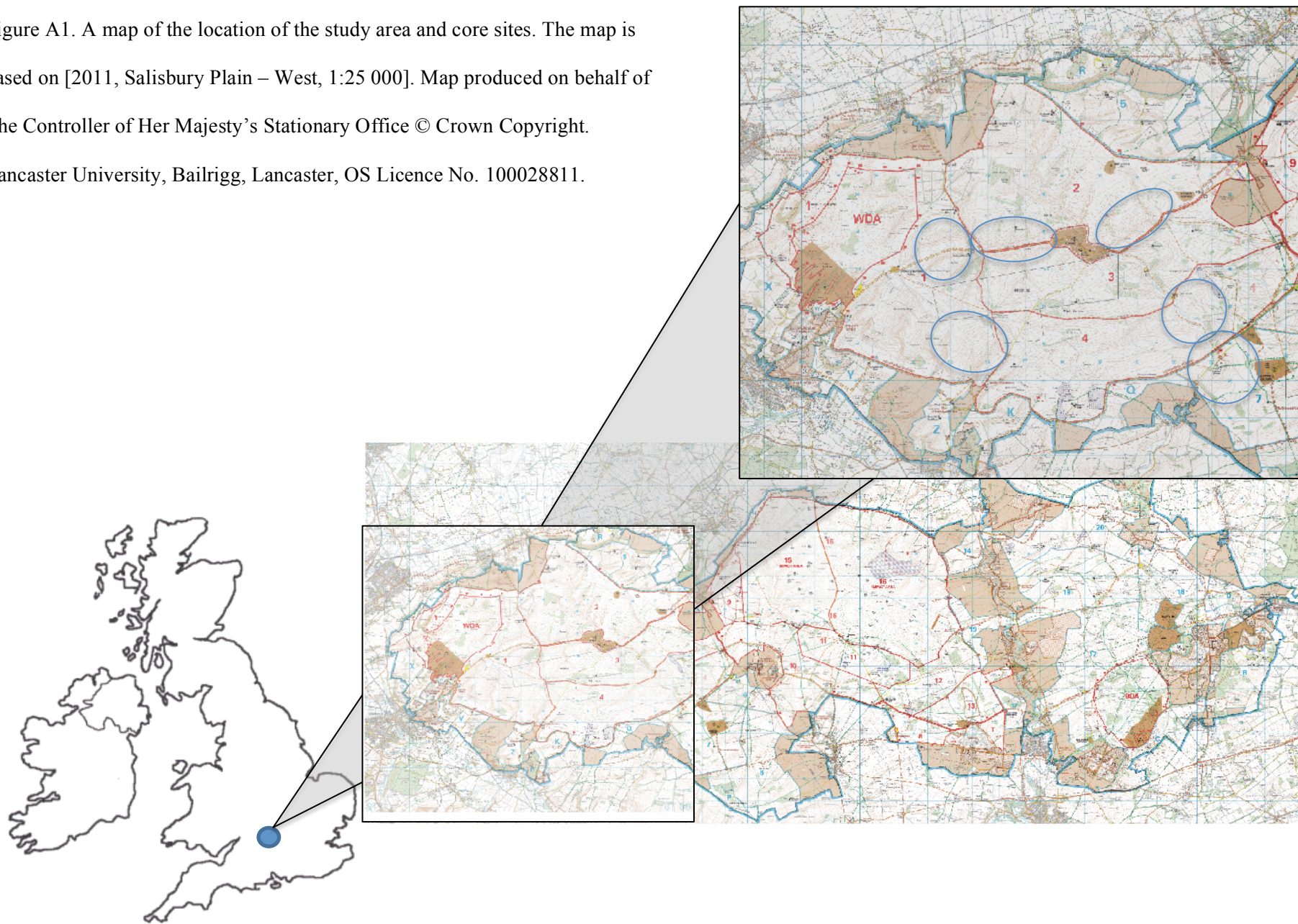


Supplementary material

Figure A1. A map of the location of the study area and core sites. The map is based on [2011, Salisbury Plain – West, 1:25 000]. Map produced on behalf of The Controller of Her Majesty's Stationary Office © Crown Copyright. Lancaster University, Bailrigg, Lancaster, OS Licence No. 100028811.



