

Buzzard



Figure 1: Buzzard in Fife (Photo: Harry Bell, Tayside & Fife RSG).

The Scottish Buzzard population is poorly represented by existing SRMS data, though these include data from some high quality local studies.

Our latest analysis of SRMS data for the period 2009-2018 has produced no national trends in breeding number or productivity at a national level or for any SRMS regions, but has produced trends for seven of the 11 SRMS regions (Table 1) and for eight of the 20 NHZ regions (Table 2) for which the SRMS holds Buzzard records.

Users of the published trends should be aware that trends in breeding numbers are drawn from a very

small, well-monitored fraction of the Buzzard's range (e.g. there are no records available from south of the Central Belt, from Angus, or from North East Scotland, all areas where Buzzards are abundant) (Figure 12). Productivity trends are based on records from a wider spread of areas, but much of the Buzzard's Scottish range is still unrepresented (e.g. there are no records from the North East, and few from the south-west, the west Highlands, and north and west Tayside).

National trends

No trends in breeding numbers or breeding productivity are available for Buzzard at a national level.

BBS data for Scotland showed no significant change at a national level over the period 2008-2018 (Harris *et al.* 2020), though the longer term trend shows a 30% increase over the period 1995-2020.

SRMS regional trends

Breeding numbers of Buzzard decreased in two regions (Argyll and Tayside & Fife) and did not change significantly in Highland (Table 1, Figure 2).

Breeding success of Buzzard showed non-linear variation in Argyll and did not change significantly in Central, Dumfries & Galloway, Highland, Lothian & Borders, Tayside & Fife and Uist (Table 1, Figure 3).

Clutch size, brood size and number of fledglings did not change significantly in Highland and Lothian & Borders (Table 1, Figures 4-6). Number of fledglings in a further four regions (Argyll, Central, Dumfries & Galloway and Tayside & Fife) did not change significantly (Table 1, Figure 6).

Trends for this species are not yet available for Lewis & Harris, North East Scotland, Orkney or South Strathclyde.

NHZ regional trends

Breeding numbers of Buzzard decreased in NHZ 14 and did not change significantly in two regions (NHZ 15 and 21) (Table 2, Figure 7).

Breeding success of Buzzard showed non-linear variation in three regions (NHZs 14 and 16-17) and did not change significantly in five more (NHZs 03, 15 and 19-21) (Table 2, Figure 8).

Clutch size, brood size and number of fledglings did not change significantly in two regions (NHZs 16 and 21) (Table 2, Figures 9-11). Number of fledglings in a further four regions (NHZs 03, 14, 17 and 20) did not change significantly (Table 2, Figure 11).

Trends for this species are not yet available for NHZs 02, 04-13 and 18.

Details of contributing records

8,257 (661 to 994 per year, mean: 826 records) from 2009-2018 contributed to this trends analysis (Table 5).

References

Harris, S.J., Massimino, D., Balmer, D.E., Eaton, M.A., Noble, D.G., Pearce-Higgins, J.W., Woodcock, P. & Gillings, S. (2020) The Breeding Bird Survey 2019.

Table 1: Summary of SRMS regional trends for Buzzard during 2009-2018. Figures in parentheses indicate the annual change, with significant decreases highlighted in blue and non-significant changes highlighted in grey. ‘Non-linear’ indicates non-linear trends. ‘—’ 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	Decrease (-4.2%)	Non-linear	—	—	Not significant
Central	—	Not significant ^v	—	—	Not significant
Dumfries & Galloway	—	Not significant ^{rs}	—	—	Not significant ^s
Highland	Not significant	Not significant ^r	Not significant	Not significant	Not significant
Lewis & Harris	—	—	—	—	—
Lothian & Borders	—	Not significant ^r	Not significant	Not significant	Not significant
North East Scotland	—	—	—	—	—
Orkney	—	—	—	—	—
Shetland	Absent	Absent	Absent	Absent	Absent
South Strathclyde	—	—	—	—	—
Tayside & Fife	Decrease (-4.5%)	Not significant	—	—	Not significant
Uist	—	Not significant	—	—	—

^r No home range random effect, ^s Sample sizes small, ^v Variable effort.

Table 2: Summary of NHZ regional trends for Buzzard 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. ‘Non-linear’ indicates non-linear trends. ‘—’ 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	—	Not significant ^s	—	—	Not significant ^{rs}
04. North West Seaboard	—	—	—	—	—
05. The Peatlands of Caithness and Sutherland	—	—	—	—	—
06. Western Seaboard	—	—	—	—	—
07. Northern Highlands	—	—	—	—	—
08. Western Highlands	—	—	—	—	—
09. North East Coastal Plain	—	—	—	—	—
10. Central Highlands	—	—	—	—	—
11. Cairngorm Massif	—	—	—	—	—
12. North East Glens	—	—	—	—	—
13. East Lochaber	—	—	—	—	—
14. Argyll West and Islands	Decrease (-4.2%)	Non-linear	—	—	Not significant ^r
15. Loch Lomond, The Trossachs and Breadalbane	Not significant ^s	Not significant	—	—	—
16. Eastern Lowlands	—	Non-linear	Not significant ^r	Not significant ^r	Not significant
17. West Central Belt	—	Non-linear	—	—	Not significant ^r
18. Wigtown Machairs and Outer Solway Coast	—	—	—	—	—
19. Western Southern Uplands and Inner Solway	—	Not significant ^{rs}	—	—	—
20. Border Hills	—	Not significant ^{rs}	—	—	Not significant ^{rs}
21. Moray Firth	Not significant	Not significant	Not significant ^r	Not significant ^s	Not significant ^r

^r No home range random effect, ^s Sample sizes small.

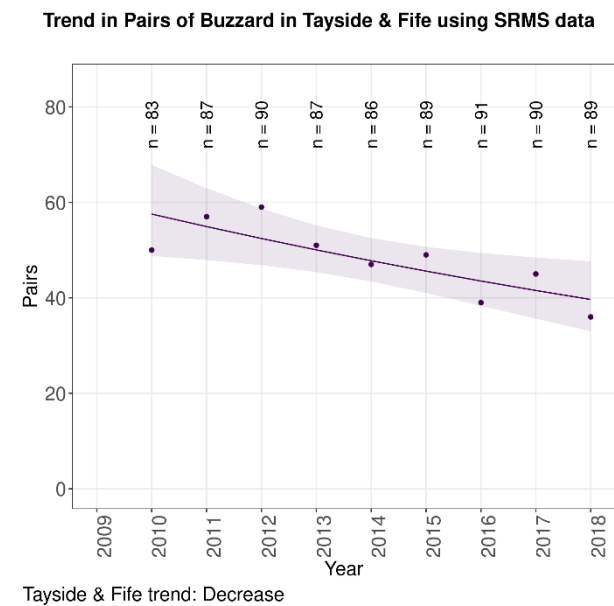
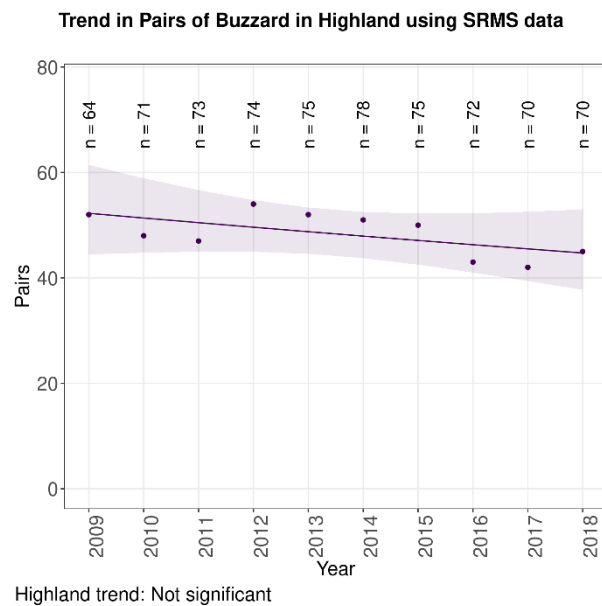
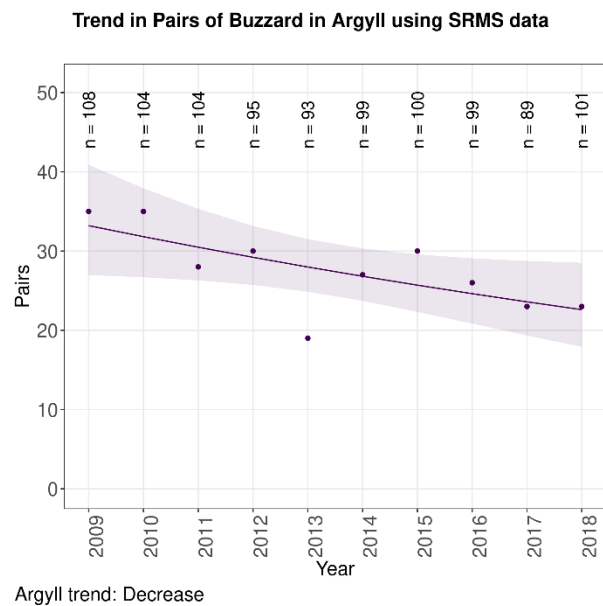


Figure 2: Trends in numbers of breeding pairs of Buzzard by SRMS region during 2009-2018.

