

# White-tailed Eagle



**Figure 1:** White-tailed Eagle in Wester Ross (Photo: Justin Grant, Highland RSG).

White-tailed Eagle is monitored widely across Scotland by SRMS data contributors.

Trends in breeding numbers and breeding productivity of White-tailed Eagle have previously been published for the period 1983-2015 (Roos *et al.* 2015). This analysis showed that the population increased nationally and regionally showing a steady population growth and range expansion. There were no significant between-year differences detected for any of the breeding productivity parameters considered at a national or regional scale.

Sansom *et al.* (2016) predicts strong population growth and spread nationally and that the population could continue to grow to over 200 pairs by 2025.

Our latest analysis of SRMS White-tailed Eagle data for the period 2009-2018 has produced national trends in breeding number and productivity at a national level (Table 1), as well as for four of the seven SRMS regions (Table 2) and four of the 14 NHZ regions (Table 3) for which the SRMS holds White-tailed Eagle records.

Users of the published trends should be aware that White-tailed Eagle numerical trends make use of all records we received for the trend period, not just those drawn from clusters. This species was monitored quite comprehensively up to the last few years of the trend period, from which time an increasing number of pairs have been breeding outside of intensively monitored areas. Productivity

information is drawn from the majority of the Scottish breeding population, though trends drawn from these data may not be representative of pairs in less intensively monitored areas where there may be a higher proportion of young breeders. Consultation with data contributors has highlighted that existing monitoring is likely to under-represent growth of rapidly expanding colonist populations (e.g. in Argyll).

#### *National trends*

Nationally, breeding numbers of White-tailed Eagle have increased significantly while breeding success of White-tailed Eagle has shown no significant change (Table 1, Figure 2).

National trends for clutch size, brood size and number of fledglings all showed no significant change overall (Table 1, Figure 2).

#### *SRMS regional trends*

Breeding numbers of White-tailed Eagle increased in Argyll, with non-significant changes in the remaining three regions (Highland, Lewis & Harris and Uist) for which trends could be produced (Table 2, Figure 3).

Breeding success of White-tailed Eagle has not changed significantly in any of the three regions (Argyll, Highland and Lewis & Harris) for which trends could be produced (Table 2, Figure 4).

Trends in clutch size, brood size and number of fledglings are available for Highland (Table 2, Figures 5-7), while trends in brood size and number of fledglings are also available for Argyll (Table 2, Figures 6-7). None of these trends showed a significant change in the relevant parameters.

Trends for this species are not yet available for North East Scotland, Orkney or Tayside & Fife.

#### *NHZ regional trends*

Breeding numbers of White-tailed Eagle increased in two regions (NHZs 03 and 06), with non-significant increases in the remaining two regions (NHZs 08 and 14) for which trends could be produced (Table 3, Figure 8).

Breeding success of White-tailed Eagle did not change significantly in NHZs 03 and 06 (Table 3, Figure 9).

Clutch size, brood size and number of fledglings in NHZ 06 (Table 3, Figures 10-12), as well as clutch size and number of fledglings in NHZ 03 (Table 3, Figure 10, Figure 12), did not change significantly.

Trends for this species are not yet available for NHZs 02, 04-05, 07, 10-13 or 15-16.

#### *Details of contributing records*

896 (49 to 128 per year, mean: 90 records) from 2009-2018 contributed to this trends analysis (Table 6).

#### *References*

Roos, S., Dobson, A., Noble, D., Haworth, P., Fielding, A., Carrington-Cotton, A., Etheridge, B. & Wernham, C. 2015. Raptors in Scotland – a methodology for developing trends and indicators. Scottish Natural Heritage Commissioned Report No. 542.

Sansom, A., Evans, R. & Roos, S. 2016. Population and future range modelling of reintroduced Scottish White-tailed Eagles (*Haliaeetus albicilla*). Scottish Natural Heritage Commissioned Report No. 898.

**Table 1:** Summary of SRMS national trends for White-tailed Eagle during 2009-2018. Figures in parentheses indicate the annual change, with significant increases highlighted in green, significant decreases highlighted in blue and non-significant changes highlighted in grey. '—' indicates where the species occurs but no trend is available. 'No SRMS data' indicates where the SRMS does not hold any records for the region of interest.

	Pairs	Success	Clutch size	Brood size	Number of fledglings
Scotland	Increase <sup>ax</sup> (5.4%)	Not significant <sup>x</sup>	Not significant <sup>s</sup>	Not significant <sup>x</sup>	Not significant <sup>x</sup>

<sup>a</sup> All data used, <sup>s</sup> Sample sizes small, <sup>x</sup> Expanding population

**Table 2:** Summary of SRMS regional trends for White-tailed Eagle during 2009-2018. Figures in parentheses indicate the annual change, with significant increases highlighted in green and non-significant changes highlighted in grey. ‘—’ indicates where the species occurs but no trend is available. ‘No SRMS data’ indicates where the SRMS does not hold any records for the region of interest. ‘Absent’ indicates where the species is not known to breed.

SRMS Region	Pairs	Success	Clutch size	Brood size	Number of fledglings
Argyll	Increase <sup>ax</sup> (5.8%)	Not significant <sup>x</sup>	—	Not significant <sup>s</sup>	Not significant <sup>s</sup>
Central	Absent	Absent	Absent	Absent	Absent
Dumfries & Galloway	Absent	Absent	Absent	Absent	Absent
Highland	Not significant <sup>ax</sup>	Not significant <sup>x</sup>	Not significant <sup>s</sup>	Not significant <sup>s</sup>	Not significant <sup>s</sup>
Lewis & Harris	Not significant <sup>asx</sup>	Not significant <sup>sx</sup>	—	—	—
Lothian & Borders	Absent	Absent	Absent	Absent	Absent
North East Scotland	—	—	—	—	—
Orkney	—	—	—	—	—
Shetland	Absent	Absent	Absent	Absent	Absent
South Strathclyde	Absent	Absent	Absent	Absent	Absent
Tayside & Fife	—	—	—	—	—
Uist	Not significant	—	—	—	—

