

Supplementary Material for Manuscript IV:
How to optimize sampling effort in ecological experiments and observational studies

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Methods S1

Quantitative literature survey

We conducted a quantitative literature survey to evaluate the general importance and implementation of gradient studies in ecological research, i.e. the question whether ecologists are interested in group contrasts or in response patterns. We define group contrasts as comparisons of two or more factorial groups or distinct treatment levels such as e.g. different amounts of fertilizer added, which includes classical treatment vs. control designs. We define response patterns as patterns of a target response variable along a continuous gradient such as natural or experimental environmental gradients. This question was answered based on the specific research question(s) and/or hypothesis(es) stated in the respective paper. Based on this, we furthermore asked whether the researchers chose the appropriate analytical approach to answer their question, i.e. using group comparisons such as Student's t-test or ANOVA when interested in group contrasts or using regression approaches when interested in response patterns. We screened ecological literature from 1988 to 2022 by searching Web of Science on Jan 31, 2022 with the topic "experiment* not model" refined by document type "article" and the web of science category "ecology". Of the 37690 papers returned by this search, we randomly selected six papers per year, adding up to a total of 210 papers over 35 years (Table S11). Studies were classified as "Analysis inappropriate" if the analytical approach (group comparison vs. regression) did not match the study question (interest in group contrasts vs. response patterns) and as "Analysis appropriate" if it matched. In case of papers with various research questions and experiments belonging to different cases, these papers were assigned to both groups.