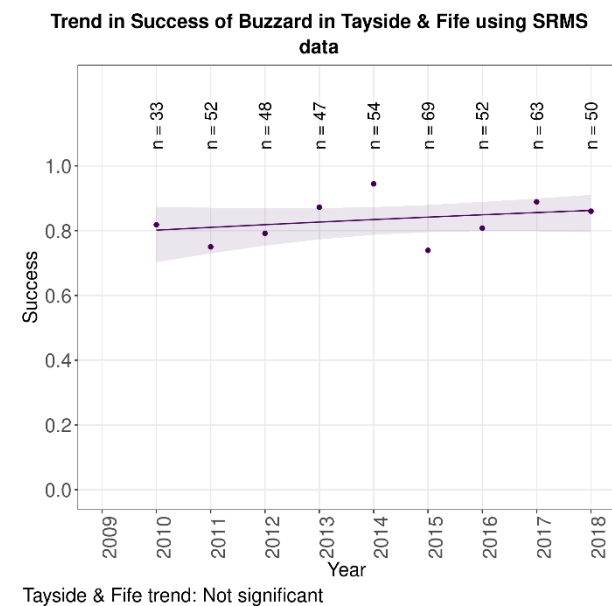
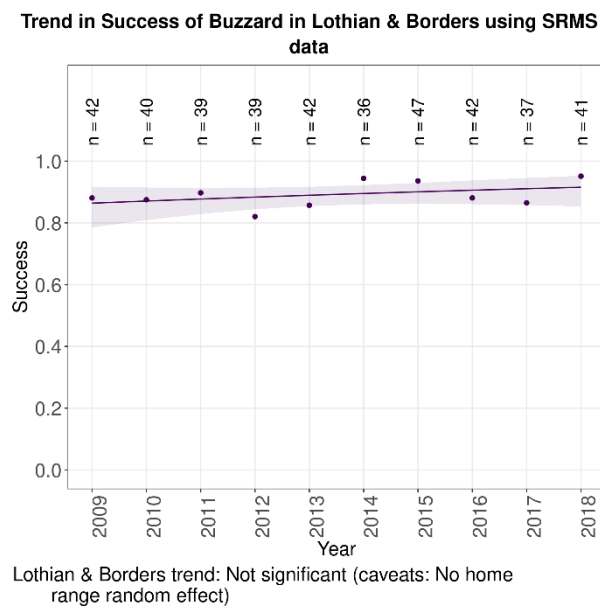
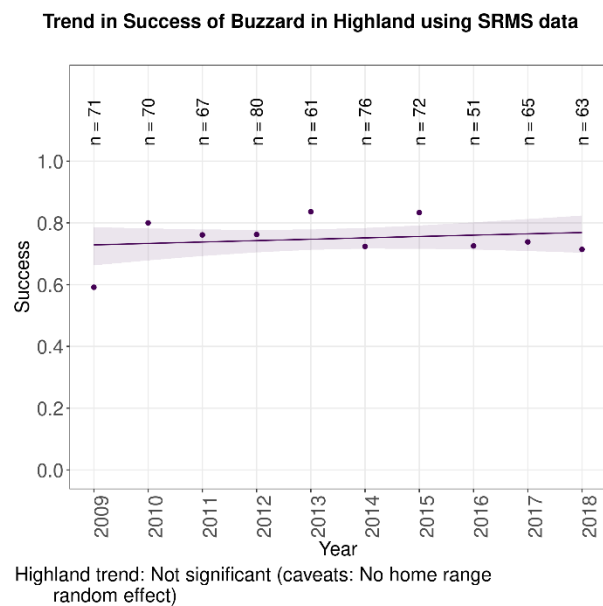
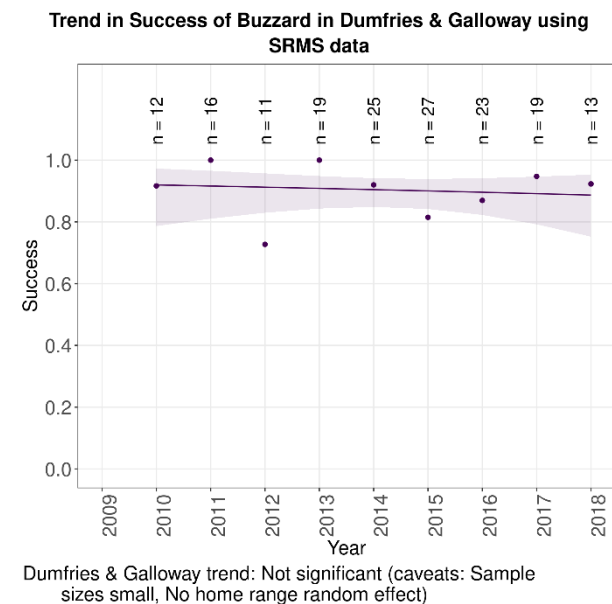
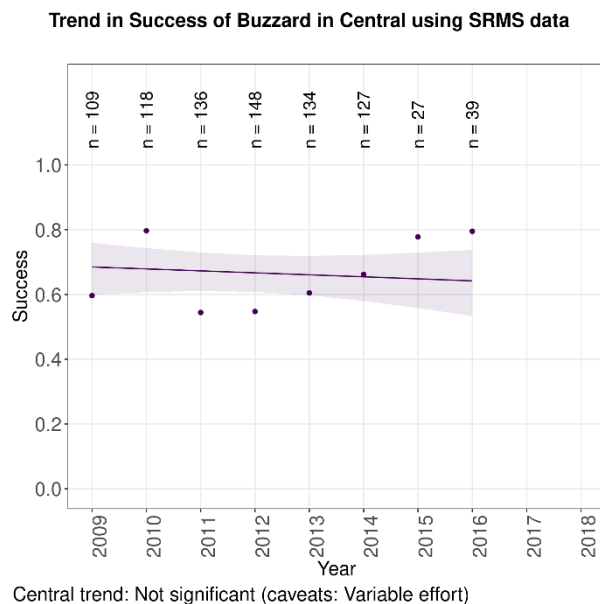
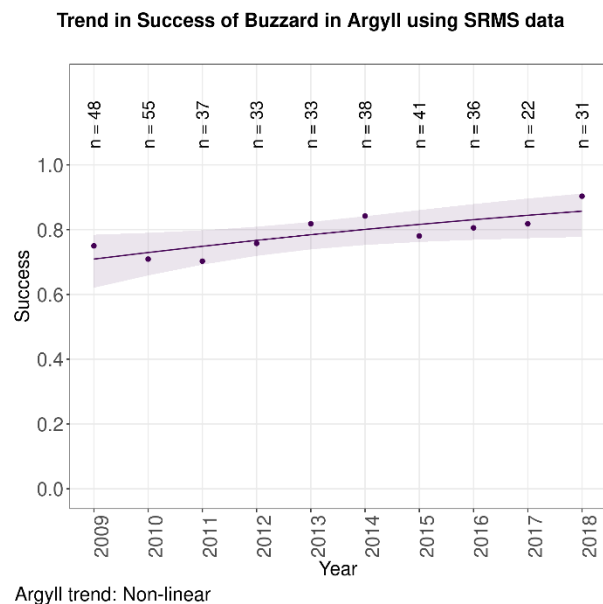


Figure 3: Trends in breeding success of Buzzard by SRMS region during 2009-2018.