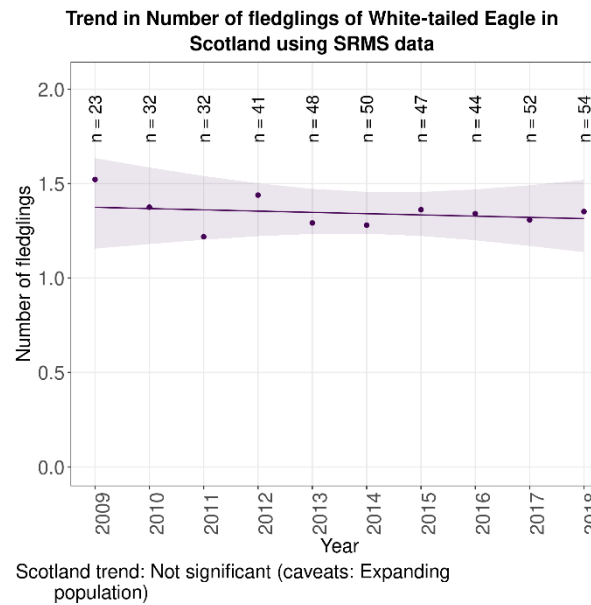
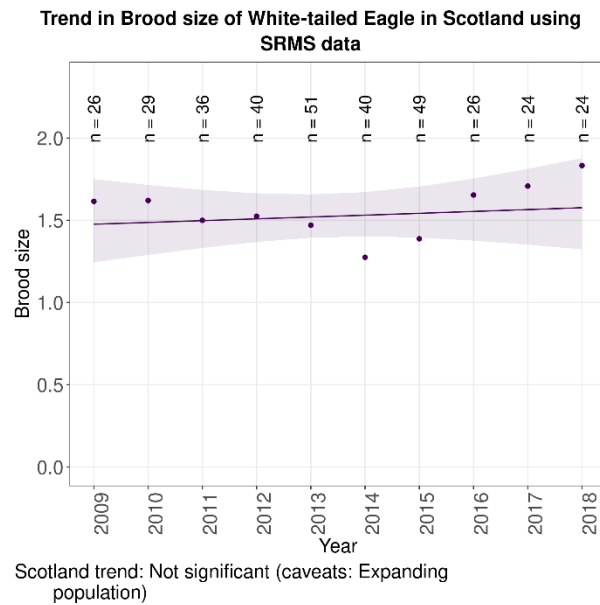
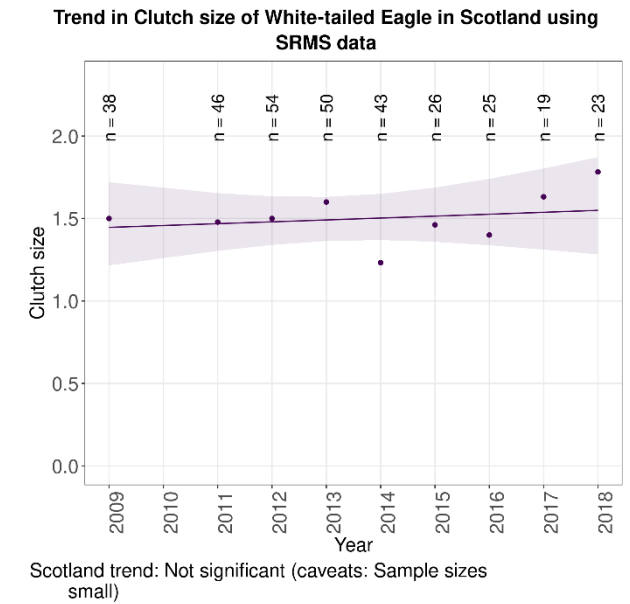
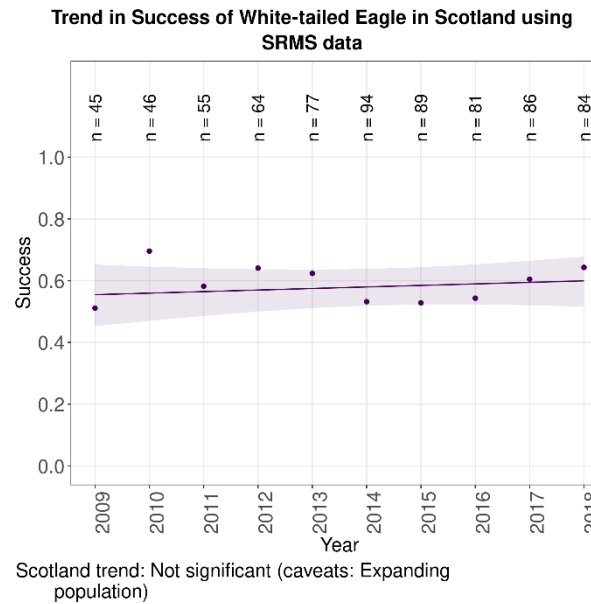
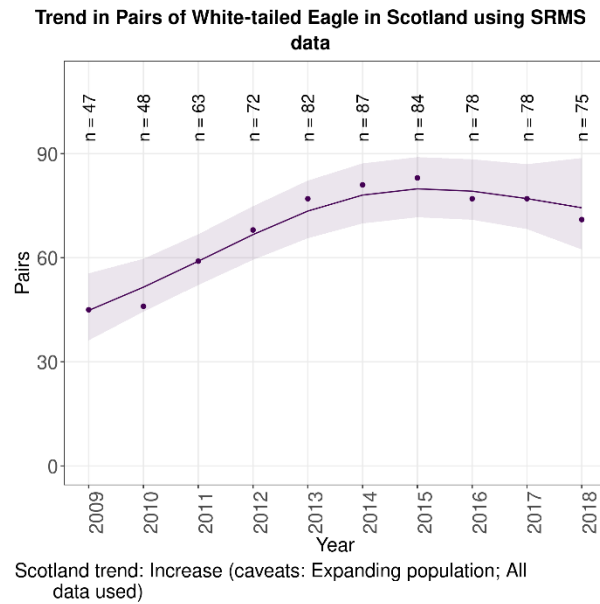
<sup>a</sup> All data used, <sup>s</sup> Sample sizes small, <sup>x</sup> Expanding population.

**Table 3:** Summary of NHZ regional trends for White-tailed Eagle during 2009-2018. Figures in parentheses indicate the annual change, with significant increases highlighted in green and non-significant changes highlighted in grey. ‘—’ indicates where the species occurs but no trend is available. ‘No SRMS data’ indicates where the SRMS does not hold any records for the region of interest. ‘Absent’ indicates where the species is not known to breed.

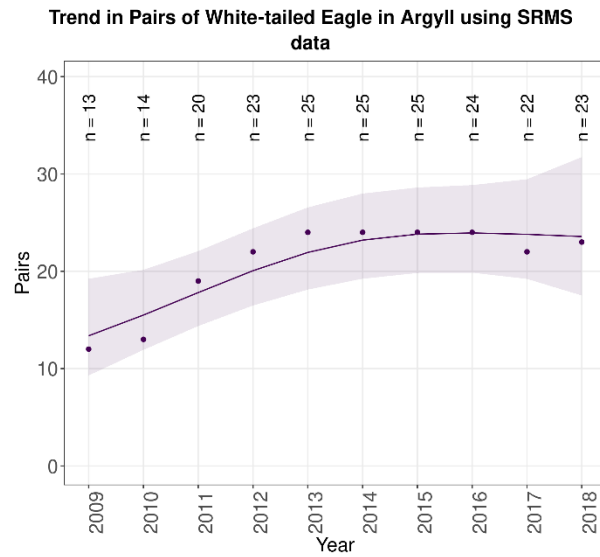
NHZ Region	Pairs	Success	Clutch size	Brood size	Number of fledglings
01. Shetland	Absent	Absent	Absent	Absent	Absent
02. North Caithness and Orkney	—	—	—	—	—
03. Coll, Tiree and the Western Isles	Increase <sup>ax</sup> (6.4%)	Not significant <sup>x</sup>	Not significant <sup>rsx</sup>	—	Not significant <sup>sx</sup>
04. North West Seaboard	—	—	—	—	—
05. The Peatlands of Caithness and Sutherland	—	—	—	—	—
06. Western Seaboard	Increase <sup>ax</sup> (4.9%)	Not significant <sup>x</sup>	Not significant <sup>rsx</sup>	Not significant <sup>rsx</sup>	Not significant <sup>sx</sup>
07. Northern Highlands	—	—	—	—	—
08. Western Highlands	Not significant <sup>ax</sup>	—	—	—	—
09. North East Coastal Plain	Absent	Absent	Absent	Absent	Absent
10. Central Highlands	—	—	—	—	—
11. Cairngorm Massif	—	—	—	—	—
12. North East Glens	—	—	—	—	—
13. East Lochaber	—	—	—	—	—
14. Argyll West and Islands	Not significant <sup>ax</sup>	—	—	—	—
15. Loch Lomond, The Trossachs and Breadalbane	—	—	—	—	—
16. Eastern Lowlands	—	—	—	—	—
17. West Central Belt	Absent	Absent	Absent	Absent	Absent
18. Wigtown Machairs and Outer Solway Coast	Absent	Absent	Absent	Absent	Absent
19. Western Southern Uplands and Inner Solway	Absent	Absent	Absent	Absent	Absent
20. Border Hills	Absent	Absent	Absent	Absent	Absent
21. Moray Firth	Absent	Absent	Absent	Absent	Absent

