lesser Black-backed Gulls *Larus fuscus* breeding in the Bowland Fells Special Protection Area (SPA). For analyses of the data collected during the 2016 breeding season quantifying: (i) the home ranges of Lesser Black-backed Gulls during the breeding season and their spatial overlap with the SPA; (ii) maximum foraging distances; and (iii) the time spent by individual birds inside the SPA, please see the main report.
2. Twenty-two GPS-GSM tags (Movetech Telemetry) were deployed on Lesser Black-backed Gulls during 2016 across two sites (Tarnbrook Fell and Langden Head) within the Bowland Fells SPA. Fourteen of the 22 birds fitted with tags in 2016 returned and transmitted data during the 2017 breeding season. Two additional individuals were tagged in 2017 from the Tarnbrook colony to increase the sample there as birds from either main colony within Bowland can have different local space use. Many of the movements in 2017 appeared consistent with those reported for 2016 although some new behaviours, such as potential colony switching, were recorded.

1. INTRODUCTION

This annex to BTO Research Report 694 (Clewley *et al.* 2016) presents a summary update for 2017 on the results of a GPS tracking study of Lesser Black-backed Gulls *Larus fuscus* breeding in the Bowland Fells Special Protection Area (SPA). The overall aims of the project were to:

- i. Identify potential feeding areas (both within and outside the SSSI/SPA) used by Lesser Black-backed Gulls from this breeding population; and
- ii. Quantify the amount of time spent by the gulls in these areas.

Twelve GPS-GSM tags (Movetech Telemetry) were deployed during 2015 but unfortunately subsequent performance was not as expected and the work was repeated in 2016, with an additional sample of tags also deployed, resulting in 22 deployments across two sites (Tarnbrook Fell and Langden Head) within the SPA. Further details on the background to the study and analyses of the data collected during the 2016 breeding season quantifying: (i) the home ranges of Lesser Black-backed Gulls during the breeding season and their spatial overlap with the SPA; (ii) maximum foraging distances; and (iii) the time spent by individual birds inside the SPA are presented in the main report.

Here, we provide an update on the status of tracked individuals and an overview of the data collected during the 2017 breeding season.

2. METHODS

To add to the data from birds returning for the 2017 breeding season, two additional birds were fitted with improved GPS tags in 2017 on the Tarnbrook Fell site to replace two tags which did not function as expected during 2016. With the exception of a new style of harness designed to safely fall off the bird after the intended tracking period all methods were unchanged from the previous work.

3. RESULTS

3.1 Overview of the Status of Tagged Birds and Data Collection Periods

Fourteen of the 22 birds tagged in 2016 returned and continued to transmit data during the breeding period in 2017 after spending the winter months further south (at various locations between south England and West Africa). There was some attrition of the tagged cohort through both mortality and potentially tag failure (Table 1).

Table 1 Summary of status of all tagged birds since 2015 and summary of data transmitted for the 2017 breeding period. The breeding period is defined by the first and last date in which any GPS fixes were recorded inside the Bowland Fells SPA.

Bird ID	Total GPS fixes	2017 breeding season tracking period	Notes
2015			
Langden_Head_28	-	NA	Did not transmit during 2017
Langden_Head_68	-	NA	Did not transmit during 2017
Langden_Head_76	-	NA	Did not transmit during 2017
Langden_Head_101	-	NA	Did not transmit during 2017
Langden_Head_107	-	NA	Did not transmit during 2017
Langden_Head_109	-	NA	Did not transmit during 2017
Tarnbrook_34	-	NA	Did not transmit during 2017
Tarnbrook_41	-	NA	Did not transmit during 2017
Tarnbrook_55	-	NA	Did not transmit during 2017
Tarnbrook_100	-	NA	Did not transmit during 2017
Tarnbrook_104	-	NA	Did not transmit during 2017
Tarnbrook_110	-	NA	Did not transmit during 2017
2016			
Langden_Head_178	530	31/03/2017 - 22/06/2017	Truncated dataset – presumed dead
Langden_Head_237	4994	19/03/2017 - 20/08/2017	
Langden_Head_245	3413	03/05/2017 - 20/08/2017	
Langden_Head_269	3302	18/04/2017 - 20/08/2017	
Langden_Head_270	2791	12/03/2017 - 13/07/2017	Truncated dataset – presumed dead
Langden_Head_277	1110	29/03/2017 - 07/07/2017	
Langden_Head_279	3552	03/05/2017 - 05/08/2017	
Langden_Head_287	3143	28/03/2017 - 24/07/2017	
Langden_Head_451	129	31/03/2017 - 25/05/2017	Truncated dataset – tag failed
Langden_Head_457	289	12/03/2017 - 31/05/2017	Truncated dataset – tag failed
Langden_Head_459	903	08/04/2017 - 01/08/2017	
Langden_Head_460	220	05/05/2017 - 22/06/2017	
Langden_Head_461	2304	13/03/2017 - 16/07/2017	
Tarnbrook_226	3689	07/04/2017 - 04/08/2017	
Langden_Head_262	-	NA	Reported dead in 2017
Langden_Head_263	-	NA	Presumed dead in 2016
Langden_Head_284	-	NA	Reported dead in 2016
Langden_Head_454	-	NA	Did not transmit during breeding season
Langden_Head_458	-	NA	Did not transmit during breeding season
Langden_Head_462	-	NA	Reported dead in 2016
Tarnbrook_452	-	NA	Did not transmit during breeding season
Tarnbrook_453	-	NA	Did not transmit during breeding season
2017			
Tarnbrook_697	896	21/05/2017 - 14/08/2017	
Tarnbrook_728	1458	21/05/2017 - 14/08/2017	

The following birds were proven (from reports) or assumed (from the data received) to have died during the study period. For those proven cases, ringing recovery reports have been submitted.

