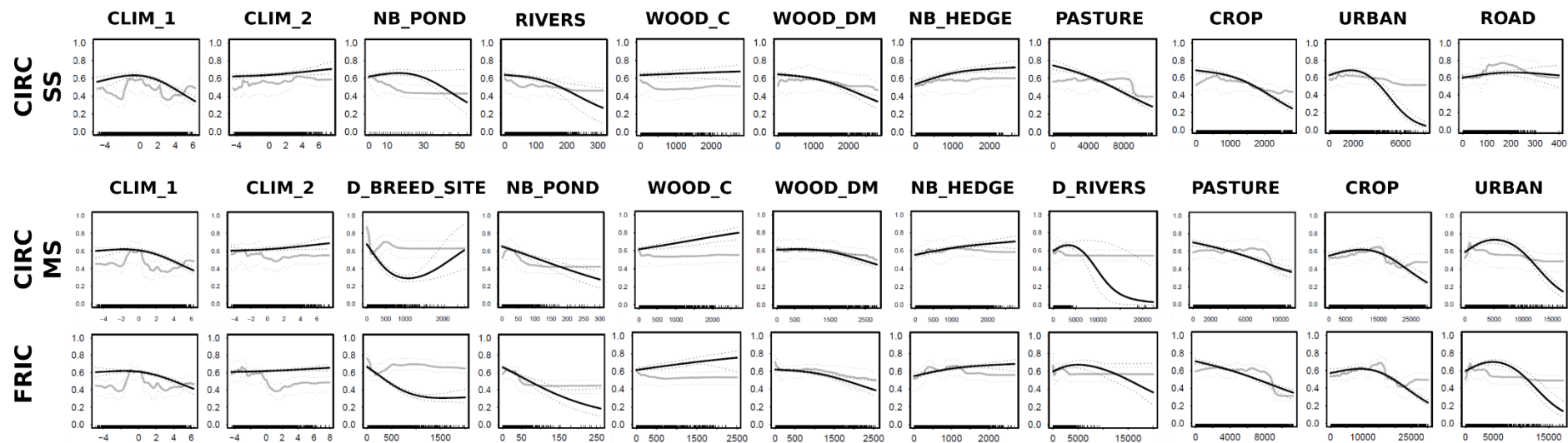


Appendix 3 – supplementary results

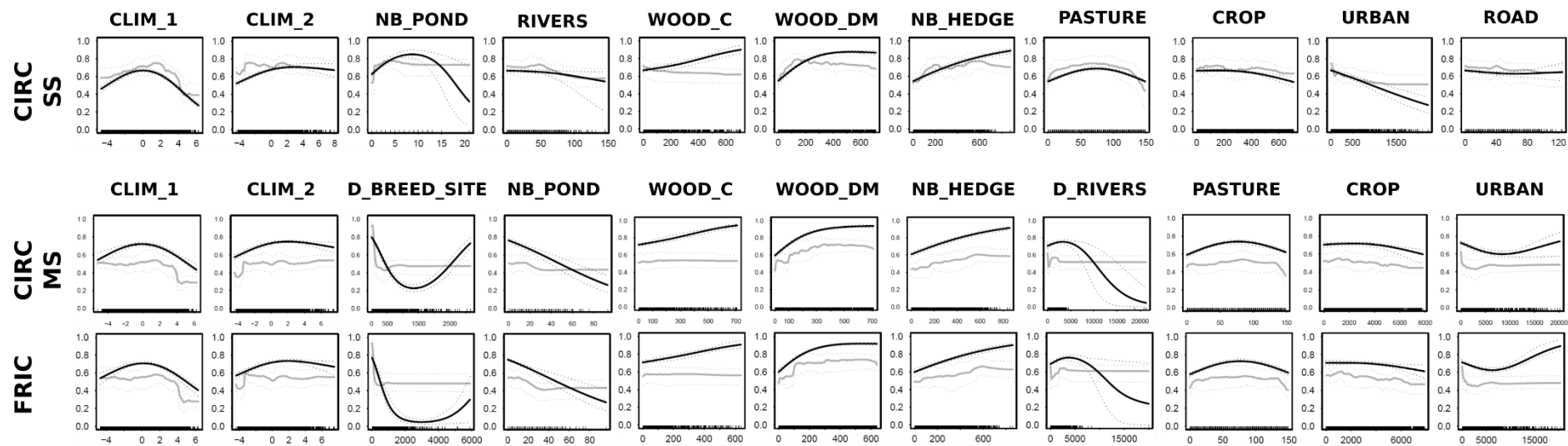
								Best model by hypotheses tested		
Species	Model	Threshold	Sensitivity	Specificity	Kappa	AUC	SEDI	H1	H2	H3
<i>R. temporaria</i>	DIST	0.56	0.84	0.88	0.59	0.91	0.86	x		
	CIRC.SS	0.58	0.75	0.92	0.61	0.89	0.83		x	
	CIRC.MS	0.44	0.83	0.82	0.47	0.88	0.80			
	FRIC	0.41	0.86	0.83	0.49	0.88	0.83			x
	Matutini et al. 2020	0.51	0.81	0.90	0.61	0.87	0.85			
<i>S. salamandra</i>	DIST	0.48	0.74	0.68	0.42	0.75	0.59			
	CIRC.SS	0.46	0.79	0.74	0.52	0.82	0.70	x	(x)	
	CIRC.MS	0.44	0.80	0.73	0.53	0.81	0.69			
	FRIC	0.42	0.88	0.66	0.56	0.81	0.71			x
	Matutini et al. 2020	0.41	0.79	0.66	0.45	0.78	0.62			
<i>T. marmoratus</i>	DIST	0.58	0.80	0.56	0.34	0.70	0.51			
	CIRC.SS	0.58	0.81	0.66	0.46	0.76	0.63	x	x	
	CIRC.MS	0.56	0.84	0.58	0.41	0.73	0.59			
	FRIC	0.58	0.86	0.58	0.43	0.73	0.62			x
	Matutini et al. 2020	0.44	0.87	0.54	0.39	0.74	0.59			
<i>P. punctatus</i>	DIST	0.43	0.90	0.64	0.44	0.80	0.71	x		
	CIRC.SS	0.43	0.71	0.73	0.41	0.77	0.60			
	CIRC.MS	0.46	0.78	0.69	0.42	0.80	0.63		x	
	FRIC	0.53	0.77	0.75	0.47	0.80	0.67			x
	Matutini et al. 2020	0.43	0.86	0.73	0.52	0.80	0.75			