<sup>a</sup> All data used, <sup>r</sup> No home range random effect, <sup>s</sup> Sample sizes small, <sup>x</sup> Expanding population.

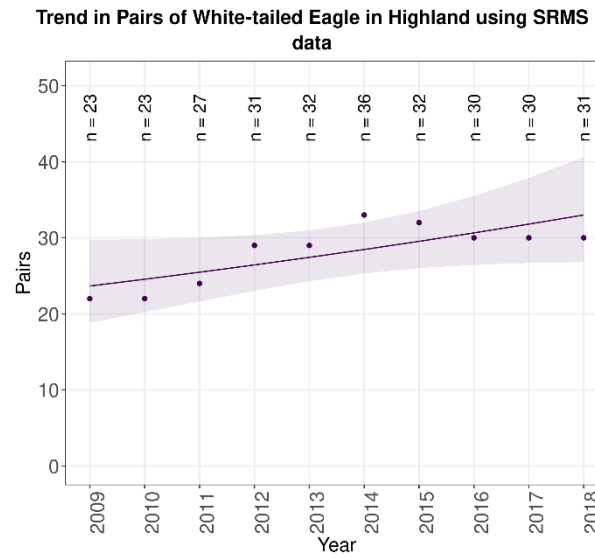




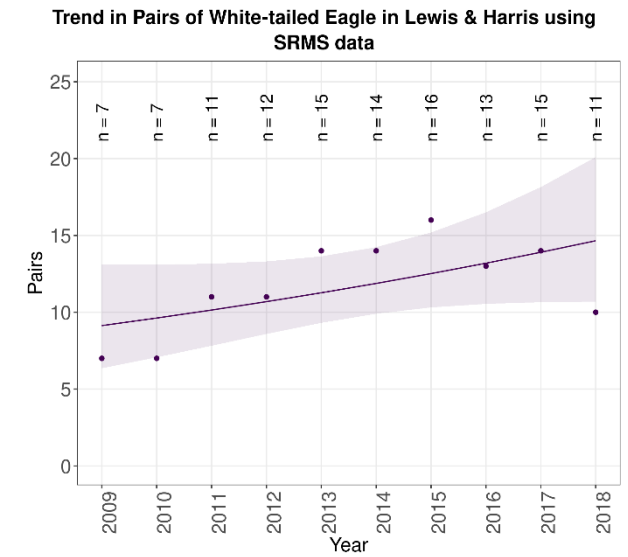
**Figure 2:** Trends in breeding pairs, success, clutch size, brood size and number of fledglings of White-tailed Eagle in Scotland during 2009-2018.



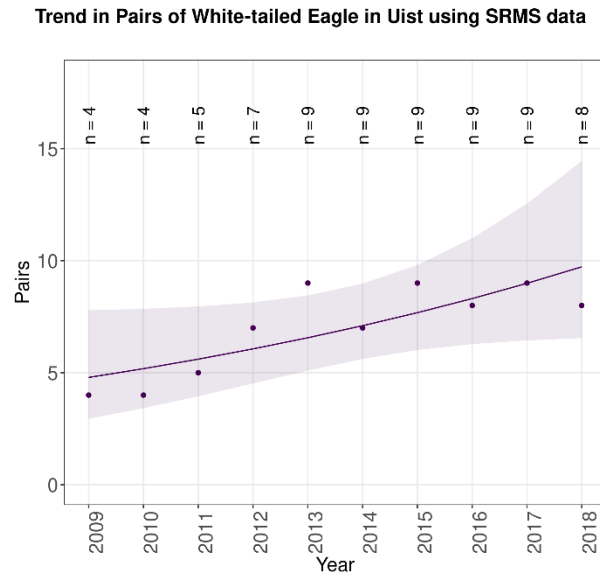
Argyll trend: Increase (caveats: Expanding population, All data used)



Highland trend: Not significant (caveats: Expanding population, All data used)



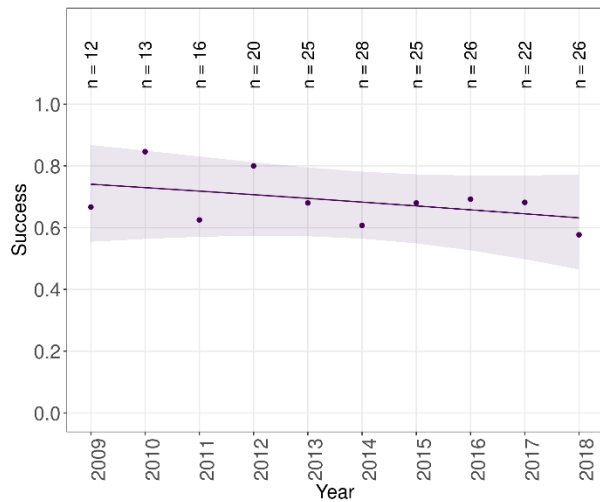
Lewis & Harris trend: Not significant (caveats: Expanding population, Sample sizes small, All data used)



Uist trend: Not significant

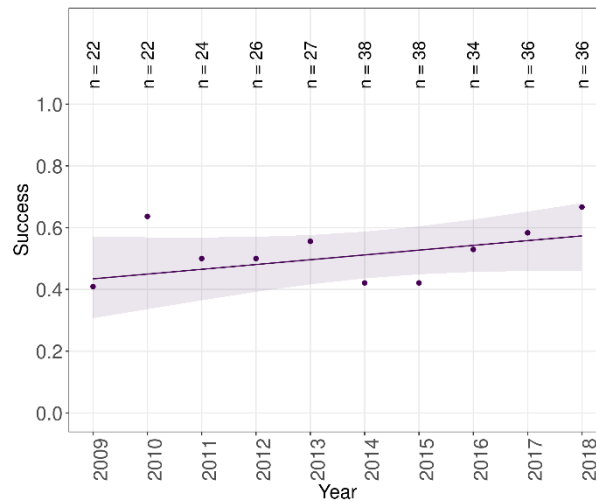
**Figure 3:** Trends in numbers of breeding pairs of White-tailed Eagle by SRMS region during 2009-2018.