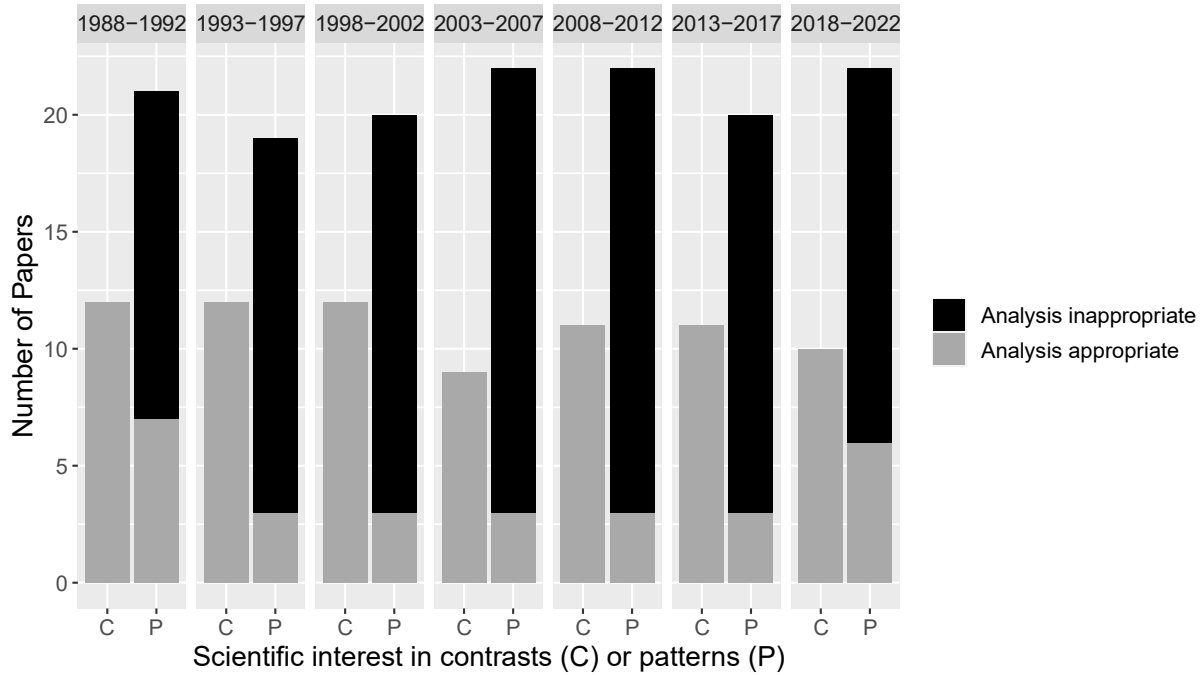


Figure S1. Temporal development of the portion of appropriate and inappropriate analytical approaches chosen in ecological experimentation with interest in either group comparison (contrasts) or response patterns. The analysis was based on an annually stratified random sample of 210 papers published between 1988 and 2022. Grey bars indicate an appropriate use of either contrasts or pattern analysis based on the stated hypotheses and applied statistics, i.e. the black bar indicates papers where pattern analysis would have been the better choice according to the hypotheses, but group contrasts were compared. This discrepancy between study interest and analytical approach (i.e. interests in response patterns analyzed with inappropriate analytical tools such as analysis of group contrasts) did not change over time ($R^2=0$, $p=0.856$).

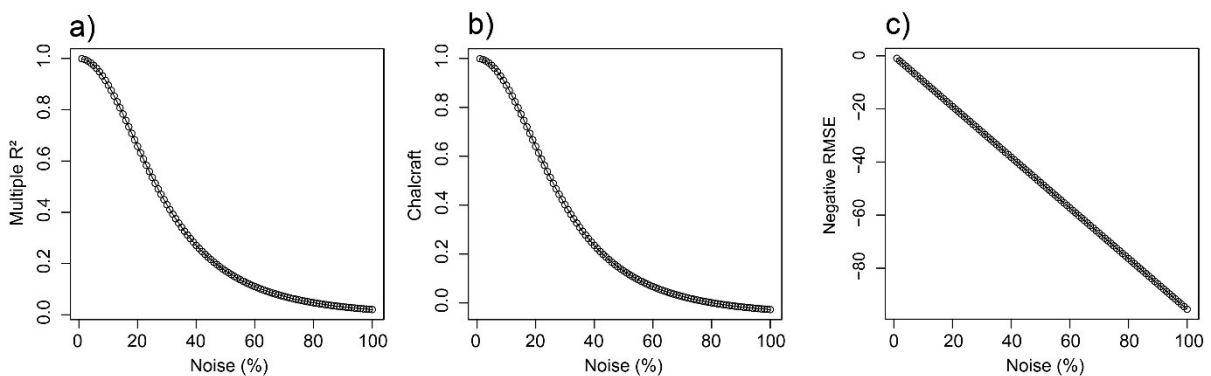


Figure S2. Response of Multiple R^2 (a), Chalcraft's measure for prediction success (b) and RMSE (negative values, c) to increasing random noise and with a linear response shape underlying.

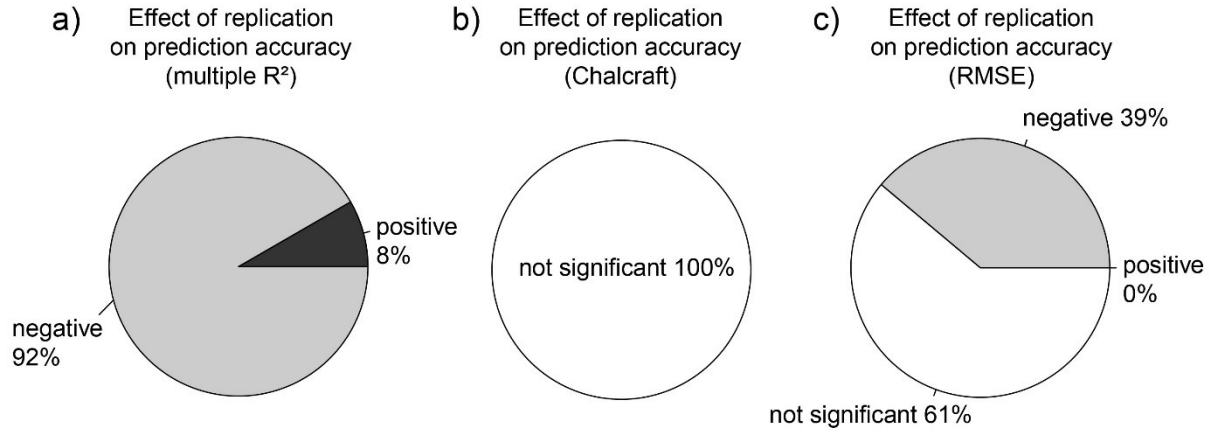


Figure S3. Effect of replication on prediction accuracy and a given number of samples. Effects were quantified for prediction accuracy measures based on multiple R^2 (a), negative RMSE (b) and Chalcraft's prediction success (c) for 100% noise. A priori knowledge of the underlying response shape was accounted for in a linear mixed effect model (Model 3 in Table 1).