Bird 178 – Stationary GPS data transmitted from 4 July 2017 from a farm building near Preston suggesting that the bird had died. A subsequent search on 6 August 2017 recovered the tag from a well decomposed corpse.

Bird 262 – We received a report on 16 May 2017 from keepers from the Abbeystead Estate in the Bowland Fells SPA that this bird had been shot by them. Both the corpse and tag were returned to us for examination, the freshness of the corpse indicating that the bird had been shot within one or two days of the day of the report.

Bird 263 – Stationary GPS data transmitted for several days adjacent to a busy main road suggests that this bird died around the evening of 28 July 2016. A search of the area (near to the Bowland Fells SPA) was made after this period on 7 August, but no bird or tag was recovered.

Bird 270 – Stationary GPS data transmitted from 14 July 2017 suggesting that the bird had died near Cowpe Reservoir in Lancashire. A corpse and the tag were found following a search on 7 August 2017, but with no obvious cause of death.

Bird 284 – Reported to us on 26 August 2016 by a member of the public as dead and possibly collided with power lines around Chipping in Lancashire.

Bird 462 – Stationary GPS data were transmitted from 25 August 2016 from a site near the M1/M6 interchange. The bird subsequently ‘moved’ across the field, which we interpret to be a scavenger moving the body. An intensive search was made of the area on 4 October 2016 and while we did not find the corpse, we found the tag with chewed harness material suggesting that the bird was predated.

3.2 Nest Monitoring

Three separate nest monitoring visits were made during 2017 to locate the nests of returning tagged birds and to compare their breeding success to that of a control sample of unmarked birds. Nests of tagged birds were identified by selecting the nearest nest to the centre point of stationary GPS data collected within the breeding colony; the nearest adjacent nest served as a paired control.

It was possible to identify the likely nests of 12 returning tagged adults from 2016 at the Langden Head colony but unfortunately none at Tarnbrook Fell (there was a sampling bias in 2016 and few birds were marked at Tarnbrook Fell). Estimates of nest success (Table 2) represent a minimum as it was not always apparent whether nest had failed or whether eggs had hatched and chicks already dispersed from the nest site.

Table 2 Nest outcomes for returning tagged adult Lesser Black-backed Gulls in 2017 at Langden Head in the Bowland Fells SPA, in relation to a control sample. Clutch size was recorded during the first monitoring visit. Minimum hatching success takes into account observed hatching during any visit and presumed nest outcomes were from the final visit.

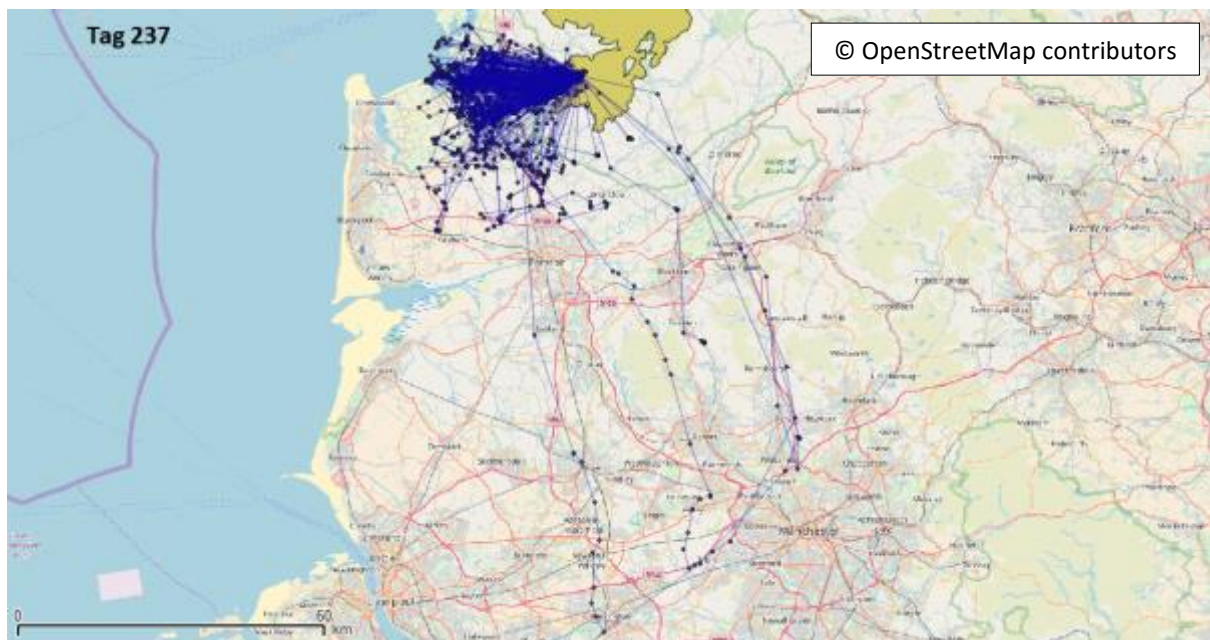
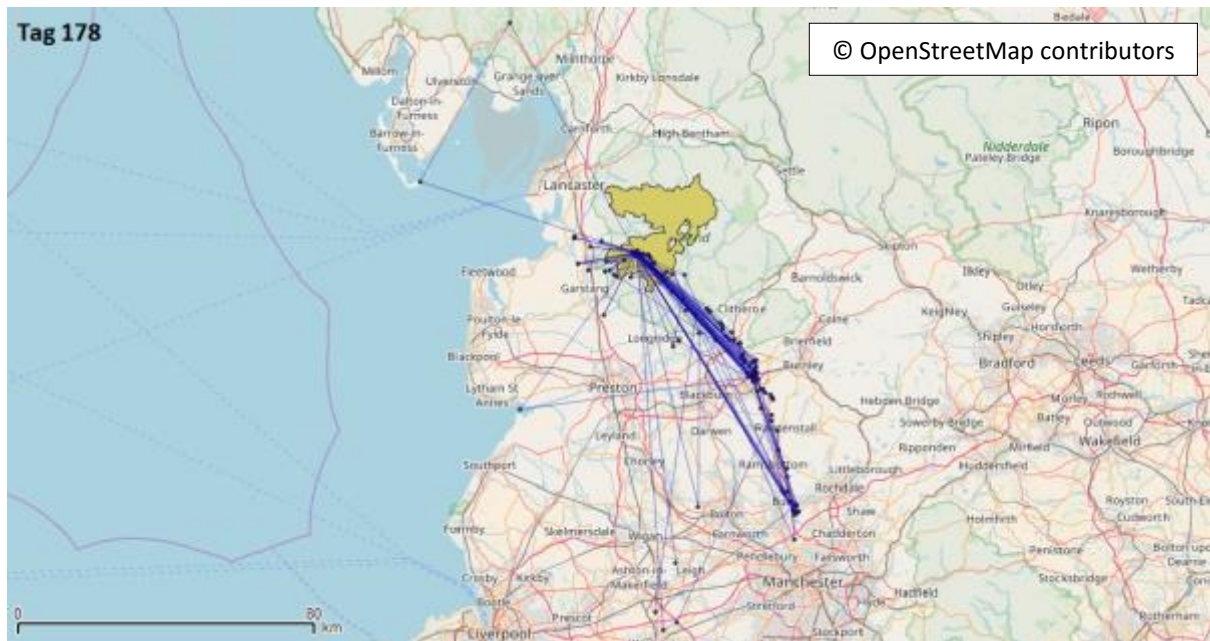
	Mean clutch size \pm SD	Minimum hatching success	Presumed minimum nest success	Potential nest failure
Tagged birds’ nests	2.58 \pm 0.64	0.75	0.58	0.42
Control nests	2.75 \pm 0.43	0.83	0.67	0.33