Trend in Success of White-tailed Eagle in Argyll using SRMS data



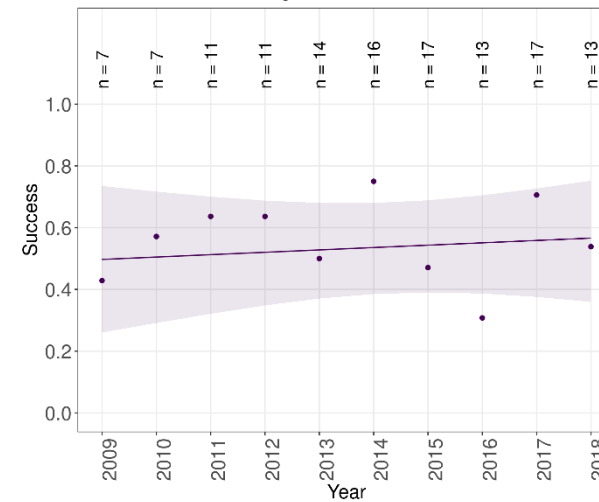
Argyll trend: Not significant (caveats: Expanding population)

Trend in Success of White-tailed Eagle in Highland using SRMS data



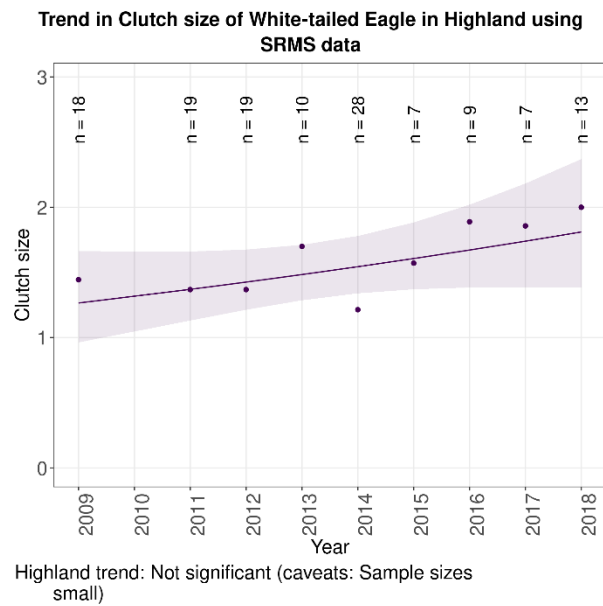
Highland trend: Not significant (caveats: Expanding population)

Trend in Success of White-tailed Eagle in Lewis & Harris using SRMS data



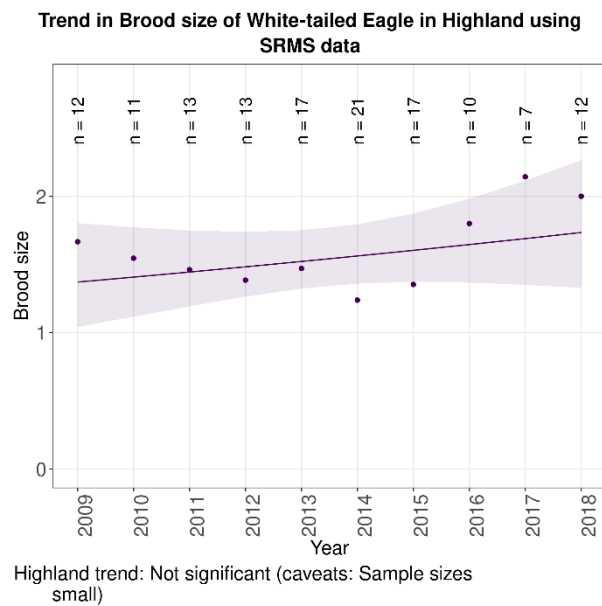
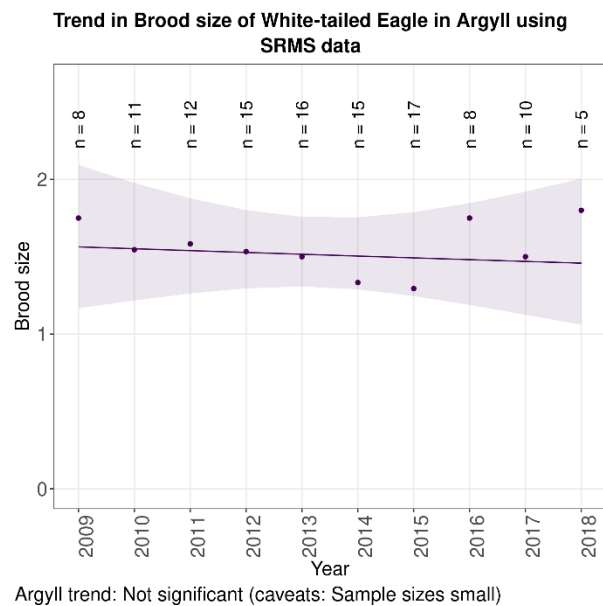
Lewis & Harris trend: Not significant (caveats: Sample sizes small; Expanding population)

**Figure 4:** Trends in breeding success of White-tailed Eagle by SRMS region during 2009-2018.

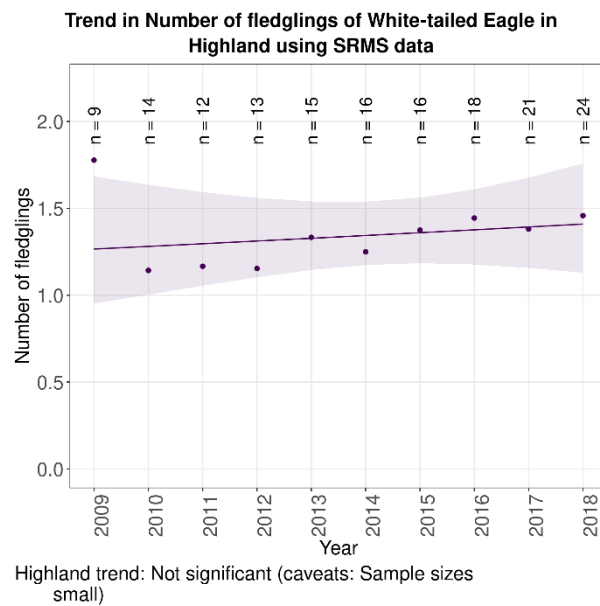
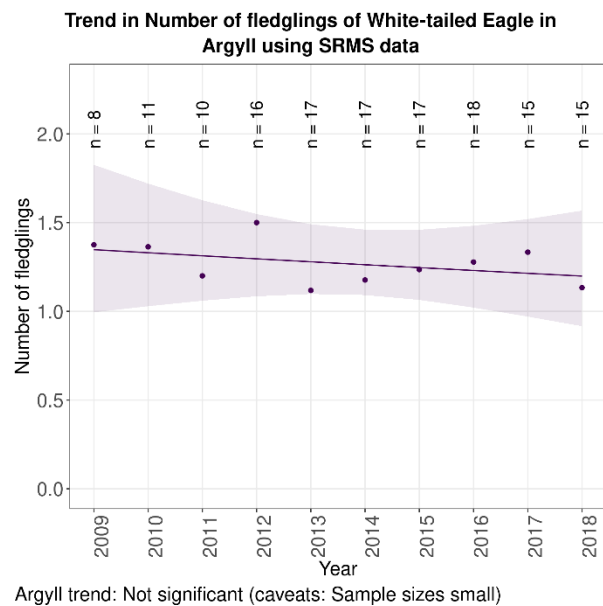