<i>T. cristatus</i>	DIST	0.58	0.86	0.47	0.29	0.69	0.53			
	CIRC.SS	0.63	0.76	0.60	0.34	0.72	0.61	x		
	CIRC.MS	0.56	0.91	0.48	0.34	0.72	0.71		x	x
	FRIC	0.56	0.85	0.51	0.33	0.70	0.63			
	Matutini et al. 2020	0.35	0.88	0.45	0.29	0.70	0.61			
<i>L. helveticus</i>	DIST	0.64	0.52	0.69	0.10	0.61	0.34			
	CIRC.SS	0.57	0.63	0.56	0.12	0.61	0.35	(x)	(x)	
	CIRC.MS	0.47	0.58	0.61	0.10	0.60	0.37			
	FRIC	0.56	0.62	0.57	0.11	0.61	0.37			(x)
	Matutini et al. 2020	0.55	0.50	0.76	0.12	0.64	0.42			
<i>R. dalmatina</i>	DIST	0.43	0.71	0.49	0.14	0.61	0.37			
	CIRC.SS	0.54	0.72	0.57	0.18	0.67	0.42	x	x	
	CIRC.MS	0.63	0.63	0.65	0.15	0.64	0.40			(x)
	FRIC	0.62	0.61	0.63	0.12	0.63	0.41			
	Matutini et al. 2020	0.31	0.77	0.41	0.13	0.59	0.38			
<i>H. arborea</i>	DIST	0.44	0.81	0.43	0.26	0.66	0.49			
	CIRC.SS	0.52	0.76	0.56	0.30	0.69	0.47	x		
	CIRC.MS	0.52	0.82	0.49	0.31	0.68	0.48		(x)	
	FRIC	0.54	0.85	0.46	0.32	0.68	0.50			x
	Matutini et al. 2020	0.64	0.41	0.78	0.12	0.60	0.34			
<i>B. spinosus</i>	DIST	0.55	0.63	0.57	0.19	0.61	0.35	x		
	CIRC.SS	0.49	0.67	0.50	0.17	0.59	0.33			
	CIRC.MS	0.60	0.58	0.66	0.23	0.64	0.40		x	x
	FRIC	0.58	0.56	0.67	0.21	0.61	0.38			
	Matutini et al. 2020	0.40	0.75	0.38	0.14	0.56	0.30			