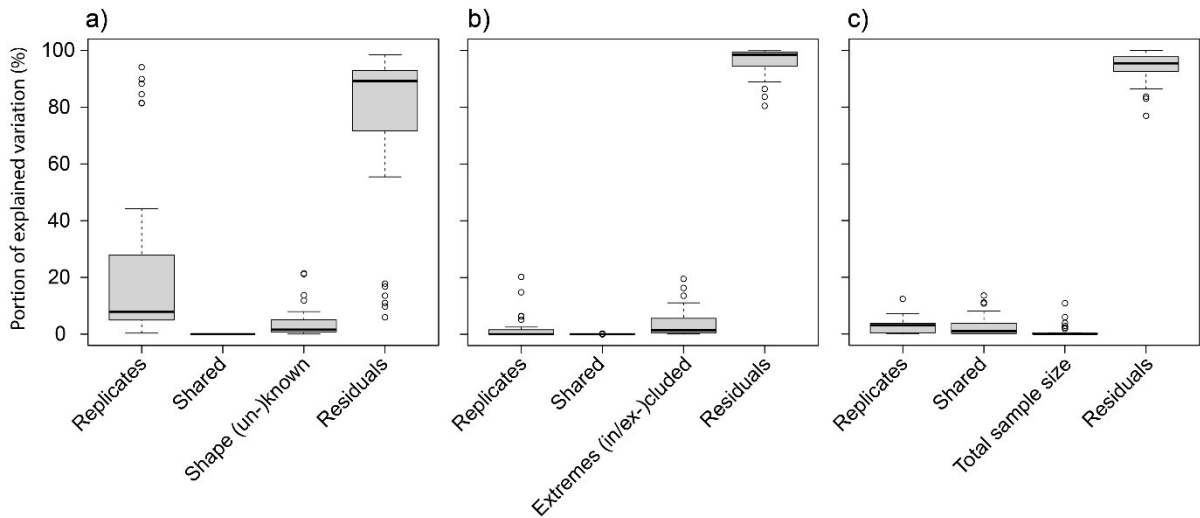


Figure S4. Relative contributions of replicates, a priori knowledge of the underlying response shape, length of the sampled gradient (i.e. extremes in-/excluded) and total sample size for explaining prediction accuracy (i.e. multiple R^2). Depicted are the relative contributions (i.e. portion of explained variation) for each single explanatory and their interactions (i.e. shared). The outcome is shown for the effects of replicates*a priori knowledge (a), replicates*gradient length (b) and replicates*total sample size (c). The tested, linear mixed effect models correspond to model 2 to 4 defined in the methods section. Residuals correspond to the portion of unexplained variation. Based on 20 % of random variation (noise) in the response (i.e. prediction accuracy).