**Figure 5:** Trends in clutch size of White-tailed Eagle by SRMS region during 2009-2018.



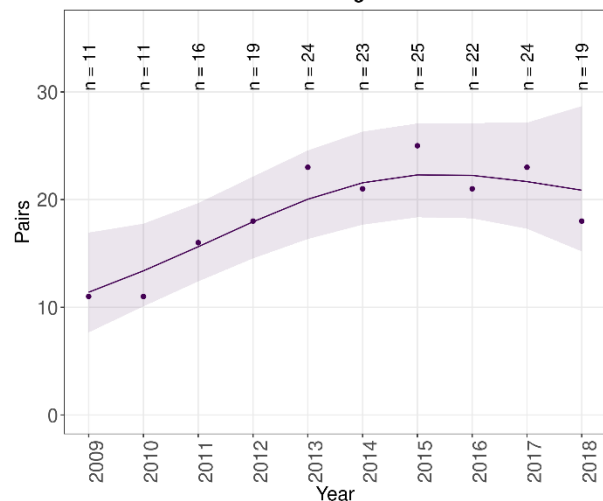


**Figure 6:** Trends in brood size of White-tailed Eagle by SRMS region during 2009-2018.



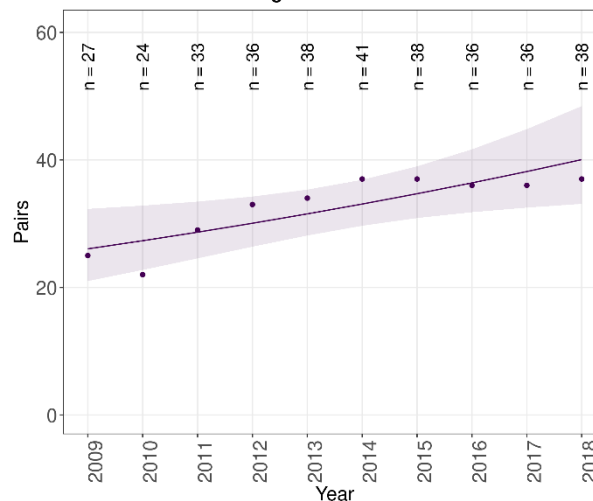
**Figure 7:** Trends in number of fledglings of White-tailed Eagle by SRMS region during 2009-2018.

**Trend in Pairs of White-tailed Eagle in 03. Coll, Tiree and the Western Isles using SRMS data**



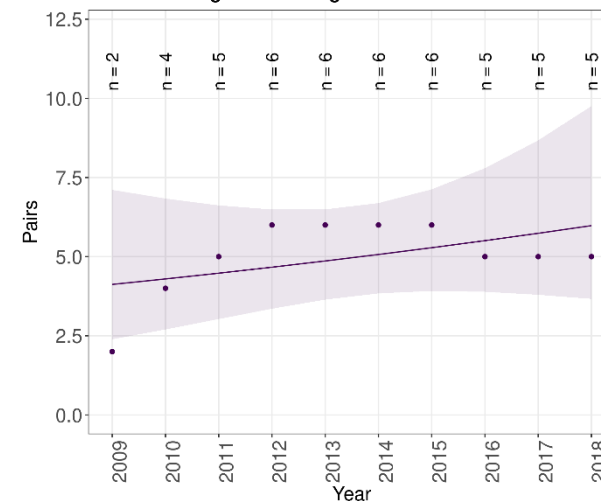
03. Coll, Tiree and the Western Isles trend: Increase (caveats: Expanding population, All data used)

**Trend in Pairs of White-tailed Eagle in 06. Western Seaboard using SRMS data**



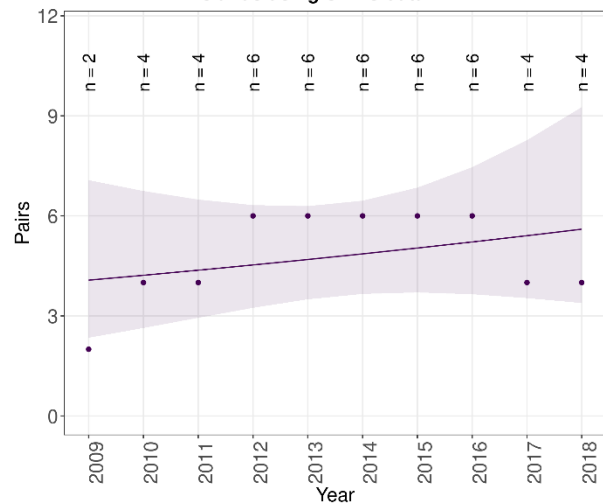
06. Western Seaboard trend: Increase (caveats: Expanding population, All data used)

**Trend in Pairs of White-tailed Eagle in 08. Western Highlands using SRMS data**



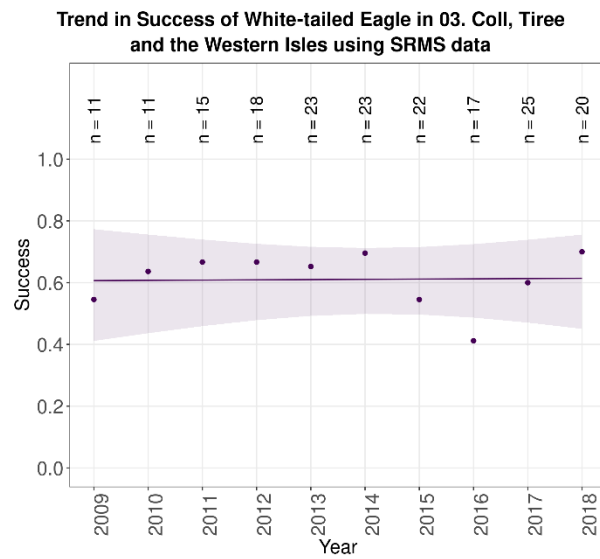
08. Western Highlands trend: Not significant (caveats: Expanding population, All data used)