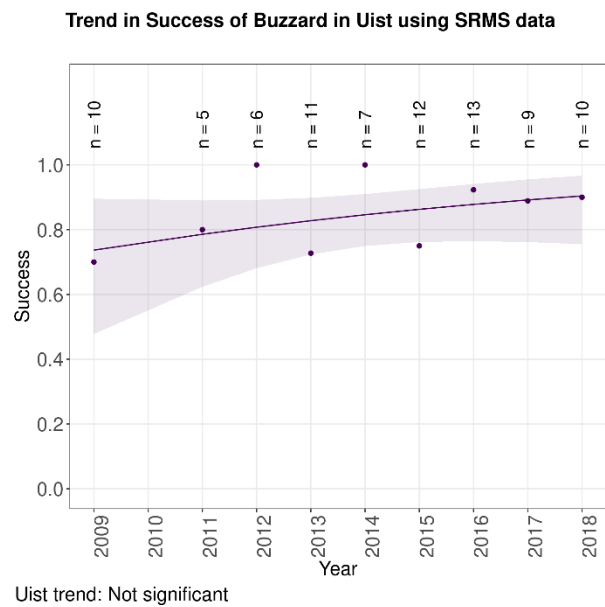
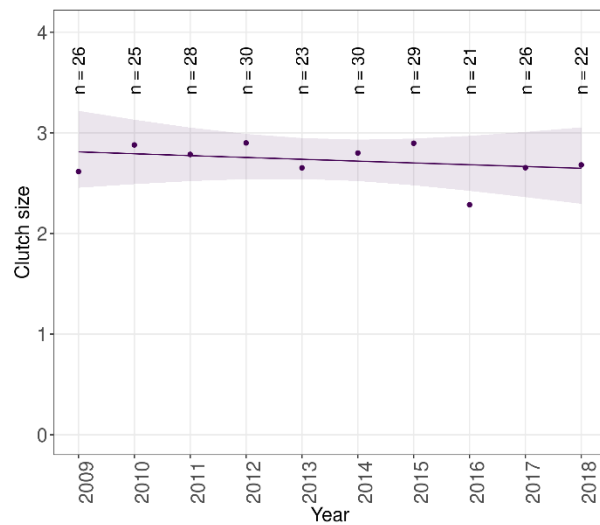


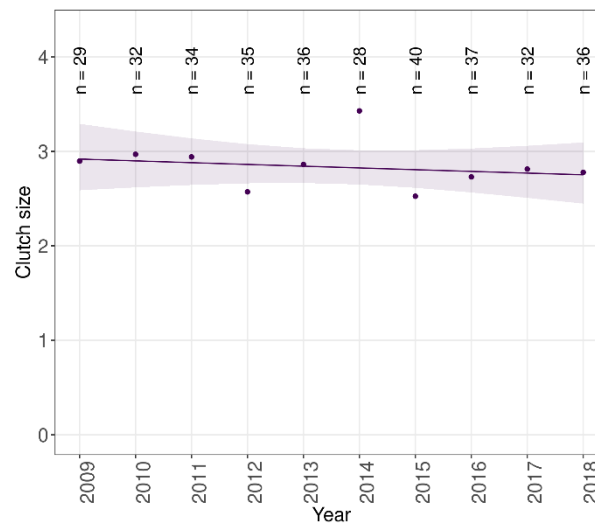
Figure 3 continued: Trends in breeding success of Buzzard by SRMS region during 2009-2018.

Trend in Clutch size of Buzzard in Highland using SRMS data



Highland trend: Not significant

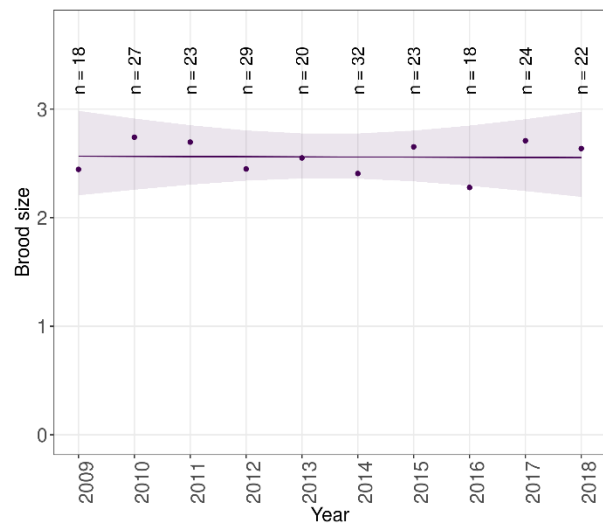
Trend in Clutch size of Buzzard in Lothian & Borders using SRMS data



Lothian & Borders trend: Not significant

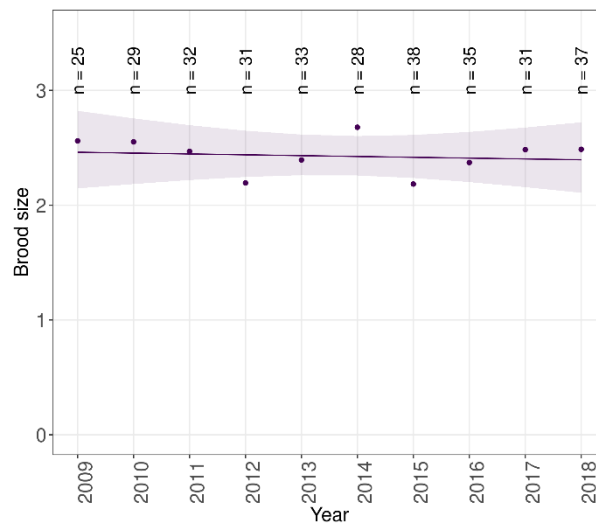
Figure 4: Trends in clutch size of Buzzard by SRMS region during 2009-2018.

Trend in Brood size of Buzzard in Highland using SRMS data



Highland trend: Not significant

Trend in Brood size of Buzzard in Lothian & Borders using SRMS data



Lothian & Borders trend: Not significant

Figure 5: Trends in brood size of Buzzard by SRMS region during 2009-2018.