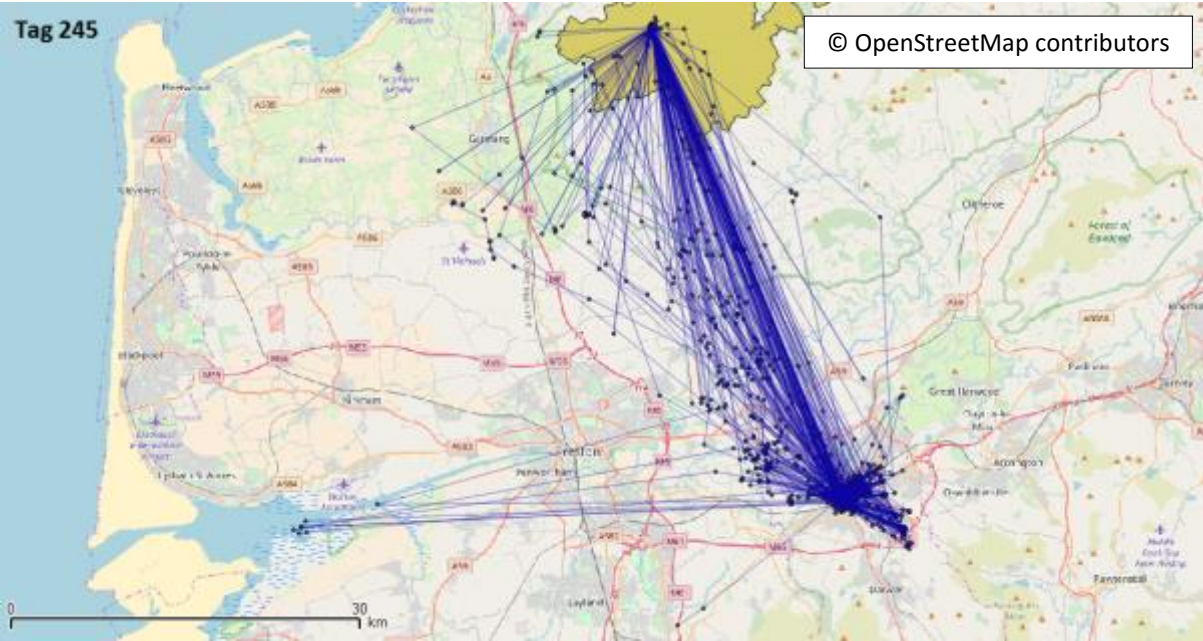
3.3 Summary of Data Collected

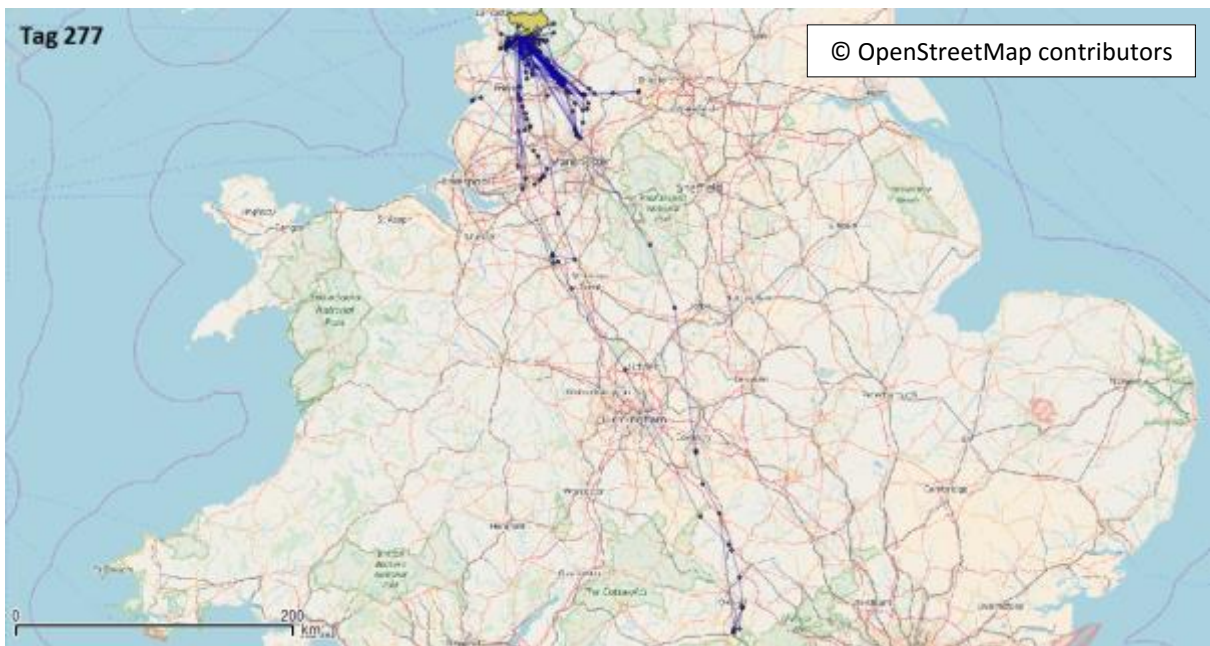
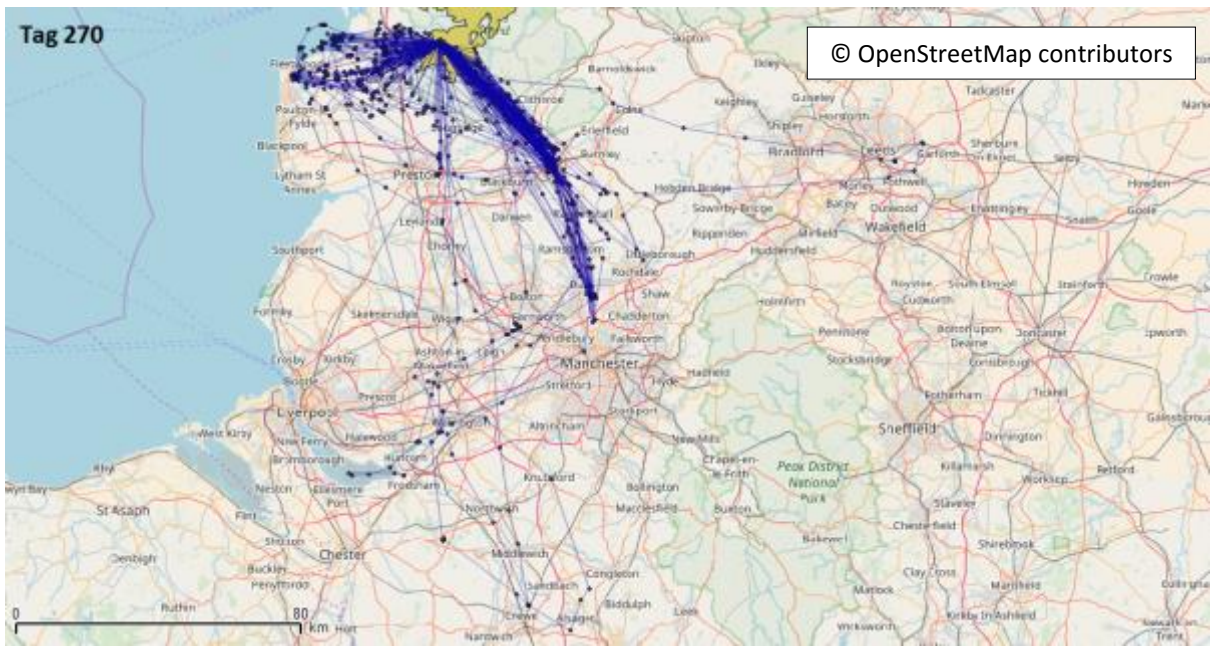
Broadly many of the movements recorded in 2017 were similar to those during 2016 (Fig. 1). Particularly, birds breeding at the Langden Head colony made extensive use of landfill and urban