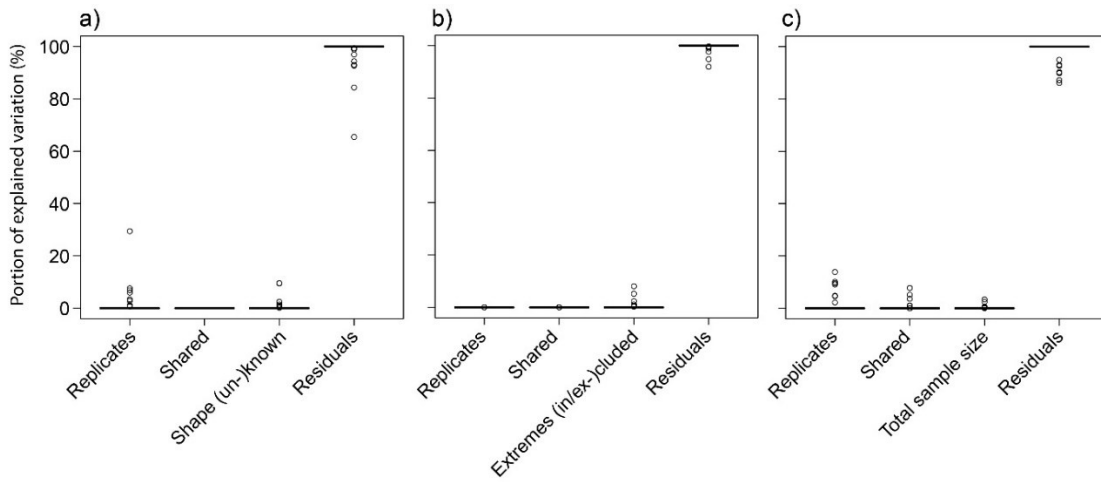


Figure S5. Relative contributions of replicates, a priori knowledge of the underlying response shape, length of the sampled gradient (i.e. extremes in-/excluded) and total sample size for explaining prediction accuracy (i.e. Chalcraft's prediction accuracy). Depicted are the relative contributions (i.e. portion of explained variation) for the single explanatories and their interactions (i.e. shared). The outcome is shown for the effects of replicates*a priori knowledge (a), replicates*gradient length (b) and replicates*total sample size (c). The tested, linear mixed effect models correspond to model 2 to 4 defined in the methods section. Residuals correspond to the portion of unexplained variation. Based on 20 % of random variation (noise) in the response (i.e. prediction accuracy).

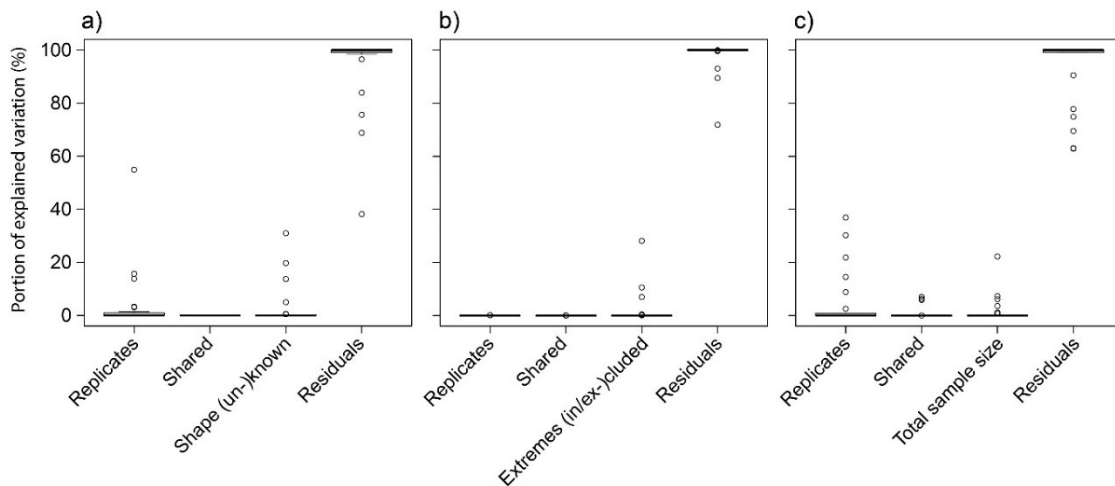


Figure S6. Relative contributions of replicates, a priori knowledge of the underlying response shape, length of the sampled gradient (i.e. extremes in-/excluded) and total sample size for explaining prediction accuracy (i.e. negative RMSE). Depicted are the relative contributions (i.e. portion of explained variation) for the single explanatories and their interactions (i.e. shared). The outcome is shown for the effects of replicates*a priori knowledge (a), replicates*gradient length (b) and replicates*total sample size (c). The tested, linear mixed effect models correspond to model 2 to 4 defined in the methods section. Residuals correspond to the portion of unexplained variation. Based on 20 % of random variation (noise) in the response (i.e. prediction accuracy).

