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Supplement 4. Significant variables, AIC and the best variable combination at each modelling step and final models for 1 km<sup>2</sup>, 25 km<sup>2</sup> and 100 km<sup>2</sup> landscape sizes in Lapland.  $\Delta$ AIC indicates the difference to the final model. Final models were obtained by including all significant variables from each step in both the count and zero models in the final model and by running the models as many times as needed to ensure only significant variables were left in both models. Note, that the average number of damage in neighboring cells (NNDAMAGE) was a significant variable in both models at all landscape sizes. Variables with  $0.05 \leq p \leq 0.10$  shown in parentheses, ns = no significant variables.

Landscape size	Model step, #	$\Delta$ AIC	AIC	Count model	Zero model
1 km <sup>2</sup>	1	88.219	7307.432	FORESTSUM	FORESTSUM
	2	88.705	7307.918	FORESTSUM	FORESTSUM
	3	37.017	7256.23	OPENMIN, PLANTSUM, THINNSUM, MATURE	OPENMIN, PLANTSUM, THINNSUM, MATURE
	4	45.041	7264.254	OTHERPLANT, PINETHINNSUM	OTHERPLANT, PINETHINNSUM
	5	151.844	7371.057	PINEPLAMIN	PINEPLANTPEATSUM, PINETHIMIN
	6	172.321	7391.534	PINEMINSUM	PINEMINSUM, PINEPEATSUM
	7	179.656	7398.869	ns	ns
	8	175.286	7394.499	ns	PINENDSUM
	9	149.625	7368.838	AGRI, (ROADSUM)	ns
	10	156.552	7375.765	(MAINROAD), CONNROAD	ns
Final	0	7219.213	PINEPLAMIN, OTHERPLANT, (THINNSUM), CONNROAD	OPENMIN, OTHERPLANT, MATURE, THINNSUM	
25 km <sup>2</sup>	1	20.333	2388.245	ns	ns
	2	24.178	2392.09	ns	FOREST
	3	13.811	2381.723	PLANTSUM, MATURE	PLANTSUM, THINNSUM
	4	20.981	2388.893	OTHERPLANT	OTHERTHI
	5	38.869	2406.781	PINETHIMIN	PINEPLAMIN
	6	50.336	2418.248	ns	ns
	7	52.342	2420.254	ns	ns
	8	48.387	2416.299	ns	ns
	9	54.628	2422.54	ns	ns
	10	41.955	2409.867	CONNROAD	ns
Final	0	2367.912	PLANTSUM, CONNROAD, PINETHIMIN, MATURE	PINEPLAMIN, OTHERTHI	
100 km <sup>2</sup>	1	8.69	816.23	FORESTSUM	FORESTSUM
	2	7.86	815.4	FORESTSUM	FORESTSUM
	3	1.41	808.95	PLANTSUM, MATURE	PLANTSUM
	4	23.83	831.37	ns	ns
	5	23.39	830.93	ns	ns
	6	18.76	826.3	ns	ns
	7	29.83	837.37	ns	ns
	8	23.82	831.36	ns	ns
	9	19.17	826.71	ns	(INHABITED)
	10	25.51	833.05	ns	FORROAD
Final	0	807.54	PLANTSUM, MATURE	PLANTSUM, (FORROAD)	