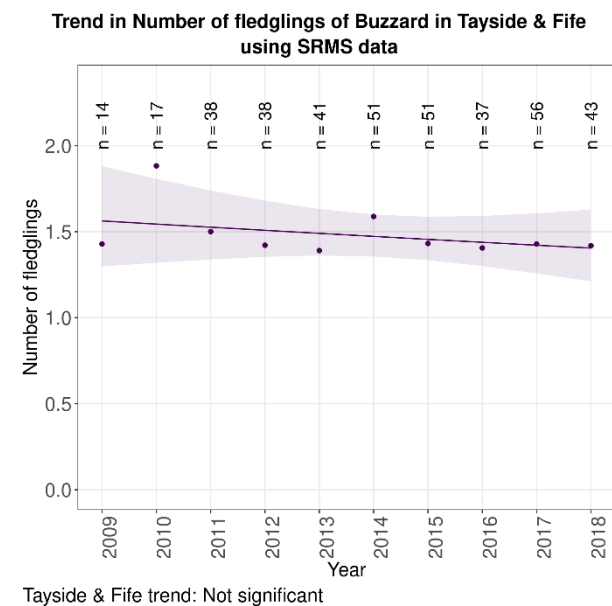
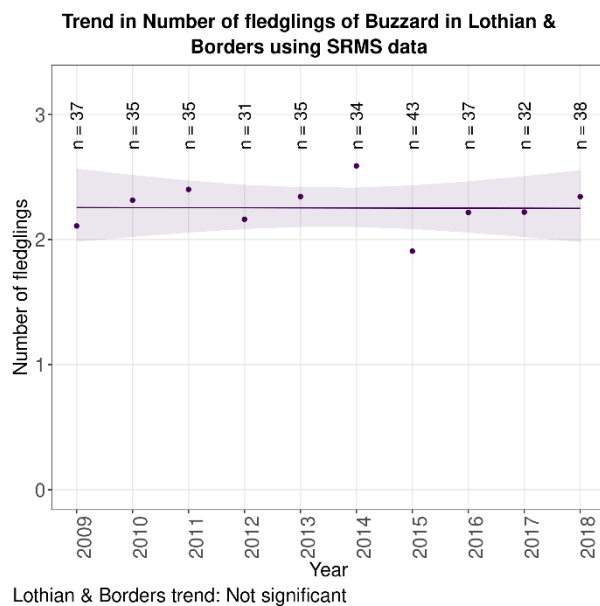
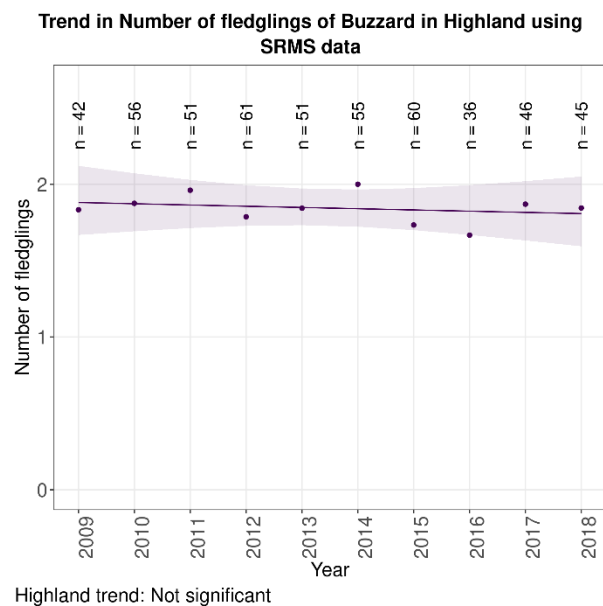
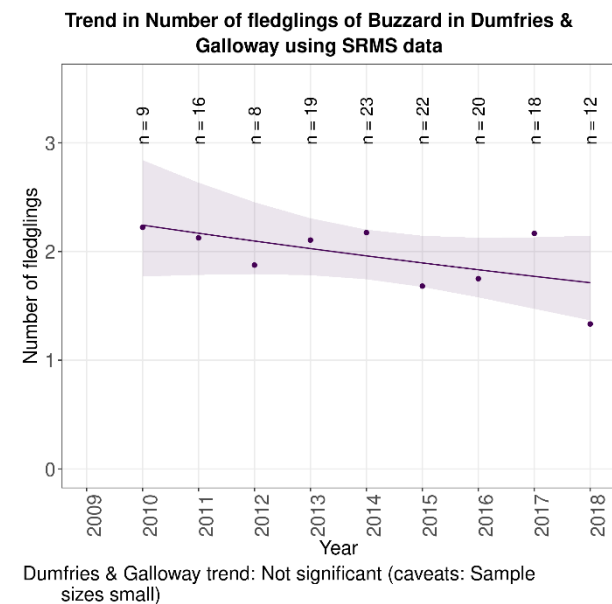
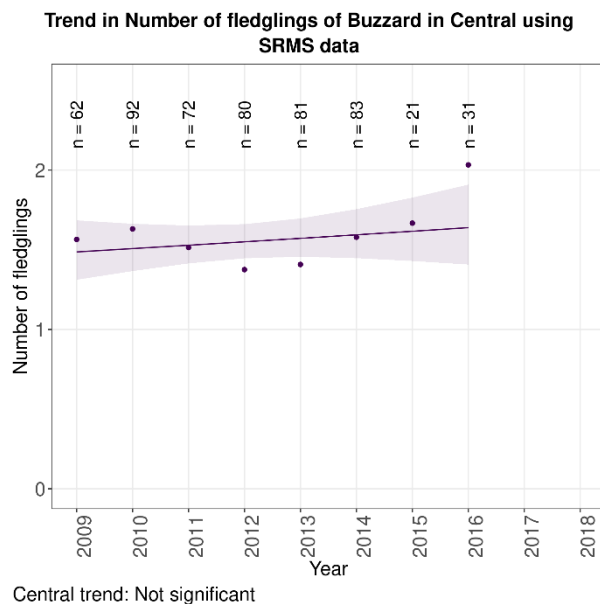
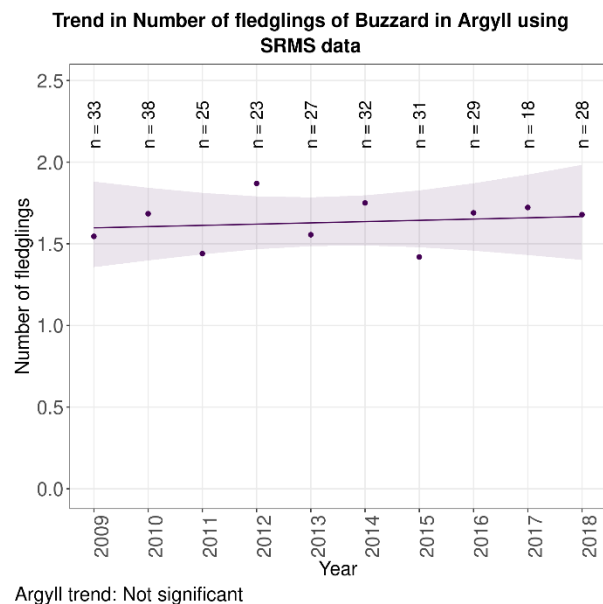
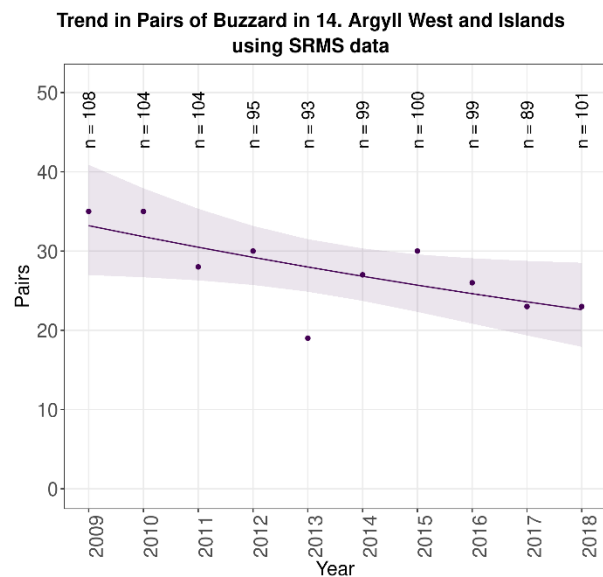
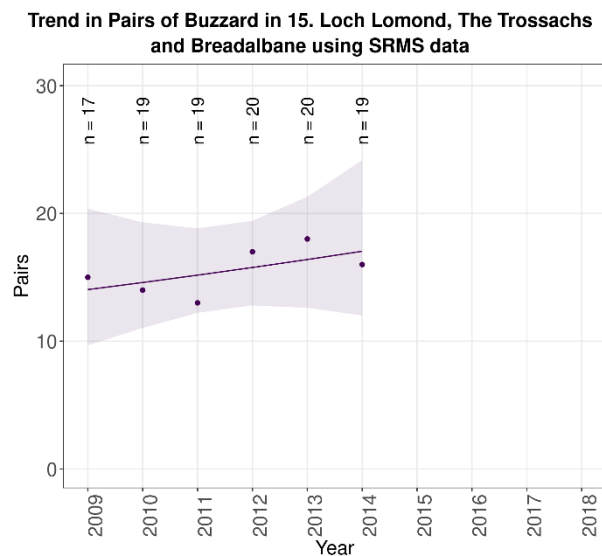


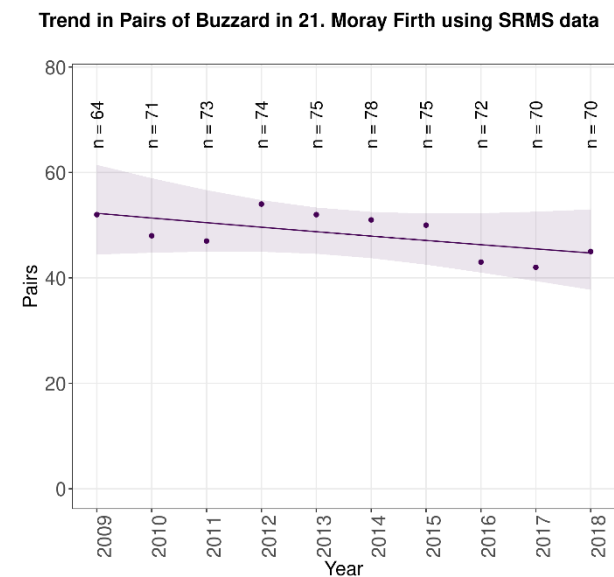
Figure 6: Trends in number of fledglings of Buzzard by SRMS region during 2009-2018.