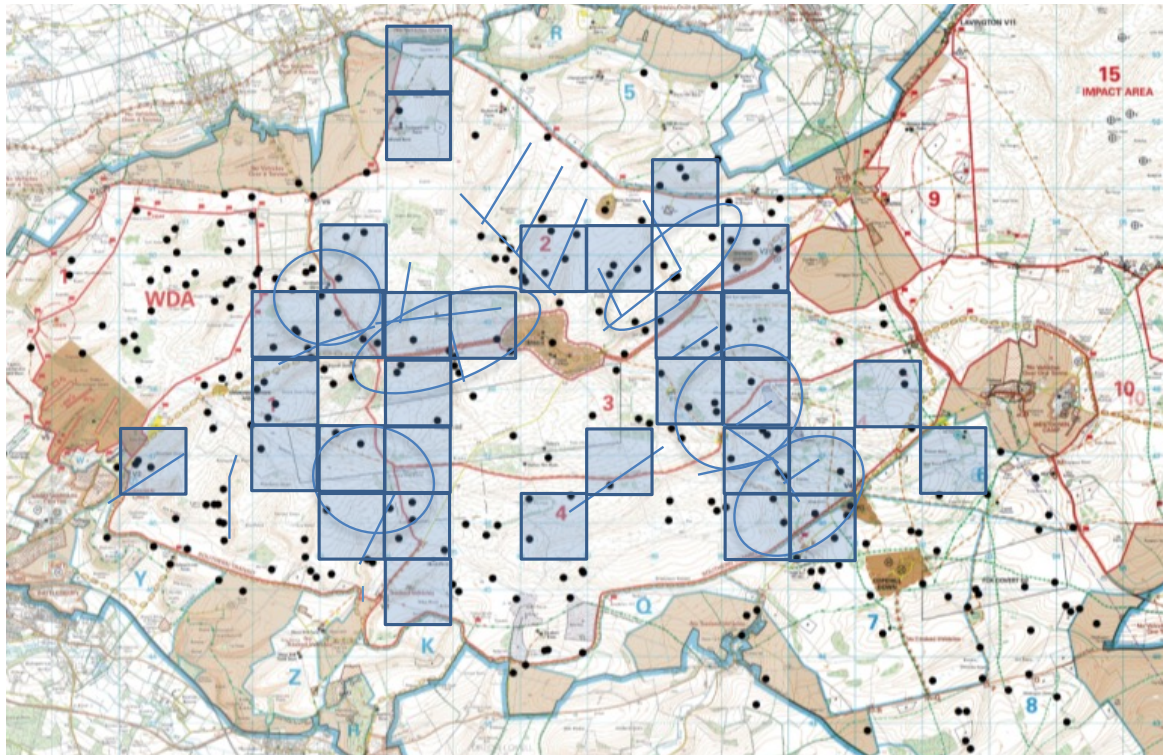


Figure A2. A map the surveys undertaken on Salisbury Plain between 2012–2014. The blue squares indicate the grid square surveys, the black points indicate point surveys, the blue lines indicate the valley surveys (explained in Border et al. 2017). The circles indicate the intensely surveyed core sites. Based on [2011, Salisbury Plain – West, 1:25 000]. Map produced on behalf of The Controller of Her Majesty’s Stationary Office © Crown Copyright. Lancaster University, Bailrigg, Lancaster, OS Licence No. 100028811.

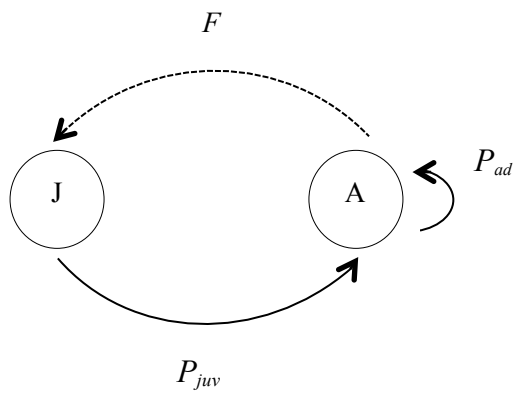


Figure A3. Diagram representing the lifecycle of a whinchat split into two stage classes. The circles represent the stage classes, J = First-year of life, A = Adults. P_{juv} is the probability of a fledgling surviving through to its first breeding year, P_{ad} is the probability of an adult (older than first breeding year) surviving. F is the breeding success, the number of fledglings produced per adult from one breeding season. The arrows represent the contribution of an average individual in one class to the number of individuals in the class one time step later- either through surviving or reproducing (Hastings and Gross 2012).