Table 1. Performance of discrimination capacity and accuracy of ensemble models for each studied species using the evaluation set EVAL. Results obtained with 500 permutations. DIST: model with distance predictors only; CIRC.MS: model with compositional predictors calculated in different circular buffer sizes according to species migration or dispersal ability (multi-scale); CIRC.SS: same than CIRC.MS but using only one circular buffer size (single-scale); FRIC: same predictors than CIRC.MS but suitable resources are considered in a friction-based buffer according to landscape permeability. Best models: H1: distance vs composition-based models; H2: single-scale vs multiscale models; H3: including vs not including finer-scale movements using a friction-based functional grain. For each species, last line shows the evaluation metrics calculated on the final maps obtain by Matutini et al. 2020.

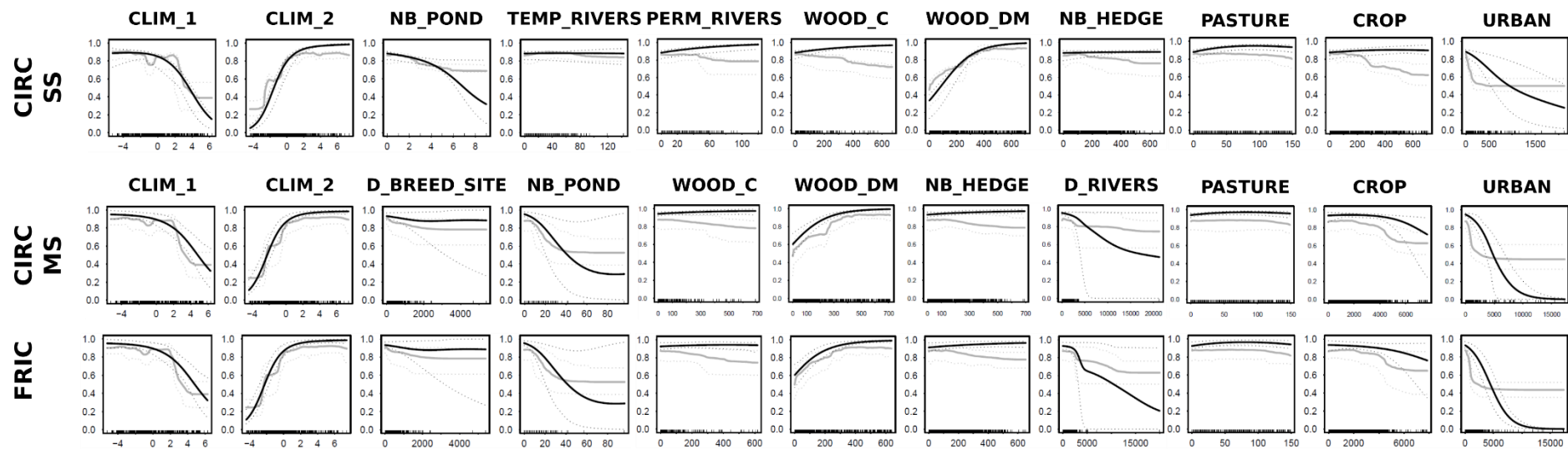
Bufo spinosus



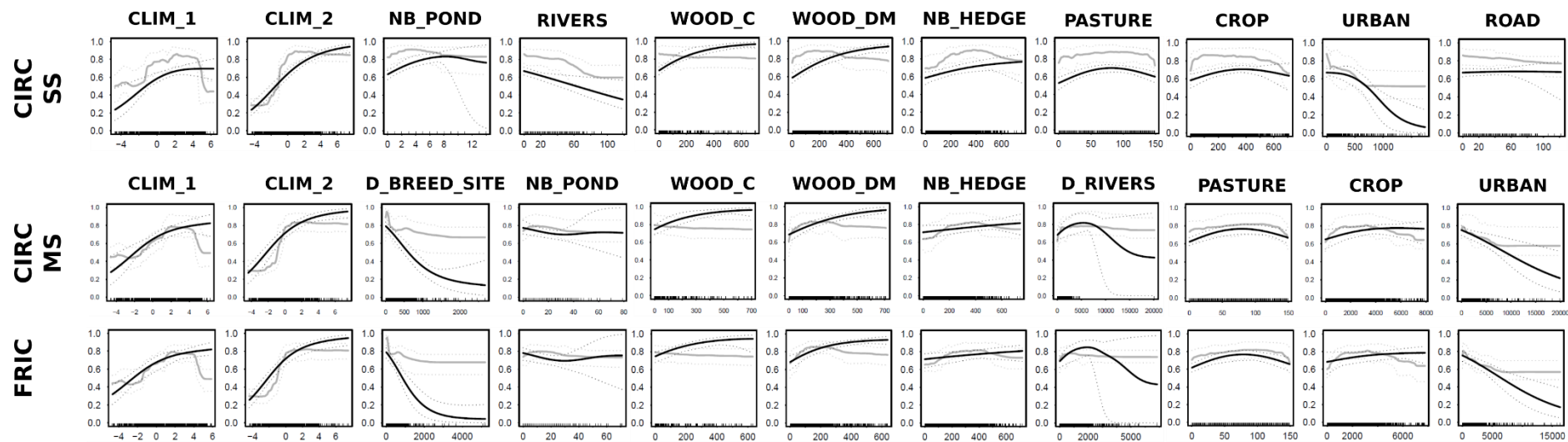
Rana dalmatina



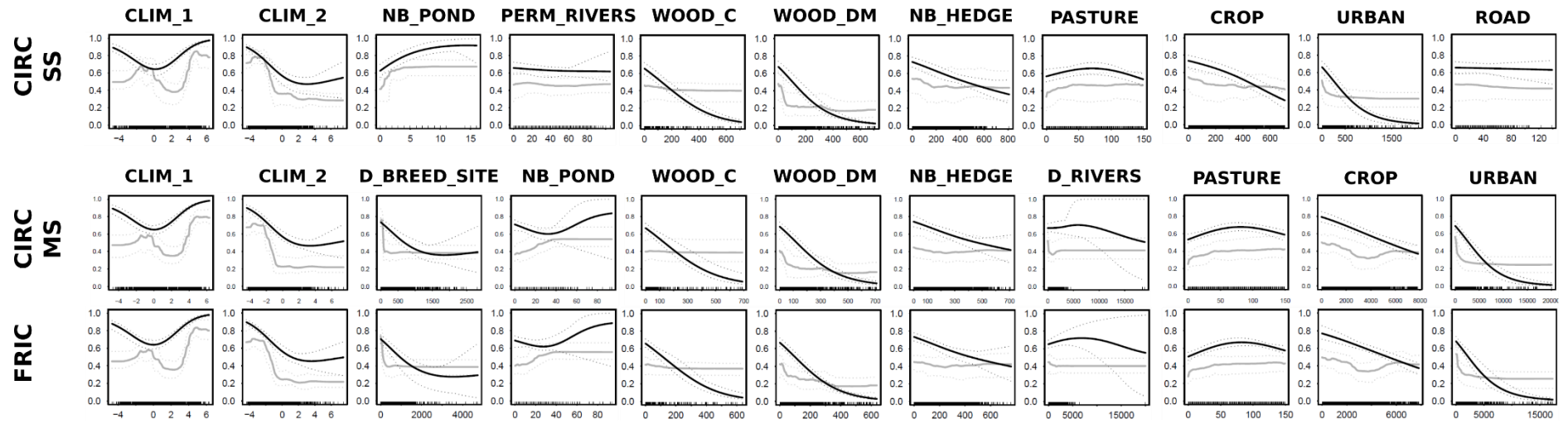
Rana temporaria



Triturus marmoratus



Pelodytes punctatus



Salamandra salamandra

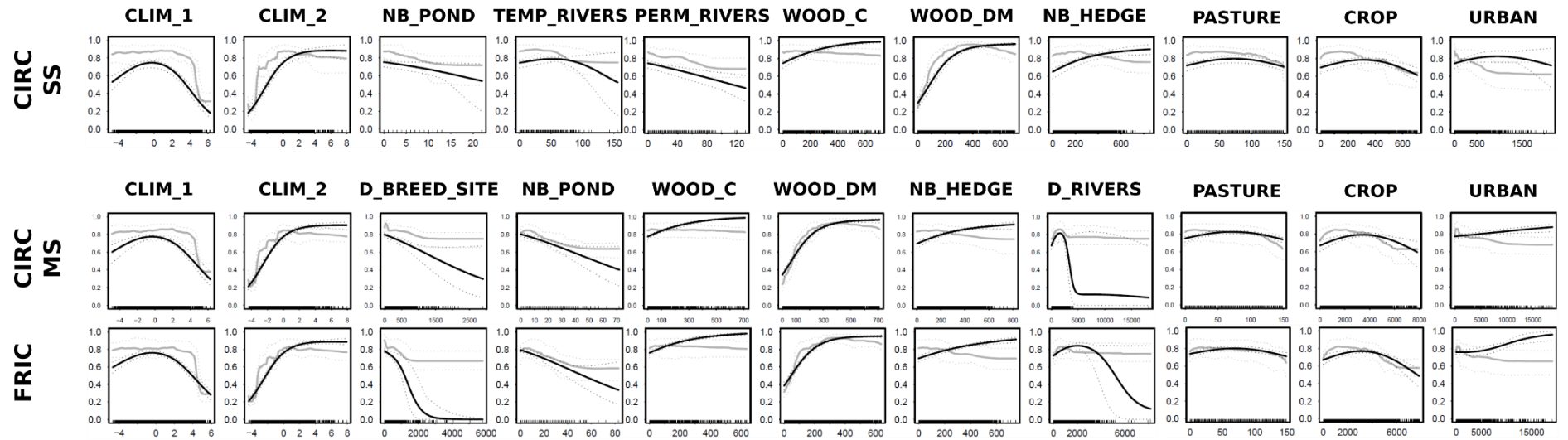


Figure 2. Response curves for CIRC SS, CIRC MS and FRIC for 6 studied species. Results shown are for GAM (black line) and RF (grey line). Associate dotted lines show maximal range of all iterations (20 iterations). Bars above responses curves show mean percentage importance of variables and standard error (GAM in black and RF in grey). 1) best model with external evaluation; 2) best model with internal evaluation. s2 (random pseudo-absence selection excluding known presence points) and s3 (random pseudo-absence selection adjusted to consider site accessibility and sampling effort). For description of variables, see Table 2.