14. Argyll West and Islands trend: Decrease

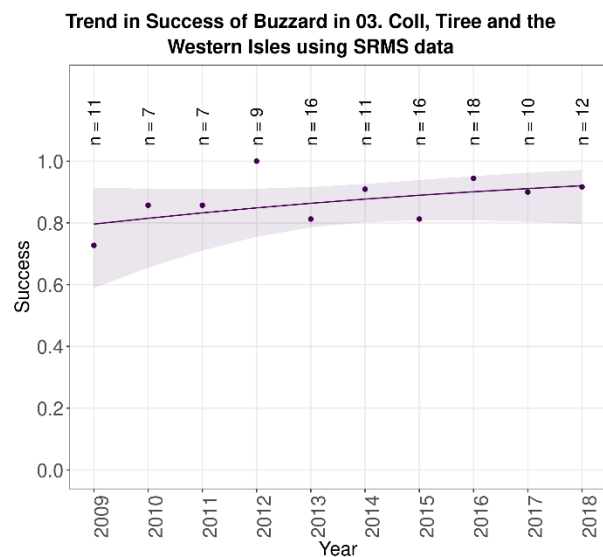


15. Loch Lomond, The Trossachs and Breadalbane trend: Not significant (caveats: Sample sizes small)

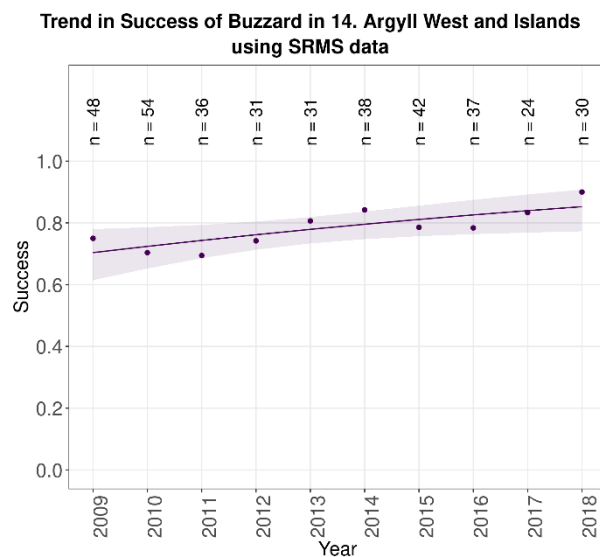


21. Moray Firth trend: Not significant

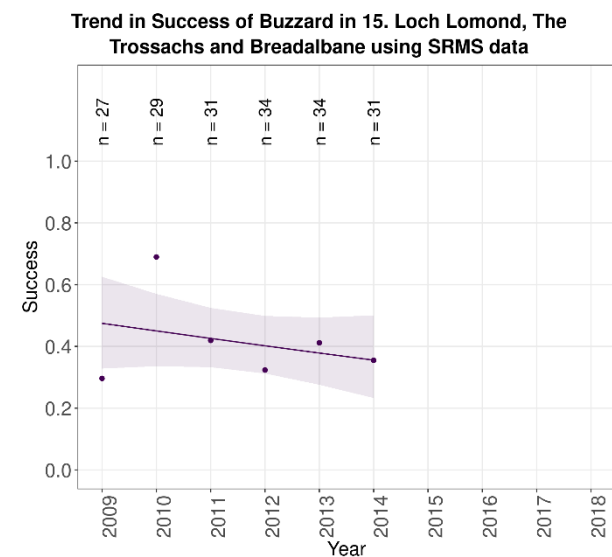
Figure 7: Trends in breeding pairs of Buzzard by NHZ region during 2009-2018.



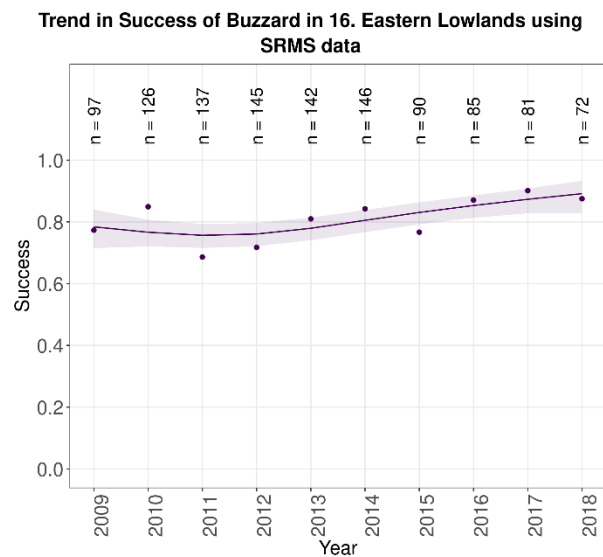
03. Coll, Tiree and the Western Isles trend: Not significant (caveats: Sample sizes small)



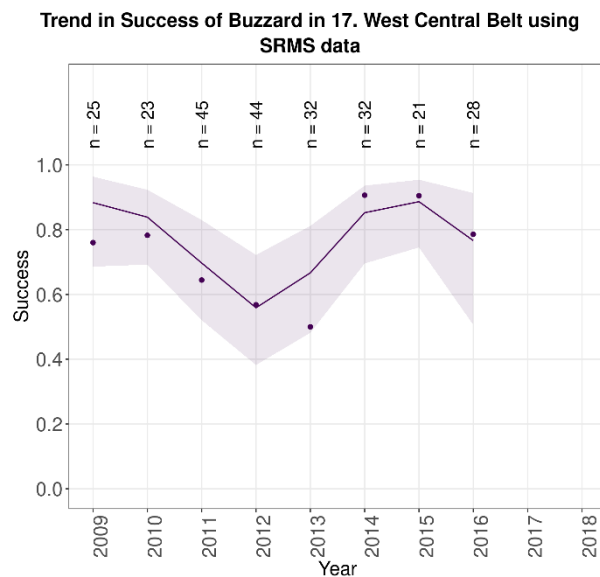
14. Argyll West and Islands trend: Non-linear (caveats: Variable effort)



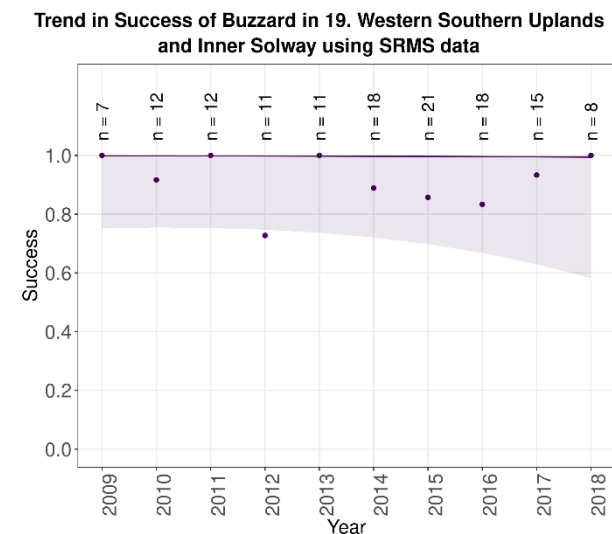
15. Loch Lomond, The Trossachs and Breadalbane trend: Not significant



16. Eastern Lowlands trend: Non-linear (caveats: Variable effort)



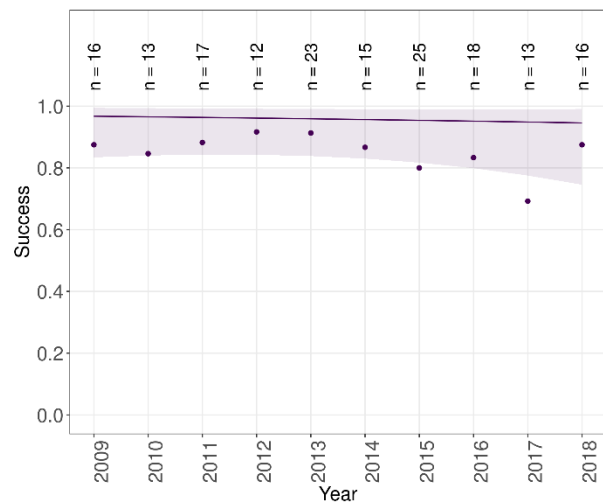
17. West Central Belt trend: Non-linear



19. Western Southern Uplands and Inner Solway trend: Stable (<5% change) (caveats: Sample sizes small, No home range random effect)

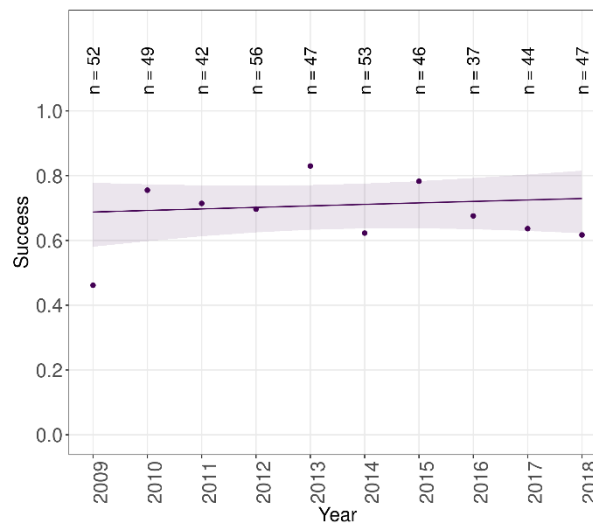
Figure 758: Trends in breeding success of Buzzard by NHZ region during 2009-2018.

