SUPPLEMENT

Table S1. Size and weight of logger models used in this study and produced by Migrate Technology (Cambridge, UK), Biotrack (Cambridge, UK) and British Antarctic Survey (BAS, Cambridge, UK).

producer	model	length (mm)	width (mm)	depth (mm)	weight (g)
Migrate Technology	c250	18	17	6	2.6
	c330	19	17	8	3.3
Biotrack	mk3006	16	14	6	2.5
	mk3006†	18	14	6	2.85
	mk4093	15	10	6	1.5
BAS	mk3	19	22	12	9
	mk4	25	20	8	5
	mk15	16	14	6	2.5

† mk3006, produced 2017 and later

Table S2. Overview of when (year tracked) different geolocator models were used in the study.

| | Migrate Tech | | Biotrack | | | BAS | | |
	c250	c330	mk3006	†	mk4093	mk3	mk4	mk15
2006-07							X	
2007-08						X	X	
2008-09							X	
2011-12								X
2012-13			X					X
2013-14	X		X					X
2014-15	X				X			X
2015-16	X		X		X			
2016-17	X	X	X					
2017-18	X	X	X	X				
2018-19	X	X	X	X				

† mk3006, produced 2017 and later

Table S3. Sampling and recording intervals of logger models used in this study and produced by Migrate Technology (Cambridge, UK), Biotrack (Cambridge, UK) and British Antarctic Survey (BAS, Cambridge, UK). The light level was sampled every minute and the maximum value within 5 or 10 minutes was recorded. Loggers sampled wet/dry conditions with a saltwater sensor every 3 or 30 seconds and recorded the number of all wet-readings over 10 min intervals.

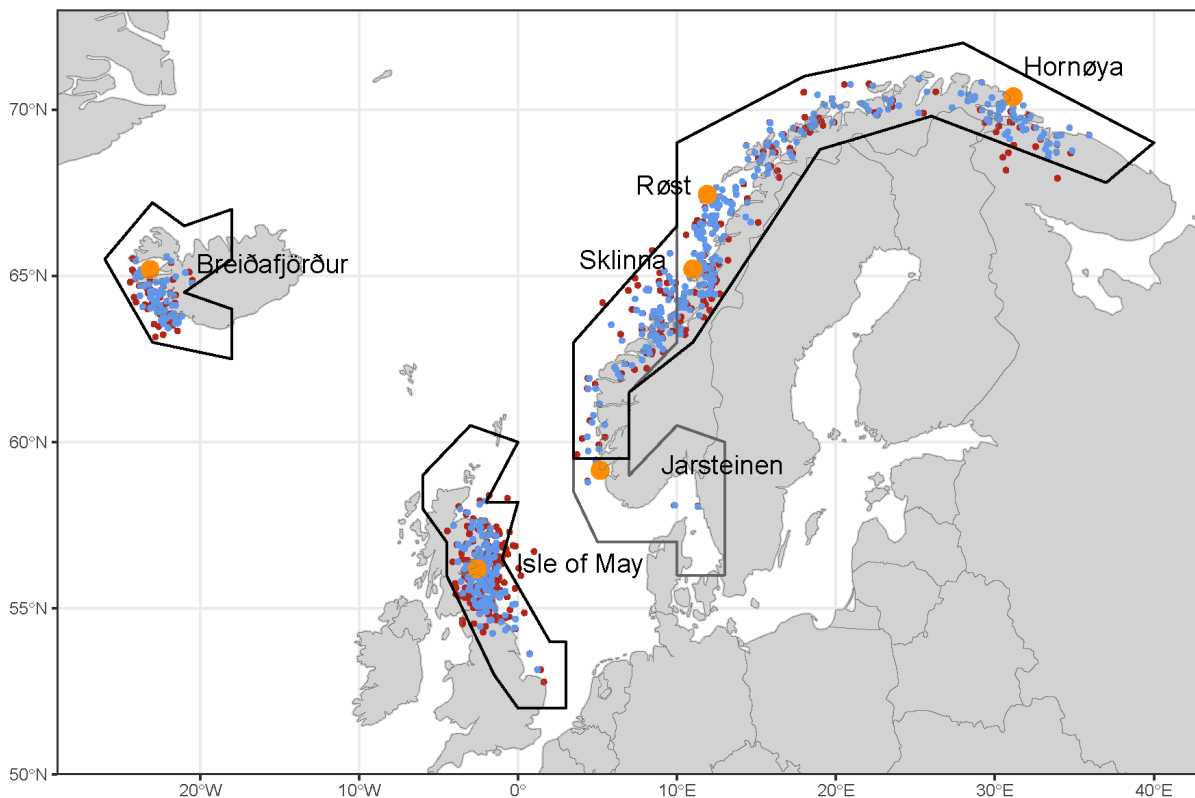| producer	model	light sampling	light recording	wet/dry sampling	wet/dry recording
Migrate Technology	c250	1 min	5 mins	30 secs	10 mins
	c330	1 min	5 mins	30 secs	10 mins
Biotrack	mk3006	1 min	10 mins	3 secs	10 mins
	mk4093	1 min	5 mins	3 secs	10 mins
BAS	mk3	1 min	10 mins	3 secs	10 mins
	mk4	1 min	10 mins	3 secs	10 mins
	mk15	1 min	10 mins	3 secs	10 mins

Fig. S1. Colony specific polygons for filtering of positions before calculating median December positions. Shags breeding in Iceland were filtered with the Iceland polygon, Scottish shags with the Britain polygon. Shags from Jarsteinen were filtered with a polygon for southern and central Norway (grey), while shags from Sklinna, Røst and Hornøya were filtered with a polygon for northern and central Norway (note that these 2 polygons overlap). Blue points: median December positions obtained after this polygon filtering; red points: December medians calculated from all positions without using the polygon filter; large orange points: colonies.