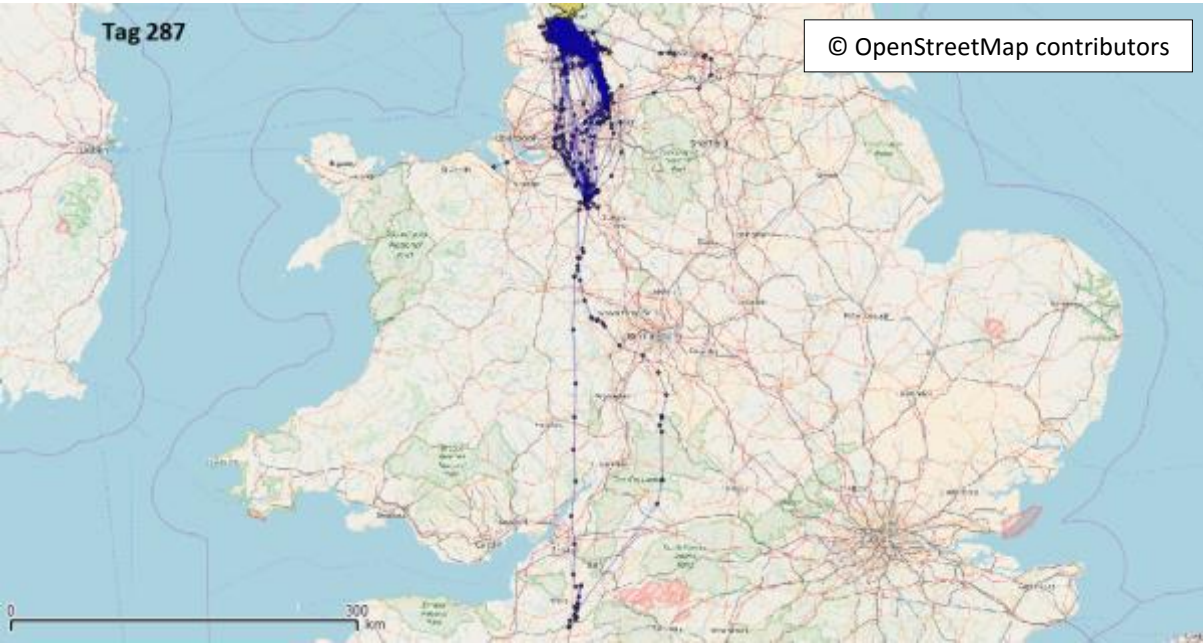
areas to the south of Bowland Fells SPA and there was a reasonably high degree of consistency in the behaviour of individuals between the two years. However, some new movement behaviours were recorded, for example, bird 461 also spent time at the South Walney colony and foraging around the Furness peninsula.