**Trend in Pairs of White-tailed Eagle in 14. Argyll West and Islands using SRMS data**

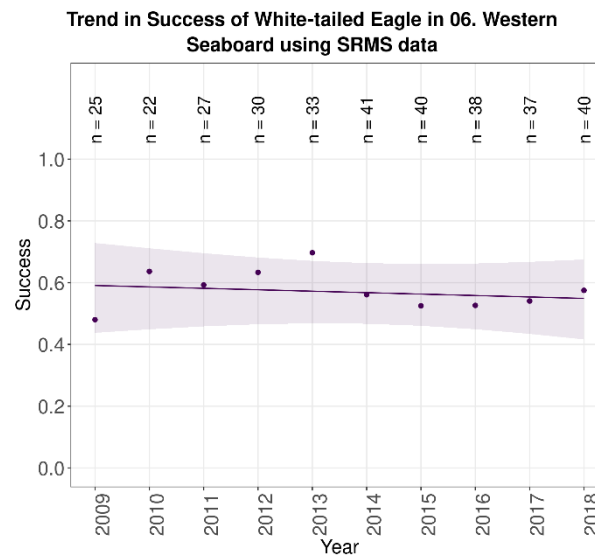


14. Argyll West and Islands trend: Not significant (caveats: Expanding population, All data used)

**Figure 8: Trends in breeding pairs of White-tailed Eagle by NHZ region during 2009-2018**

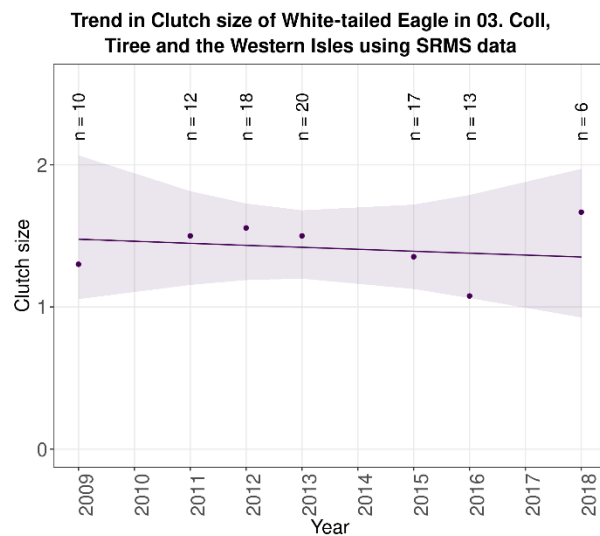


03. Coll, Tiree and the Western Isles trend: Not significant  
(caveats: Expanding population)

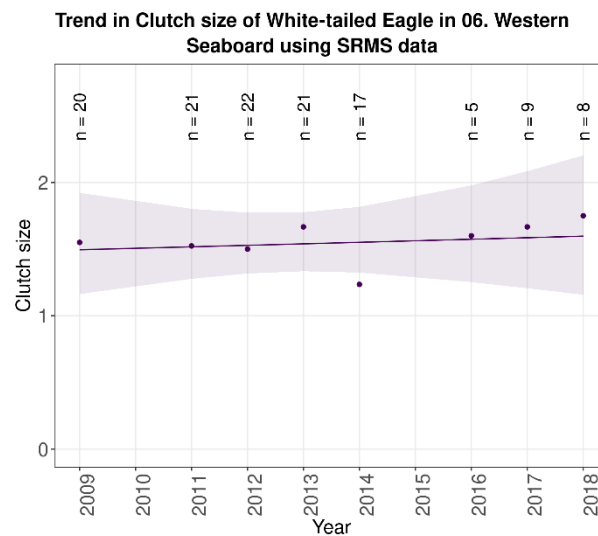


06. Western Seaboard trend: Not significant (caveats:  
Expanding population)

**Figure 9:** Trends in breeding success of White-tailed Eagle by NHZ region during 2009-2018.

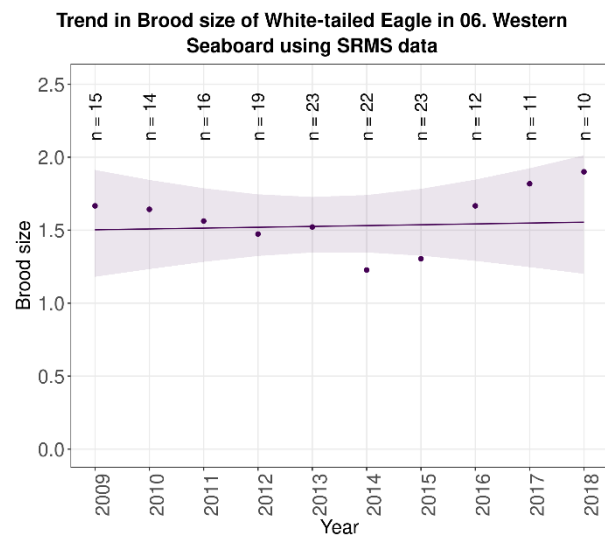


03. Coll, Tiree and the Western Isles trend: Not significant  
(caveats: Expanding population; Sample sizes small;  
No home range random effect)



06. Western Seaboard trend: Not significant (caveats:  
Expanding population; Sample sizes small; No home  
range random effect)

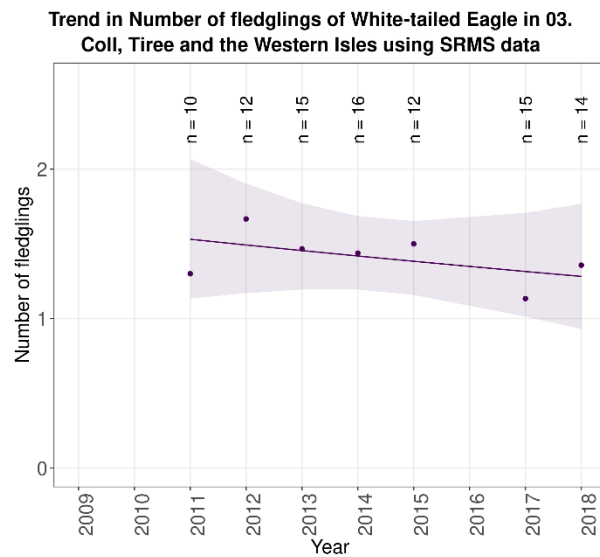
**Figure 10:** Trends in clutch size of White-tailed Eagle by NHZ region during 2009-2018.



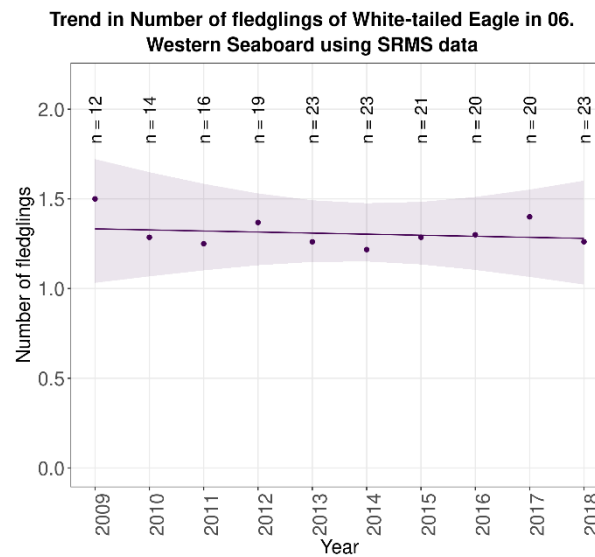
06. Western Seaboard trend: Not significant (caveats:  
Expanding population; Sample sizes small; No home  
range random effect)