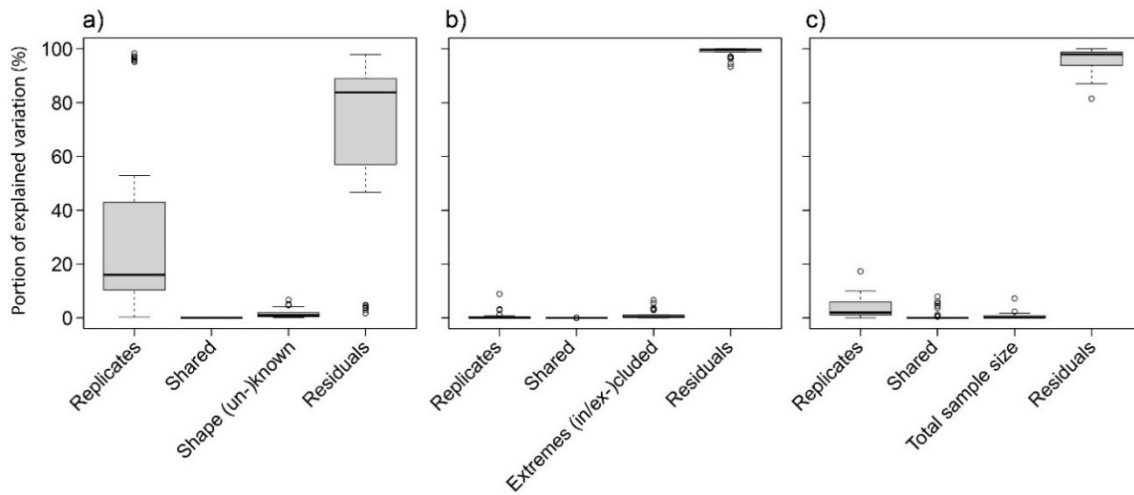


Figure S7. Relative contributions of replicates, a priori knowledge of the underlying response shape, length of the sampled gradient (i.e. extremes in-/excluded) and total sample size for explaining prediction accuracy (i.e. multiple R^2). Depicted are the relative contributions (i.e. portion of explained variation) for each single explanatory and their interactions (i.e. shared). The outcome is shown for the effects of replicates*a priori knowledge (a), replicates*gradient length (b) and replicates*total sample size (c). The tested, linear mixed effect models correspond to model 2 to 4 defined in the methods section. Residuals correspond to the portion of unexplained variation. Based on 100 % of random variation (noise) in the response (i.e. prediction accuracy).