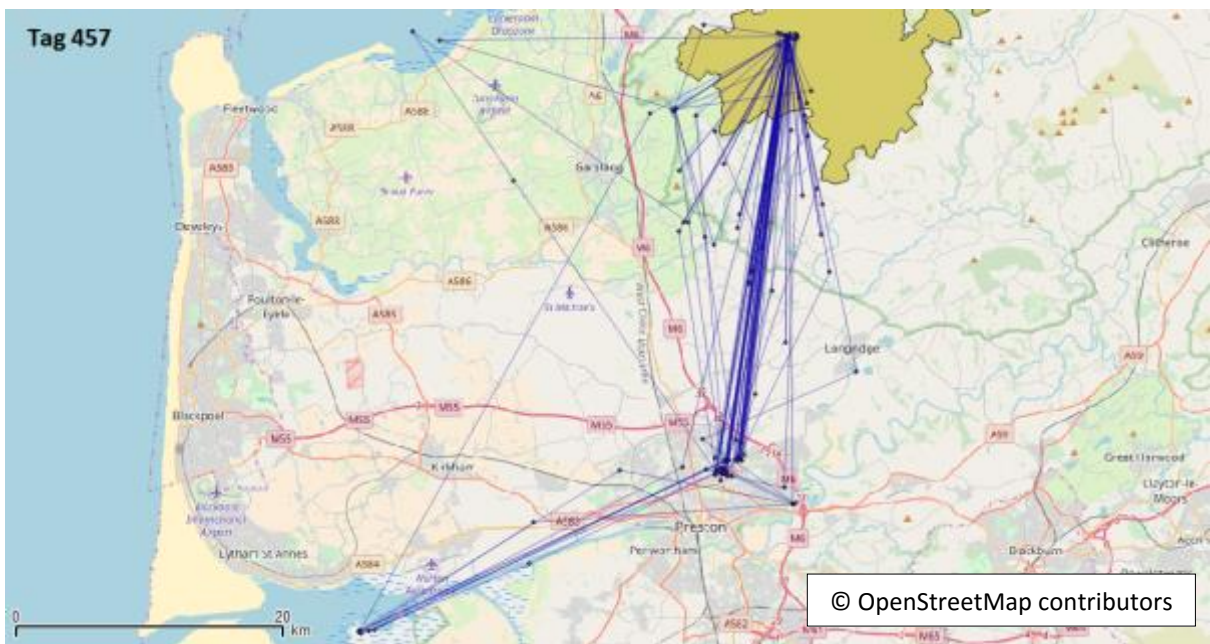
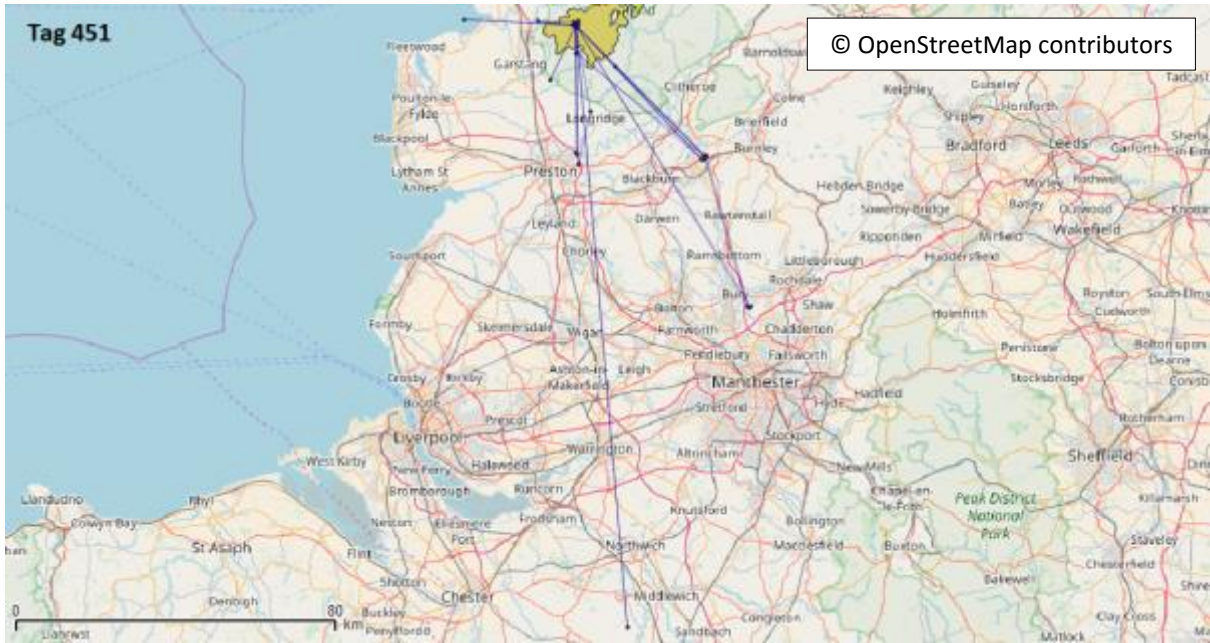
The additional tags deployed on birds at the Tarnbrook colony were beneficial as they appeared to confirm that birds from Tarnbrook utilise areas towards the north and east of the Bowland Fells SPA more than individuals from the Langden Head site.