Table A1. Effect of year on DSR using a logistic exposure model (Shaffer 2004), n = 912 observation intervals from 231 nests, each year is shown relative to 2010.

	Estimate	Std. error	Z value	P
2011	-0.047	0.555	-0.084	0.933
2012	-0.228	0.496	-0.460	0.646
2013	-0.346	0.492	-0.703	0.482
2014	-0.446	0.489	-0.913	0.361

Table A2. Model selection results using Cormack-Jolly-Seber models to estimate apparent survival and recapture probabilities for a) adults (older than first breeding year) and first-years (in first breeding year) and b) just adult males and females, φ = survival, P = re-sighting probability, K = number of parameters, : denotes an interaction. In a) c-hat was adjusted to 1.34, n = 396. In b) c-hat was adjusted to 1.52, n = 105.

a)

Model	QAICc	Δ QAICc	AICc weights	Model likelihood	K	QDeviance
$\varphi(\text{age})P(\text{constant})$	380	0.000	0.450	1.000	3	37.7
$\varphi(\text{age})P(\text{year})$	384	4.04	0.060	0.133	6	35.6
$\varphi(\text{age} + \text{year})P(\text{constant})$	385	5.76	0.025	0.056	6	37.3
$\varphi(\text{age} : \text{year}) P(\text{constant})$	388	8.01	0.008	0.018	9	33.3
$\varphi(\text{age} + \text{year})P(\text{year})$	388	8.72	0.006	0.013	9	34.0
$\varphi(\text{age} : \text{year})P(\text{year})$	391	11.4	0.002	0.003	12	30.4
$\varphi(\text{constant})P(\text{constant})$	397	17.2	0.000	0.000	2	56.9
$\varphi(\text{year})P(\text{constant})$	402	22.1	0.000	0.000	5	55.6
$\varphi(\text{constant})P(\text{year})$	402	22.1	0.000	0.000	5	55.7
$\varphi(\text{year})P(\text{year})$	406	26.2	0.000	0.000	8	53.6

b)

Model	QAICc	Δ QAICc	AICc weights	Model likelihood	K	QDeviance
φ (constant)P(constant)	133	0.00	0.259	1.000	2	24.6
φ (sex)P(constant)	134	0.51	0.201	0.776	3	23.0
φ (constant)P(sex)	134	0.55	0.196	0.759	3	23.1
φ (sex)P(sex)	136	2.42	0.077	0.299	4	22.8
φ (year)P(constant)	137	3.31	0.050	0.191	5	21.5
φ (constant)P(year)	137	3.61	0.043	0.165	5	21.8
φ (year)P(sex)	137	4.10	0.033	0.129	6	20.1
φ (sex)P(year)	137	4.14	0.033	0.126	6	20.2
φ (year + sex)P(constant)	138	4.26	0.031	0.119	6	20.3
φ (constant)P(year + sex)	138	4.67	0.025	0.097	6	20.7
φ (year + sex)P(sex)	139	6.19	0.012	0.045	7	20.0
φ (sex)P(year + sex)	140	6.28	0.011	0.043	7	20.1
φ (year)P(year)	140	6.53	0.010	0.038	7	20.3
φ (year)P(year + sex)	141	7.26	0.007	0.027	8	18.8
φ (year + sex)P(year)	141	7.43	0.006	0.024	8	19.0
φ (sex)P(year : sex)	141	7.93	0.005	0.019	8	19.5
φ (year + sex)P(year + sex)	143	9.48	0.002	0.009	9	18.7
φ (year)P(year : sex)	147	14.1	0.000	0.001	11	18.6
φ (year + sex)P(year : sex)	150	16.3	0.000	0.000	12	18.4
φ (year : sex)P(year + sex)	150	16.5	0.000	0.000	12	18.6
φ (year : sex)P(year : sex)	154	20.7	0.000	0.000	14	17.7