Trend in Success of Buzzard in 20. Border Hills using SRMS data



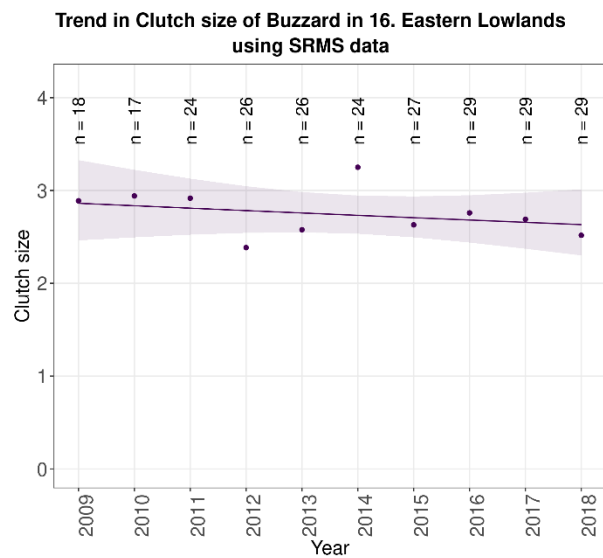
20. Border Hills trend: Not significant (caveats: Sample sizes small, No home range random effect)

Trend in Success of Buzzard in 21. Moray Firth using SRMS data

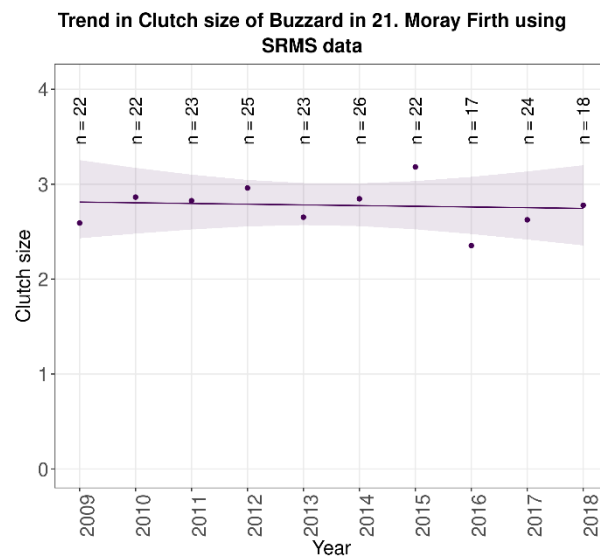


21. Moray Firth trend: Not significant

Figure 8 continued: Trends in breeding success of Buzzard by NHZ region during 2009-2018.



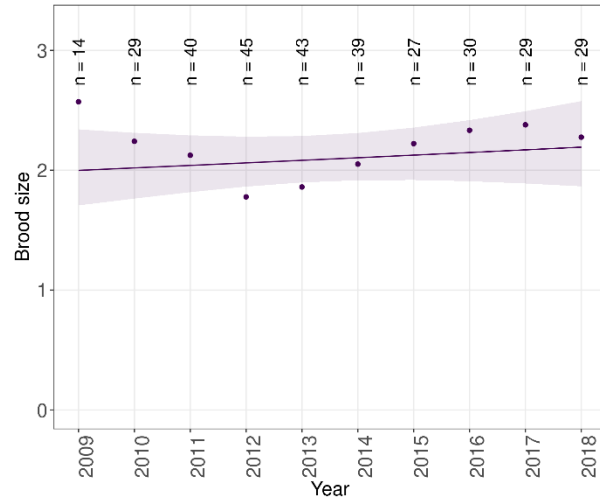
16. Eastern Lowlands trend: Not significant (caveats: No home range random effect)



21. Moray Firth trend: Not significant (caveats: No home range random effect)

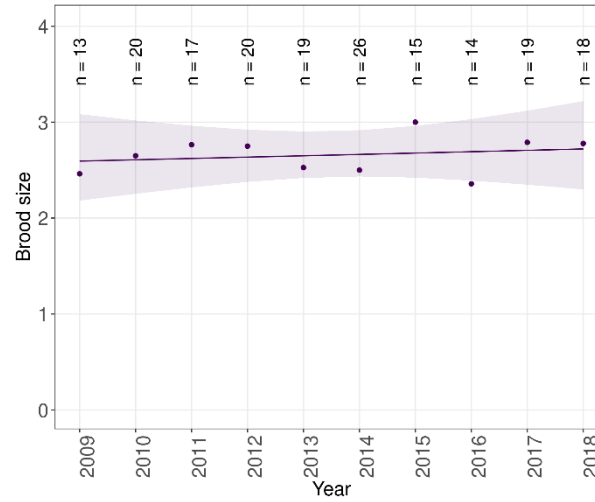
Figure 9: Trends in clutch size of Buzzard by NHZ region during 2009-2018.

Trend in Brood size of Buzzard in 16. Eastern Lowlands using SRMS data



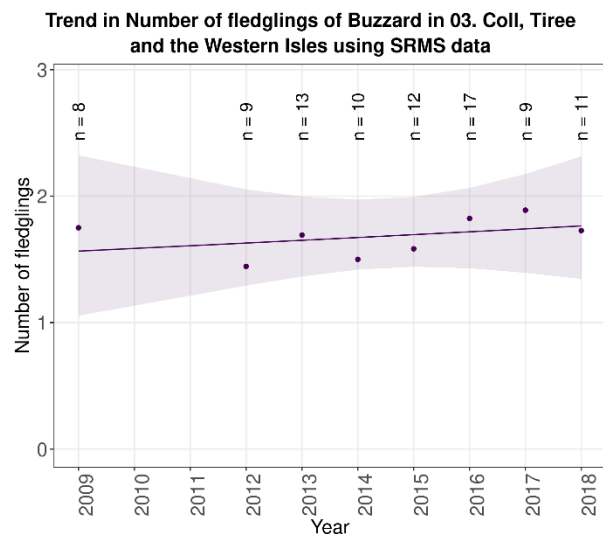
16. Eastern Lowlands trend: Not significant (caveats: No home range random effect)

Trend in Brood size of Buzzard in 21. Moray Firth using SRMS data

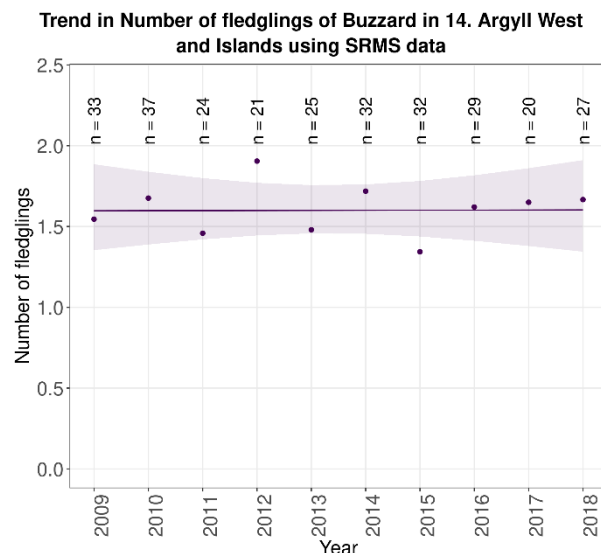


21. Moray Firth trend: Not significant (caveats: Sample sizes small)

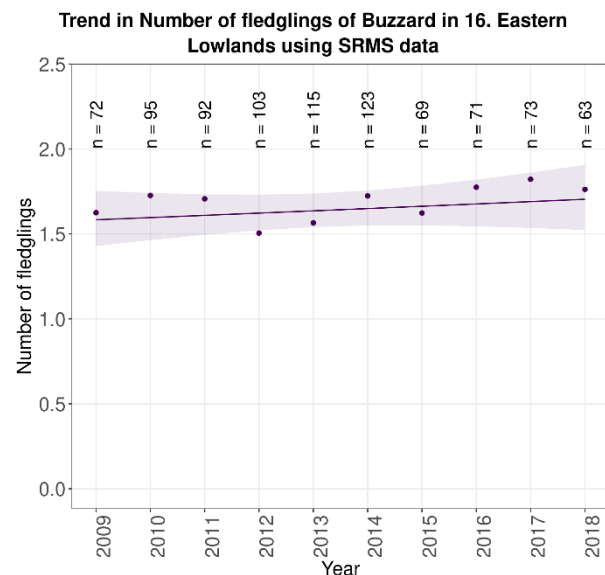
Figure 10: Trends in brood size of Buzzard by NHZ region during 2009-2018.