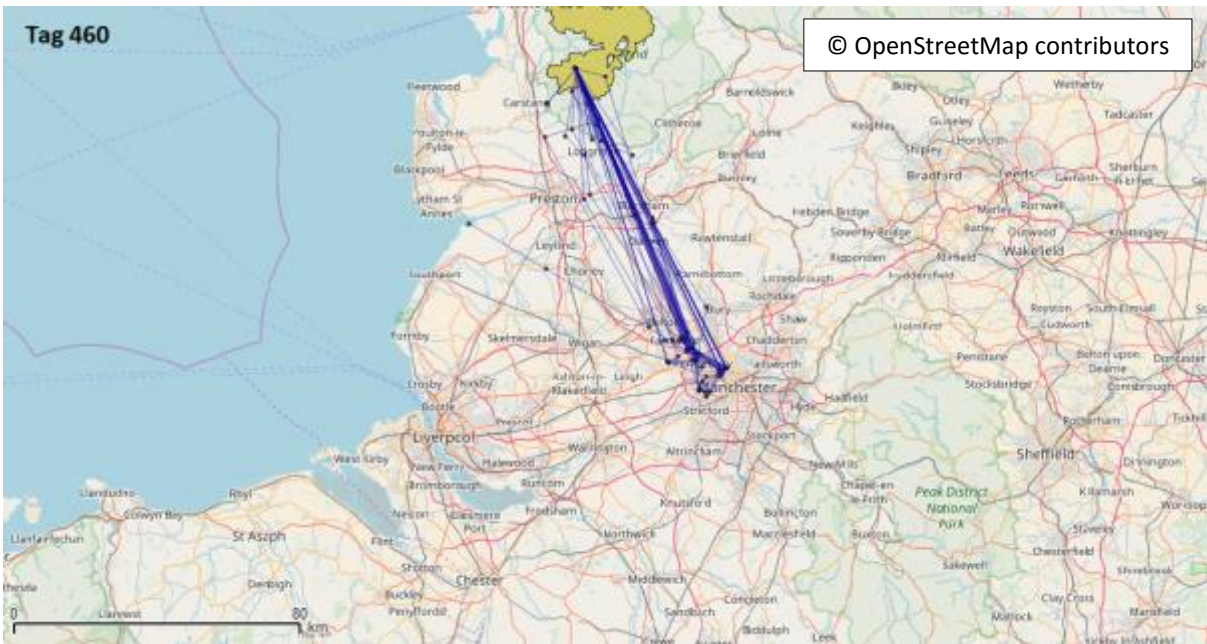
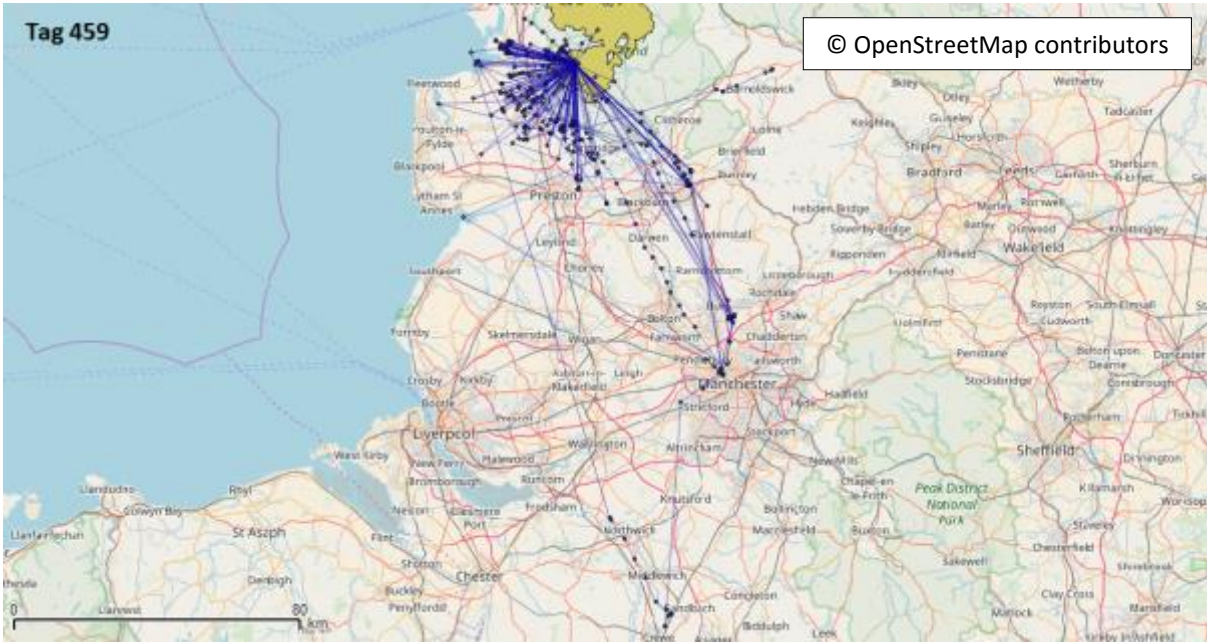