**Figure 11:** Trends in brood size of White-tailed Eagle by NHZ region during 2009-2018.





03. Coll, Tiree and the Western Isles trend: Not significant  
 (caveats: Expanding population; Sample sizes small)



06. Western Seaboard trend: Not significant (caveats:  
 Expanding population; Sample sizes small)

**Figure 12:** Trends in number of fledglings of White-tailed Eagle by NHZ region during 2009-2018.

**Table 4:** Details of SRMS Regional trends for White-tailed Eagle.

Parameter	Region	First year of trend	Last year of trend	Number of years	Mean number of home ranges across years	Mean parameter value (and 95% confidence limits)	Trend during the period	Caveats	Estimated % annual change (and 95% confidence limits)
Pairs	Scotland	2009	2018	10	71.4	68.4 (58.5 to 78.3)	Increase	Expanding population; All data used	5.4 (2.7 to 8.2)
	Argyll	2009	2018	10	21.4	20.7 (17.4 to 24.0)	Increase	Expanding population, All data used	5.8 (0.9 to 11.0)
	Highland	2009	2018	10	29.5	28.1 (25.2 to 31.0)	Not significant	Expanding population, All data used	3.8 (-0.4 to 8.1)
	Lewis & Harris	2009	2018	10	12.1	11.7 (9.5 to 13.9)	Not significant	Expanding population, Sample sizes small, All data used	5.4 (-1.1 to 12.3)
	Uist	2009	2018	10	7.3	7.0 (5.6 to 8.4)	Not significant		8.2 (-0.4 to 17.5)
Success	Scotland	2009	2018	10	72.1	0.6 (0.5 to 0.6)	Not significant	Expanding population	0.5 (-1.0 to 2.0)
	Argyll	2009	2018	10	21.3	0.7 (0.6 to 0.7)	Not significant	Expanding population	-1.1 (-3.5 to 1.2)
	Highland	2009	2018	10	30.3	0.5 (0.5 to 0.6)	Not significant	Expanding population	1.5 (-0.6 to 3.7)
	Lewis & Harris	2009	2018	10	12.6	0.6 (0.5 to 0.7)	Not significant	Sample sizes small; Expanding population	0.8 (-3.1 to 4.7)
Clutch size	Scotland	2009	2018	9	36.0	1.5 (1.4 to 1.5)	Not significant	Sample sizes small	0.8 (-2.7 to 4.4)
	Highland	2009	2018	9	14.4	1.5 (1.4 to 1.6)	Not significant	Sample sizes small	4.1 (-1.2 to 9.6)
Brood size	Scotland	2009	2018	10	34.5	1.5 (1.5 to 1.6)	Not significant	Expanding population	0.7 (-2.6 to 4.1)
Brood size	Argyll	2009	2018	10	11.7	1.5 (1.4 to 1.6)	Not significant	Sample sizes small	-0.8 (-6.5 to 5.3)
	Highland	2009	2018	10	13.3	1.5 (1.5 to 1.6)	Not significant	Sample sizes small	2.6 (-2.5 to 8.1)
Number of fledglings	Scotland	2009	2018	10	42.3	1.3 (1.3 to 1.4)	Not significant	Expanding population	-0.5 (-3.5 to 2.6)
	Argyll	2009	2018	10	14.4	1.3 (1.2 to 1.3)	Not significant	Sample sizes small	-1.3 (-6.5 to 4.3)
	Highland	2009	2018	10	15.8	1.3 (1.3 to 1.4)	Not significant	Sample sizes small	1.2 (-3.5 to 6.1)

**Table 5:** Details of NHZ Regional trends for White-tailed Eagle.

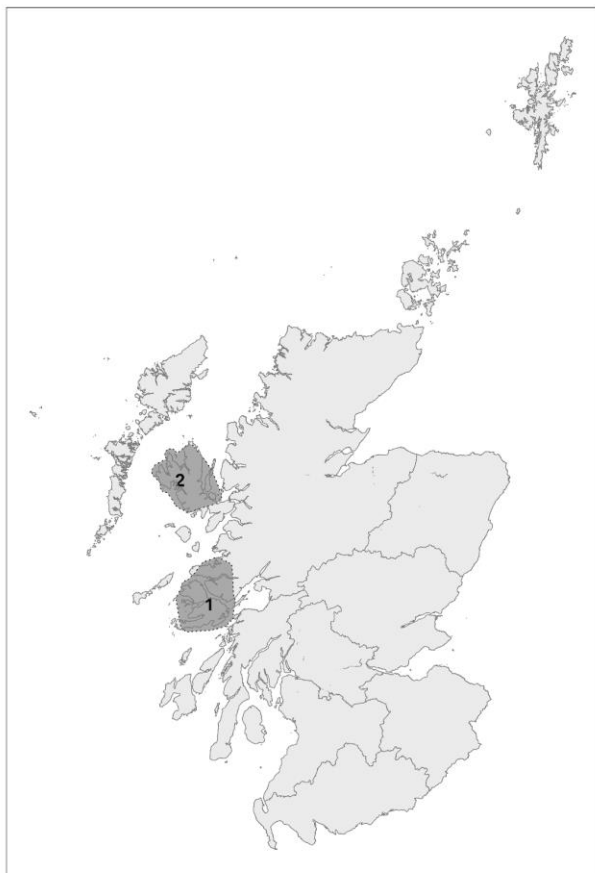
Parameter	Region	First year of trend	Last year of trend	Number of years	Mean number of home ranges across years	Mean parameter value (and 95% confidence limits)	Trend during the period	Caveats	Estimated % annual change (and 95% confidence limits)
Pairs	Scotland	2009	2018	10	71.4	68.4 (58.5 to 78.3)	Increase	Expanding population; All data used	5.4 (2.7 to 8.2)
	03. Coll, Tiree and the Western Isles	2009	2018	10	19.4	18.7 (15.2 to 22.2)	Increase	Expanding population, All data used	6.4 (1.2 to 11.9)
	06. Western Seaboard	2009	2018	10	34.7	32.6 (28.7 to 36.5)	Increase	Expanding population, All data used	4.9 (1.0 to 9.0)
	08. Western Highlands	2009	2018	10	5	5.0 (4.1 to 5.9)	Not significant	Expanding population, All data used	4.2 (-5.4 to 14.8)
	14. Argyll West and Islands	2009	2018	10	4.8	4.8 (3.8 to 5.8)	Not significant	Expanding population, All data used	3.6 (-6.1 to 14.4)
Success	Scotland	2009	2018	10	72.1	0.6 (0.5 to 0.6)	Not significant	Expanding population	0.5 (-1.0 to 2.0)
	03. Coll, Tiree and the Western Isles	2009	2018	10	18.5	0.6 (0.5 to 0.7)	Not significant	Expanding population	0.1 (-3.0 to 3.0)
	06. Western Seaboard	2009	2018	10	33.3	0.6 (0.5 to 0.6)	Not significant	Expanding population	-0.5 (-2.7 to 1.7)
Clutch size	Scotland	2009	2018	9	36	1.5 (1.4 to 1.5)	Not significant		0.8 (-2.7 to 4.4)
	03. Coll, Tiree and the Western Isles	2009	2018	7	13.714	1.4 (1.3 to 1.5)	Not significant	Expanding population; Sample sizes small; No home range random effect	-1.0 (-7.7 to 6.2)
	06. Western Seaboard	2009	2018	8	15.375	1.5 (1.4 to 1.6)	Not significant	Expanding population; Sample sizes small; No home range random effect	0.7 (-4.6 to 6.4)
Brood size	Scotland	2009	2018	10	34.5	1.5 (1.5 to 1.6)	Not significant		0.7 (-2.6 to 4.1)
	06. Western Seaboard	2009	2018	10	16.5	1.5 (1.4 to 1.6)	Not significant	Expanding population; Sample sizes small; No home range random effect	0.4 (-4.3 to 5.3)
Number of fledglings	Scotland	2009	2018	10	42.3	1.3 (1.3 to 1.4)	Not significant		-0.5 (-3.5 to 2.6)