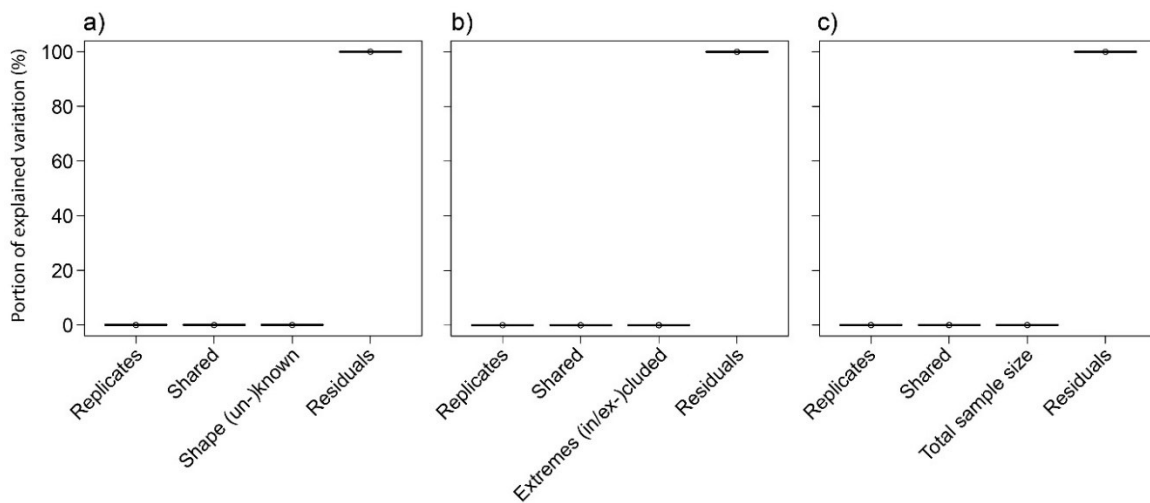


Figure S8. Relative contributions of replicates, a priori knowledge of the underlying response shape, length of the sampled gradient (i.e. extremes in-/excluded) and total sample size for explaining prediction accuracy (i.e. Chalcraft's prediction accuracy). Depicted are the relative contributions (i.e. portion of explained variation) for each single explanatory and their interactions (i.e. shared). The outcome is shown for the effects of replicates*a priori knowledge (a), replicates*gradient length (b) and replicates*total sample size (c). The tested, linear mixed effect models correspond to model 2 to 4 defined in the methods section. Residuals correspond to the portion of unexplained variation. Based on 100 % of random variation (noise) in the response (i.e. prediction accuracy).

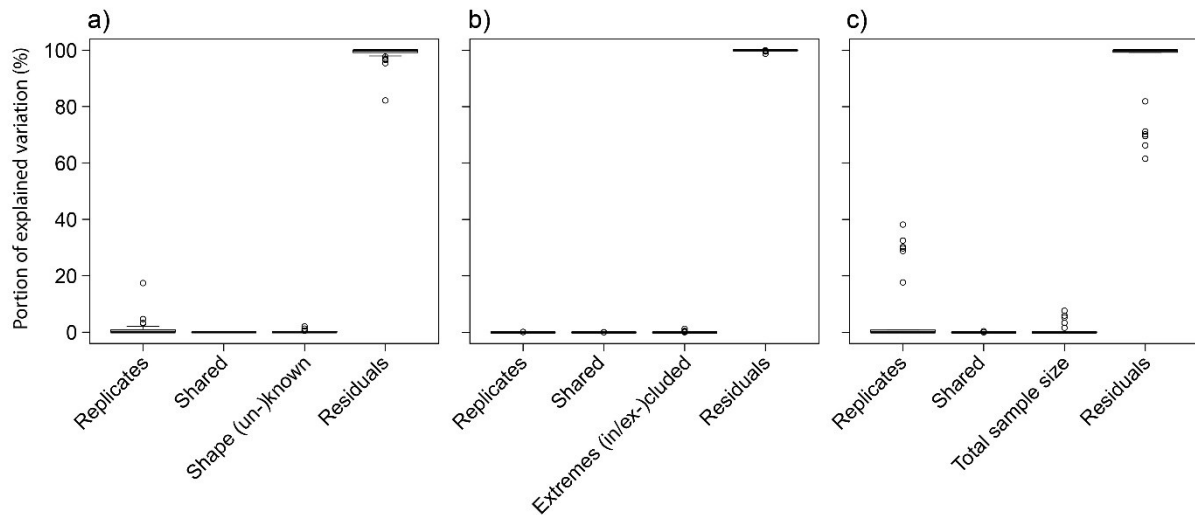


Figure S9. Relative contributions of replicates, a priori knowledge of the underlying response shape, length of the sampled gradient (i.e. extremes in-/excluded) and total sample size for explaining prediction accuracy (i.e. negative RMSE). Depicted are the relative contributions (i.e. portion of explained variation) for the single explanatories and their interactions (i.e. shared). The outcome is shown for the effects of replicates*a priori knowledge (a), replicates*gradient length (b) and replicates*total sample size (c). The tested, linear mixed effect models correspond to model 2 to 4 defined in the methods section. Residuals correspond to the portion of unexplained variation. Based on 100 % of random variation (noise) in the response (i.e. prediction accuracy).