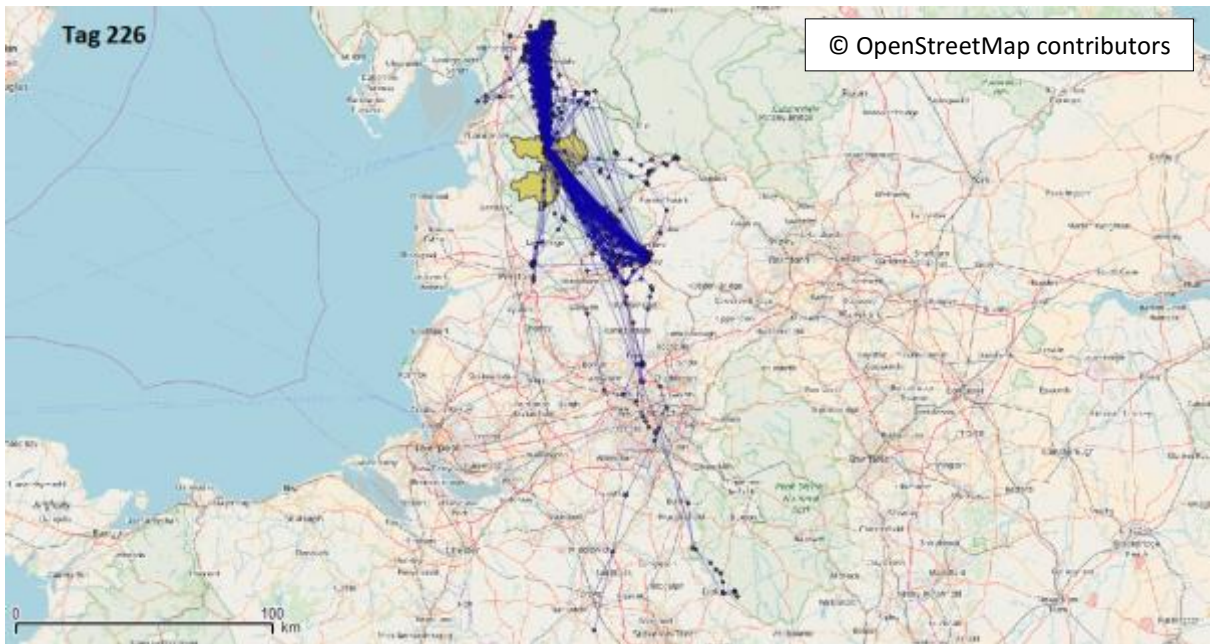
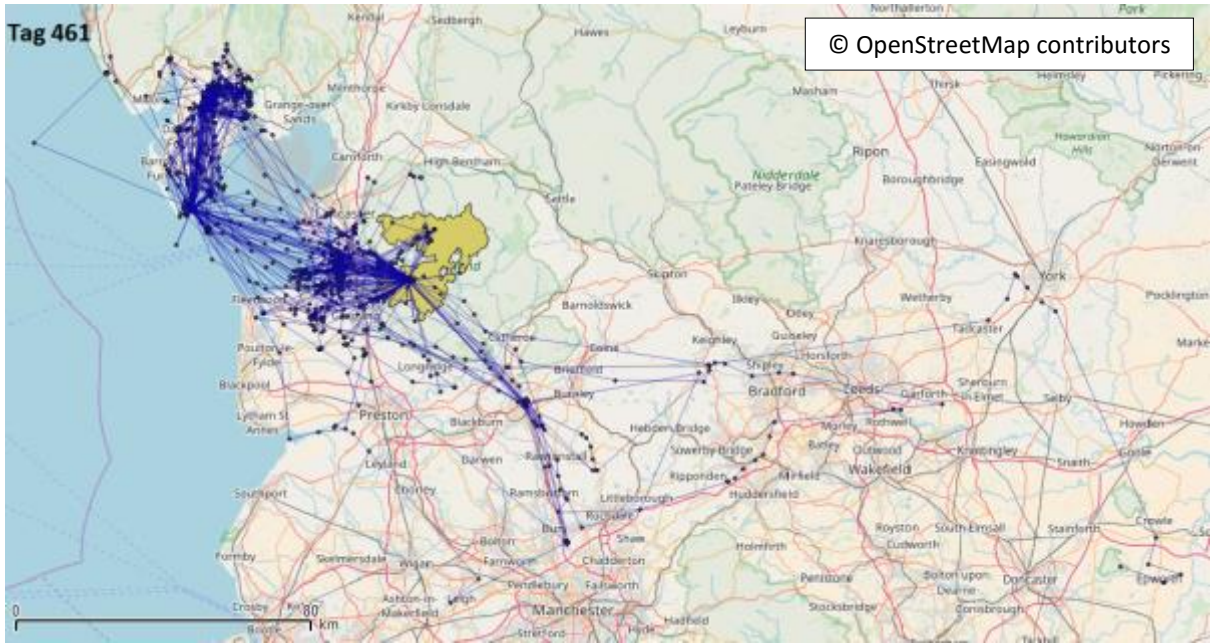