Parameter	Region	First year of trend	Last year of trend	Number of years	Mean number of home ranges across years	Mean parameter value (and 95% confidence limits)	Trend during the period	Caveats	Estimated % annual change (and 95% confidence limits)
	03. Coll, Tiree and the Western Isles	2011	2018	7	13.429	1.4 (1.3 to 1.5)	Not significant	Expanding population; Sample sizes small	-2.5 (-9.5 to 5.0)
	06. Western Seaboard	2009	2018	10	19.1	1.3 (1.2 to 1.4)	Not significant	Expanding population; Sample sizes small	-0.5 (-4.9 to 4.2)

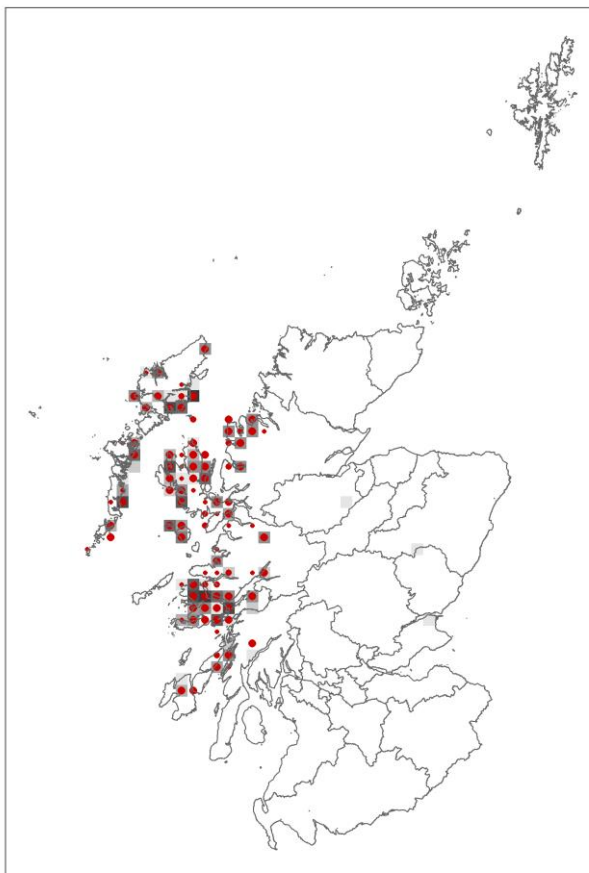
**Table 6:** Number of White-tailed Eagle home range checks for occupancy reported to the SRMS during 2009-2018, in each of the 12 SRMS Regions, with approximate proportion of estimated population monitored. At the bottom of the table, row A is the mean number of home range checks over the most recent five years. Row B gives the estimated proportion of the national population in each region, based on Bird Atlas Timed Tetrad Visit (TTV) data. The depth of red shading indicates the relative importance of each region for this species. If survey effort was spread evenly across the whole population, the ratio of A:B would not vary much between regions.

		ARGYLL	CENTRAL SCOTLAND	DUMFRIES & GALLOWAY	HIGHLAND	LEWIS & HARRIS	LOTHIAN & BORDERS	NORTH EAST SCOTLAND	ORKNEY	SHETLAND	SOUTH STRATHCLYDE	TAYSIDE & FIFE	UIST	Total
	Year													
	2009	13			24	8		0	0			0	5	50
	2010	14			23	8		0	0			0	4	49
	2011	20			27	11		0	0			0	6	64
	2012	23			30	12		0	0			0	7	72
	2013	26			32	15		0	0			2	9	84
	2014	31			47	17		0	1			4	9	109
	2015	31			44	19		0	1			3	9	107
	2016	29			47	16		0	1			3	10	106
	2017	33			54	25		1	1			3	10	127
	2018	37			53	22		1	1			3	11	128
A: Mean home range checks		32.2	Absent	Absent	49.0	19.8	Absent	0.4	1.0	Absent	Absent	3.2	9.8	115.4
B: Proportion of estimated Scottish population		32	0	0	48	15	0	0	0	0	0	0	6	100

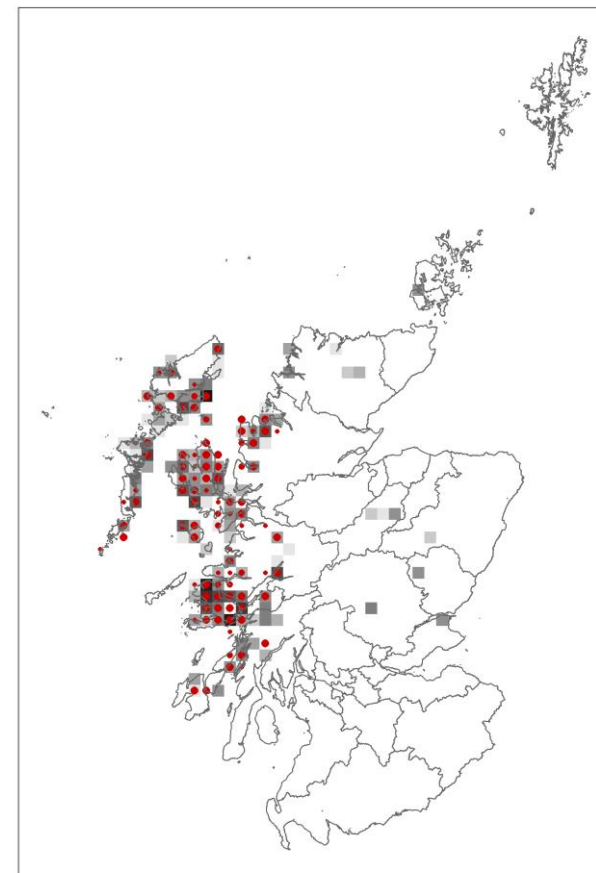
a)



b)



c)



**Figure 13:** Areas corresponding to clusters of home ranges for White-tailed Eagle between 2009 and 2018 (a) together with maps showing variation in the number of White-tailed Eagle records reported to SRMS during 2009-2013 (b) and 2014-2018 (c), in the context of the known White-tailed Eagle breeding distribution taken from the 2007-2011 Bird Atlas. SRMS data are depicted as grey squares with darker shading indicating more records while Bird Atlas data are depicted as red dots with the size of dot positively related to probability of breeding. In contrast to other species for which trends have been produced, numerical trends for White-tailed Eagle are drawn from all available data, not just from home ranges within the clusters shown in map a).