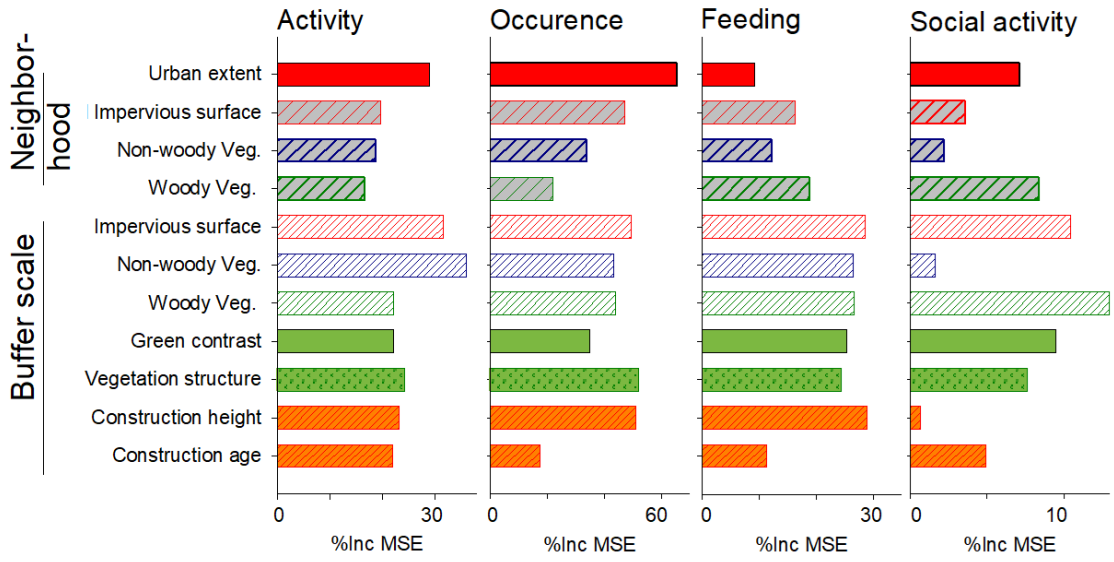
Supplementary Material

Urban areas in rural landscapes – the importance of green space and local architecture for bat conservation

Lisa Printz†, Kirsten Jung†*

*** Correspondence:** Kirsten Jung: kirsten.jung@uni-ulm.de



Supplementary Figure 1: Importance of urban environmental heterogeneity for bats. Presented are the results from random forest regression. Bars indicate environmental parameter importance for bat activity, bat species occurrence, feeding activity and the occurrence of social interactions at urban recording sites across the Schwäbische Alb.

Supplementary Table 1 Full candidate sets of statistical models relating bat occurrence, activity, feeding activity and social interactions to urban environmental parameters including spatial, structural and architectonic features of the urban environment. Models are ranked based on AICc differences For each model the table indicates the included parameters (*),potential interactions (**) number of parameters included (N), AICc, Delta AICc (Δi) and Akaike weights. 90% confidence sets are indicated by bold model numbers in the first column and AICc weights.

		Neighbor-hood				Buffer											
Model #		Urban extent	Impervious Surface	Non-woody vegetation	Woody vegetation	Impervious Surface	Non-woody vegetation	Woody vegetation	Local Green	Green contrast	Vegetation Structure	Construction height	Construction age	N	AICc	Δi	weight
Occurrence of bats																	
8	*Interacting scales b*	*							*					6	884.3	0.00	**0.84**
4	*Neighborhood*	*	*	*	*									7	889.1	4.85	**0.07**
6	*Architecture*											*	*	7	889.8	5.60	**0.05**
5	*Structure*									*	*			5	890.7	6.48	0.03
7	*Interacting scales a*		*				*	*						9	894.4	10.16	0.01
3	*Local scale*					*	*	*		*	*			8	896.0	11.79	0.00
2	*Across scales*		*	*	*	*	*	*		*				1	902.5	18.25	0.00
1	*Global model*	*	*	*	*	*	*	*		*	*	*	*	1	905.9	21.74	0.00
Activity of bats																	
6	*Architecture*											*	*	7	1765.9	0.00	**0.57**
5	*Structure*									*	*			5	1768.3	2.31	**0.18**
8	*Interacting scales b*	*							*					6	1769.0	3.05	0.12
3	*Local scale*					*	*	*		*	*			8	1770.2	4.20	0.07
4	*Neighborhood*	*	*	*	*									7	1771.4	5.43	0.04
7	*Interacting scales a*		*				*	*						8	1772.2	6.24	0.03
1	*Global model*	*	*	*	*	*	*	*		*	*	*	*	1	1777.7	11.74	0.00
2	*Across scales*		*	*	*	*	*	*		*				1	1781.7	15.74	0.00
Feeding activity of bats																	
6	*Architecture*											*	*	7	711.3	0.00	**0.55**
3	*Local scale*					*	*	*		*	*			8	711.8	0.61	**0.40**
5	*Structure*									*	*			5	117.8	6.54	0.02
2	*Across scales*		*	*	*	*	*	*		*				1	717.9	6.59	0.02
8	*Interacting scales b*	*							*					6	720.8	9.51	0.00
7	*Interacting scales a*		*				*	*						9	721.8	10.52	0.00
4	*Neighborhood*	*	*	*	*									7	722.2	10.94	0.00
1	*Global model*	*	*	*	*	*	*	*		*	*	*	*	1	724.7	13.42	0.00
Social Interactions																	
8	*Interacting scales b*	*							*					6	1217.7	0.00	**0.25**
7	*Interacting scales a*		*				*	*						9	1218.1	0.36	**0.21**
3	*Local scale*					*	*	*		*	*			8	1218.3	0.55	**0.19**
2	*Across scales*		*	*	*	*	*	*		*				1	1218.9	1.22	**0.14**
5	*Structure*									*	*			5	1220.1	2.36	**0.08**
6	*Architecture*											*	*	7	1220.1	2.43	**0.07**
4	*Neighborhood*	*	*	*	*									7	1220.6	2.93	0.06
1	*Global model*	*	*	*	*	*	*	*		*	*	*	*	1	1225.6	7.85	0.00

Supplementary Table 2 Recorded number of sequences (total bat activity) for individual bat species across urban recording sites and the number of recording sites where species occurred during our investigation.

Species	Total bat activity	Number of sites with species occurrence
Pipistrellus pipistrellus	48200	44
Pipistrellus nathusii	1332	40
Pipistrellus pygmaeus	50	23
Vespertilio murinus	224	22
Eptesicus nilssonii	115	14
Eptesicus serotinus	69	14
Nyctalus noctula	82	26
Nyctalus leislerli	15	7
Myotis myotis	28	12
Myotis nattereri	1	1
Nyctaloid	1864	41
Myotis	1176	33
Plecotus	39	21