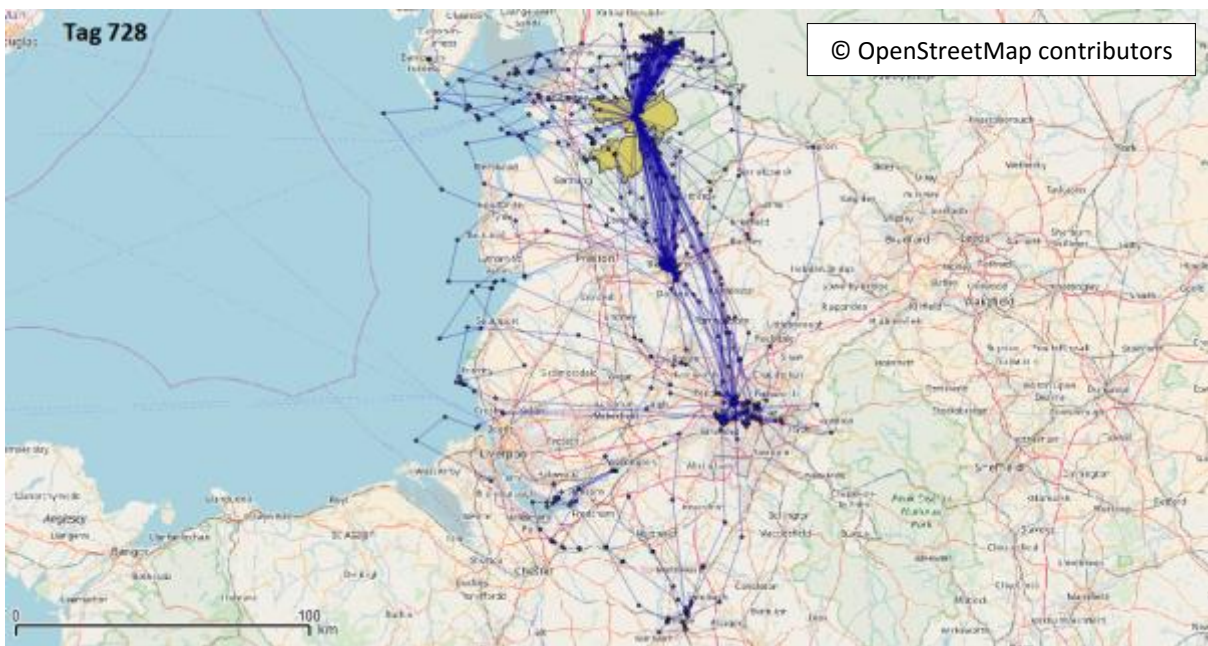
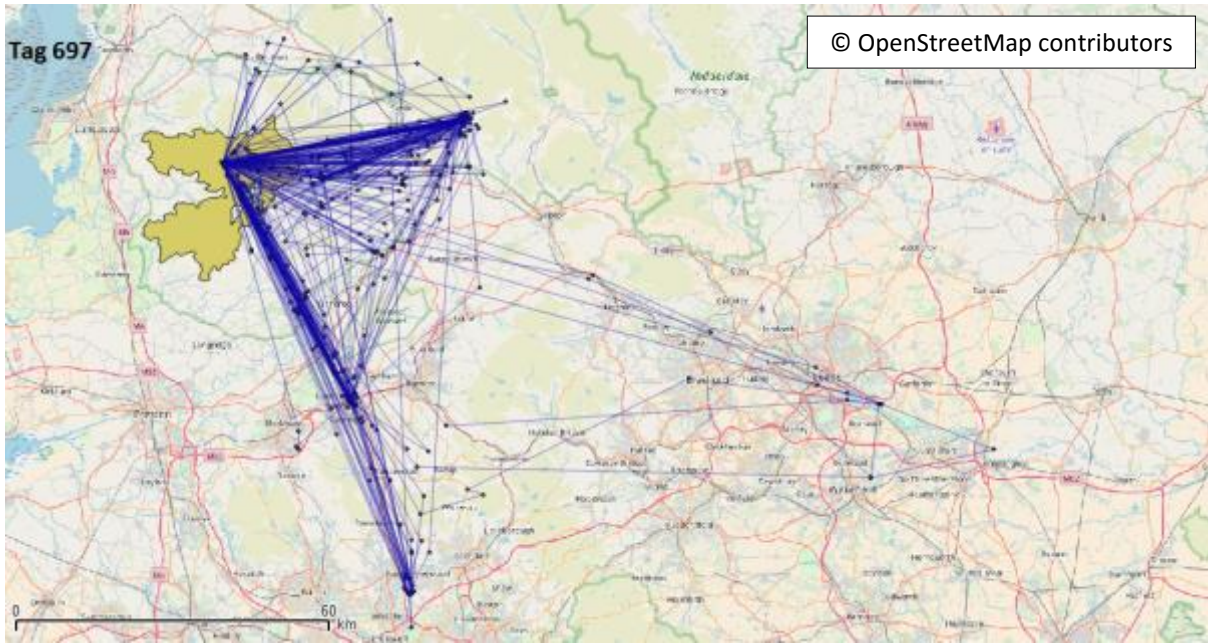


Figure 1 GPS tracks from tagged Lesser Black-backed Gulls from the Bowland Fells SPA for the 2017 breeding period.

REFERENCE

Clewley, G.D., Scragg, E.S., Thaxter, C.B. & Burton, N.H.K. 2016. Assessing the habitat use of Lesser Black-backed Gulls (*Larus fuscus*) From the Bowland Fells SPA. BTO Research Report No. 694 to Natural England. BTO, Thetford.