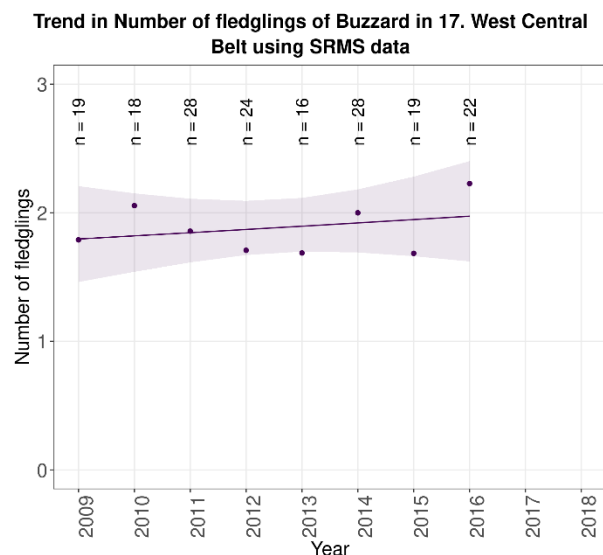
03. Coll, Tiree and the Western Isles trend: Not significant (caveats: Sample sizes small; No home range random effect)



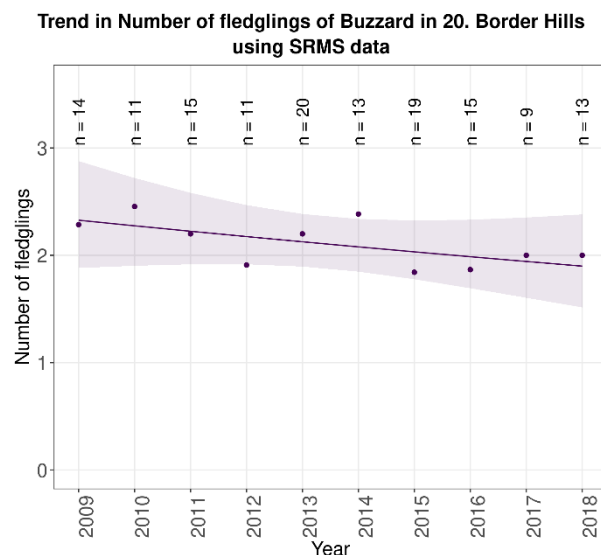
14. Argyll West and Islands trend: Not significant (caveats: No home range random effect)



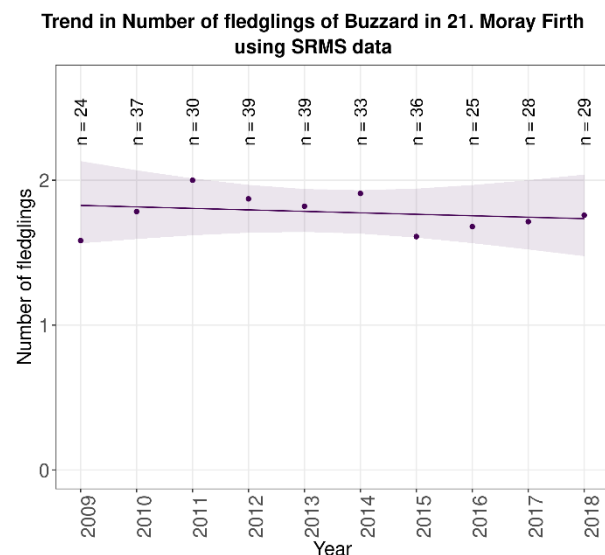
16. Eastern Lowlands trend: Not significant



17. West Central Belt trend: Not significant (caveats: No home range random effect)



20. Border Hills trend: Not significant (caveats: Sample sizes small; No home range random effect)



21. Moray Firth trend: Not significant (caveats: No home range random effect)

Figure 11: Trends in number of fledglings of Buzzard by NHZ region during 2009-2018.

Table 3: Details of SRMS Regional trends for Buzzard.

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	Argyll	2009	2018	10	99.2	27.6 (23.9 to 31.3)	Decrease		-4.2 (-8.1 to -0.1)
	Highland	2009	2018	10	72.2	48.4 (45.5 to 51.3)	Not significant		-1.7 (-4.7 to 1.4)
	Tayside & Fife	2010	2018	9	88.0	48.1 (42.3 to 53.9)	Decrease		-4.5 (-8.0 to -1.0)
Success	Argyll	2009	2018	10	37.4	0.8 (0.7 to 0.8)	Non-linear		Non-linear
	Central	2009	2016	8	104.8	0.6 (0.6 to 0.7)	Not significant	Variable effort	-0.6 (-2.6 to 1.4)
	Dumfries & Galloway	2010	2018	9	18.3	0.9 (0.8 to 0.9)	Not significant	Sample sizes small, No home range random effect	-0.3 (-2.2 to 1.2)
	Highland	2009	2018	10	67.6	0.7 (0.7 to 0.8)	Not significant	No home range random effect	0.5 (-0.8 to 1.7)
	Lothian & Borders	2009	2018	10	40.5	0.9 (0.9 to 0.9)	Not significant	No home range random effect	0.7 (-0.6 to 2.0)
	Tayside & Fife	2010	2018	9	52.0	0.8 (0.8 to 0.9)	Not significant		0.9 (-0.8 to 2.5)
	Uist	2009	2018	9	9.2	0.8 (0.7 to 0.9)	Not significant		2.7 (-1.6 to 6.6)
Clutch size	Highland	2009	2018	10	26.0	2.7 (2.6 to 2.8)	Not significant		-0.7 (-3.2 to 2.0)
	Lothian & Borders	2009	2018	10	33.9	2.8 (2.8 to 2.9)	Not significant		-0.7 (-2.8 to 1.6)
Brood size	Highland	2009	2018	10	23.6	2.6 (2.5 to 2.7)	Not significant		-0.1 (-2.9 to 2.9)
	Lothian & Borders	2009	2018	10	31.9	2.4 (2.4 to 2.5)	Not significant		-0.3 (-2.7 to 2.2)
Number of fledglings	Argyll	2009	2018	10	28.4	1.6 (1.6 to 1.7)	Not significant		0.5 (-2.6 to 3.7)
	Central	2009	2016	8	65.3	1.5 (1.5 to 1.6)	Not significant		1.4 (-2.0 to 4.9)
	Dumfries & Galloway	2010	2018	9	16.3	1.9 (1.8 to 2.1)	Not significant	Sample sizes small	-3.3 (-8.0 to 1.6)
	Highland	2009	2018	10	50.3	1.8 (1.8 to 1.9)	Not significant		-0.4 (-2.7 to 1.9)
	Lothian & Borders	2009	2018	10	35.7	2.3 (2.2 to 2.3)	Not significant		0.0 (-2.4 to 2.4)
	Tayside & Fife	2009	2018	10	38.6	1.5 (1.4 to 1.5)	Not significant		-1.2 (-4.3 to 2.0)

Table 4: Details of NHZ Regional trends for Buzzard.

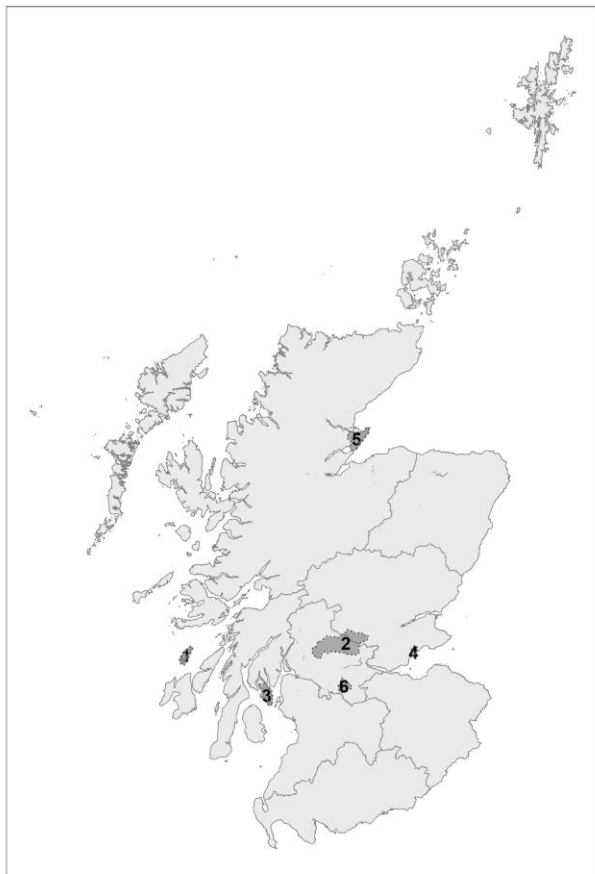
Parameter	Region	First year of trend	Last year of trend	Number of years	Mean number of home ranges across years	Mean parameter value (and 95% confidence limits)	Trend during the period	Caveats	Estimated % annual change (and 95% confidence limits)
Pairs	14. Argyll West and Islands	2009	2018	10	99.2	27.6 (23.9 to 31.3)	Decrease		-4.2 (-8.1 to -0.1)
	15. Loch Lomond, The Trossachs and Breadalbane	2009	2014	6	19	15.5 (13.5 to 17.5)	Not significant	Sample sizes small	4.0 (-7.7 to 17.1)
	21. Moray Firth	2009	2018	10	72.2	48.4 (45.5 to 51.3)	Not significant		-1.7 (-4.7 to 1.4)
Success	03. Coll, Tiree and the Western Isles	2009	2018	10	11.7	0.9 (0.8 to 0.9)	Not significant	Sample sizes small	2.0 (-1.4 to 5.0)
	14. Argyll West and Islands	2009	2018	10	37.1	0.8 (0.7 to 0.8)	Non-linear	Variable effort	Non-linear
	15. Loch Lomond, The Trossachs and Breadalbane	2009	2014	6	31	0.4 (0.3 to 0.5)	Not significant		-2.5 (-7.1 to 2.2)
Success	16. Eastern Lowlands	2009	2018	10	112.1	0.8 (0.8 to 0.8)	Non-linear	Variable effort	Non-linear
	17. West Central Belt	2009	2016	8	31.25	0.7 (0.6 to 0.8)	Non-linear		Non-linear
	19. Western Southern Uplands and Inner Solway	2009	2018	10	13.3	0.9 (0.8 to 0.9)	Stable (<5% change)	Sample sizes small, No home range random effect	0.0 (-0.1 to 0.0)
	20. Border Hills	2009	2018	10	16.8	0.9 (0.8 to 0.9)	Not significant	Sample sizes small, No home range random effect	-0.2 (-0.9 to 0.4)

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)
	21. Moray Firth	2009	2018	10	47.3	0.7 (0.6 to 0.7)	Not significant		0.5 (-1.2 to 2.1)
Clutch size	16. Eastern Lowlands	2009	2018	10	24.9	2.7 (2.6 to 2.8)	Not significant	No home range random effect	-0.9 (-3.6 to 1.8)
	21. Moray Firth	2009	2018	10	22.2	2.8 (2.7 to 2.9)	Not significant	No home range random effect	-0.3 (-3.0 to 2.6)
Brood size	16. Eastern Lowlands	2009	2018	10	32.5	2.1 (2.0 to 2.2)	Not significant	No home range random effect	1.0 (-1.9 to 4.0)
	21. Moray Firth	2009	2018	10	18.1	2.7 (2.5 to 2.8)	Not significant	Sample sizes small	0.5 (-2.7 to 3.8)
Number of fledglings	03. Coll, Tiree and the Western Isles	2009	2018	8	11.125	1.7 (1.6 to 1.8)	Not significant	Sample sizes small; No home range random effect	1.3 (-5.0 to 8.1)
	14. Argyll West and Islands	2009	2018	10	28	1.6 (1.5 to 1.7)	Not significant	No home range random effect	0.0 (-3.1 to 3.3)
	16. Eastern Lowlands	2009	2018	10	87.6	1.7 (1.6 to 1.7)	Not significant		0.8 (-1.1 to 2.8)
	17. West Central Belt	2009	2016	8	21.75	1.9 (1.8 to 2.0)	Not significant	No home range random effect	1.4 (-3.4 to 6.4)
	20. Border Hills	2009	2018	10	14	2.1 (2.0 to 2.2)	Not significant	Sample sizes small; No home range random effect	-2.2 (-6.2 to 1.9)
	21. Moray Firth	2009	2018	10	32	1.8 (1.7 to 1.9)	Not significant	No home range random effect	-0.6 (-3.5 to 2.5)

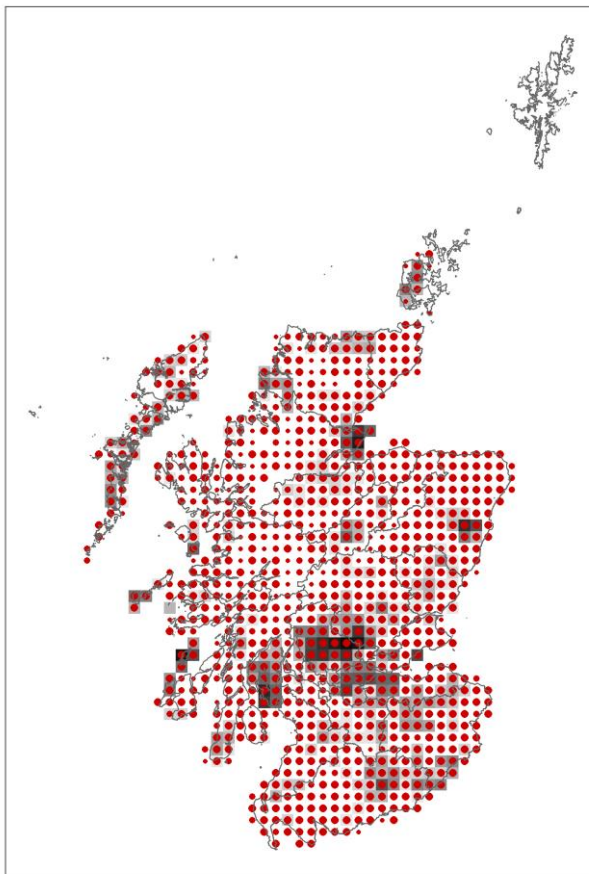
Table 5: Number of Buzzard home range checks for occupancy reported to the SRMS during 2009-2018, in each of the 12 SRMS Regions, with approximate proportion of estimated population monitored. At the bottom of the table, row A is the mean number of home range checks over the most recent five years. Row 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.

Year	ARGYLL	CENTRAL SCOTLAND	DUMFRIES & GALLOWAY	HIGHLAND	LEWIS & HARRIS	LOTHIAN & BORDERS	NORTH EAST SCOTLAND	ORKNEY	SHETLAND	SOUTH STRATHCLYDE	TAYSIDE & FIFE	UIST	Total
2009	156	215	14	110	7	54	33	5		4	46	17	661
2010	173	193	19	122	23	58	0	9		13	103	12	725
2011	172	252	39	130	9	56	2	10		21	128	7	826
2012	156	284	22	110	5	67	154	13		1	175	7	994
2013	159	282	63	117	8	61	4	13		1	121	16	845
2014	156	288	58	134	6	74	4	12		19	156	26	933
2015	167	72	62	140	4	80	3	11		12	182	22	755
2016	168	127	55	128	3	72	33	14		14	241	20	875
2017	118	58	58	134	4	59	6	17		22	294	23	793
2018	170	31	55	160	3	69	11	18		9	301	23	850
A: Mean home range checks	155.8	115.2	57.6	139.2	4.0	70.8	11.4	14.4	Absent	15.2	234.8	22.8	841.2
B: Proportion of estimated Scottish population	11	6	12	21	1	11	13	0	0	9	16	1	100

a)



b)



c)

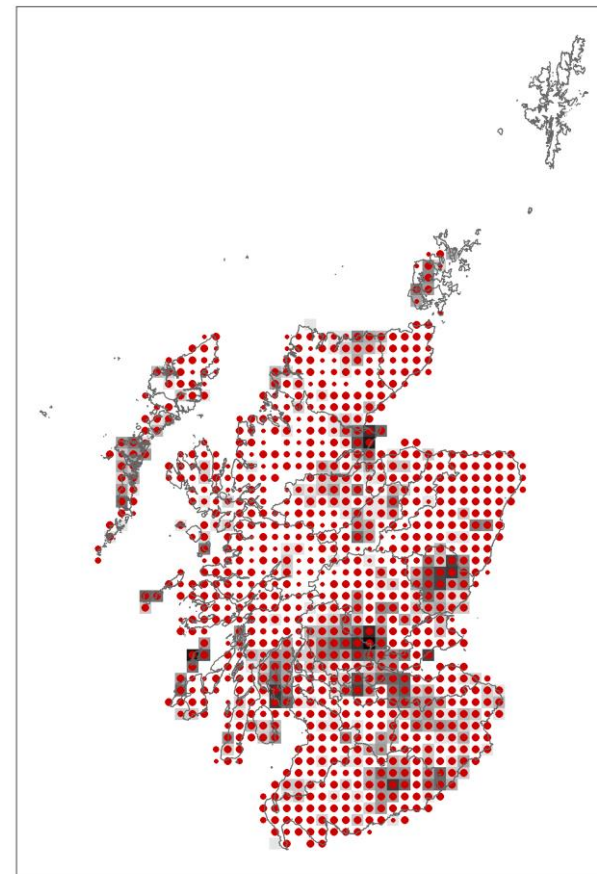


Figure 12: Areas corresponding to the clusters of home ranges from which sufficient data were reported to attempt to derive population trends for Buzzard between 2009 and 2018 (a) together with maps showing variation in the number of Buzzard records reported to SRMS during 2009-2013 (b) and 2014-2018 (c), in the context of the known Buzzard 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.