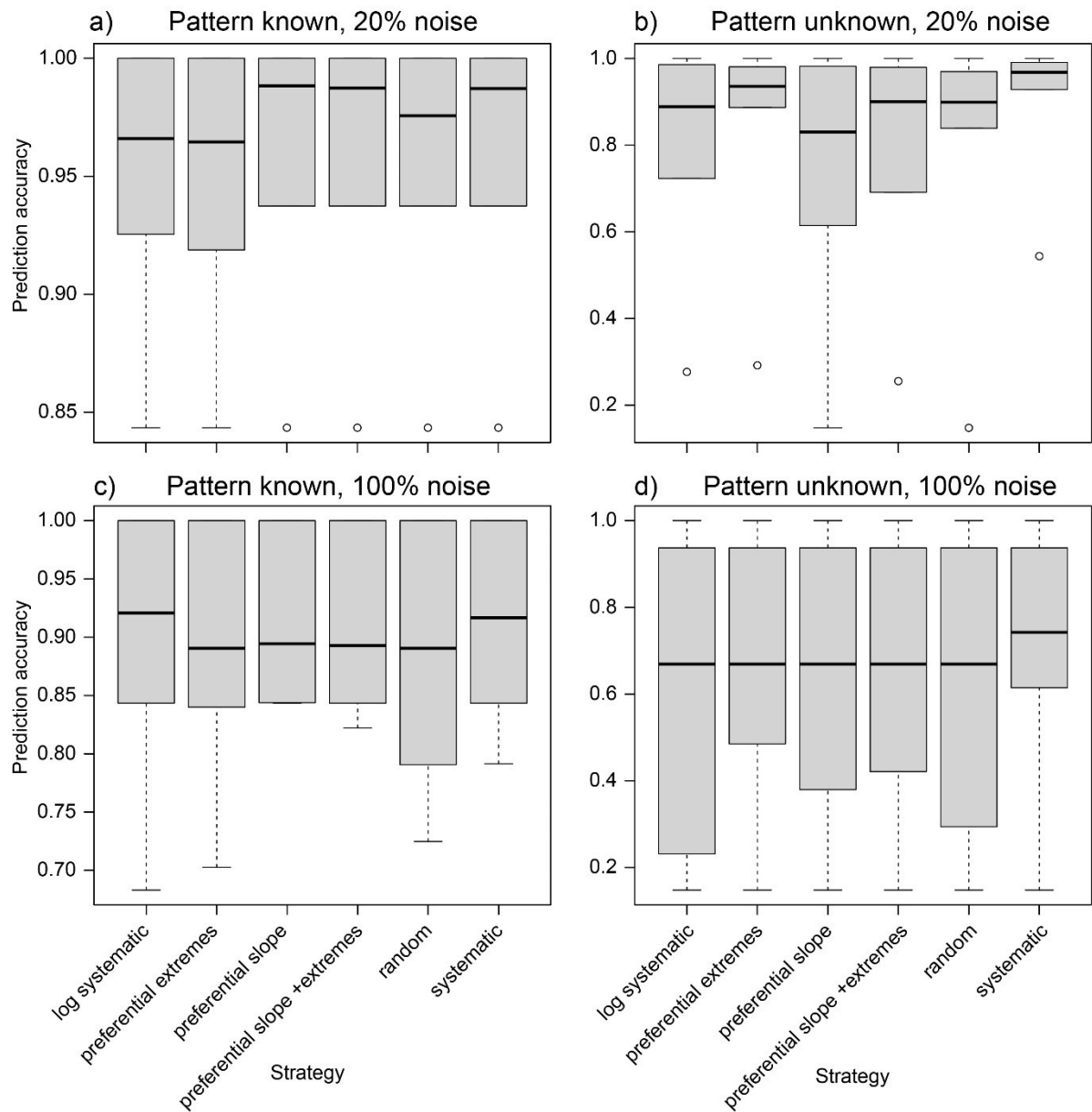


Figure S10. Differences in prediction accuracy between the different sampling strategies. Prediction accuracy is measured as multiple R^2 . Results are shown for scenarios, where the underlying response pattern is a priori known (a and c for 20% and 100% noise, respectively) as well as scenarios with unknown response patterns (b and d for 20% and 100% noise, respectively). Note that the y-axes cover different ranges.

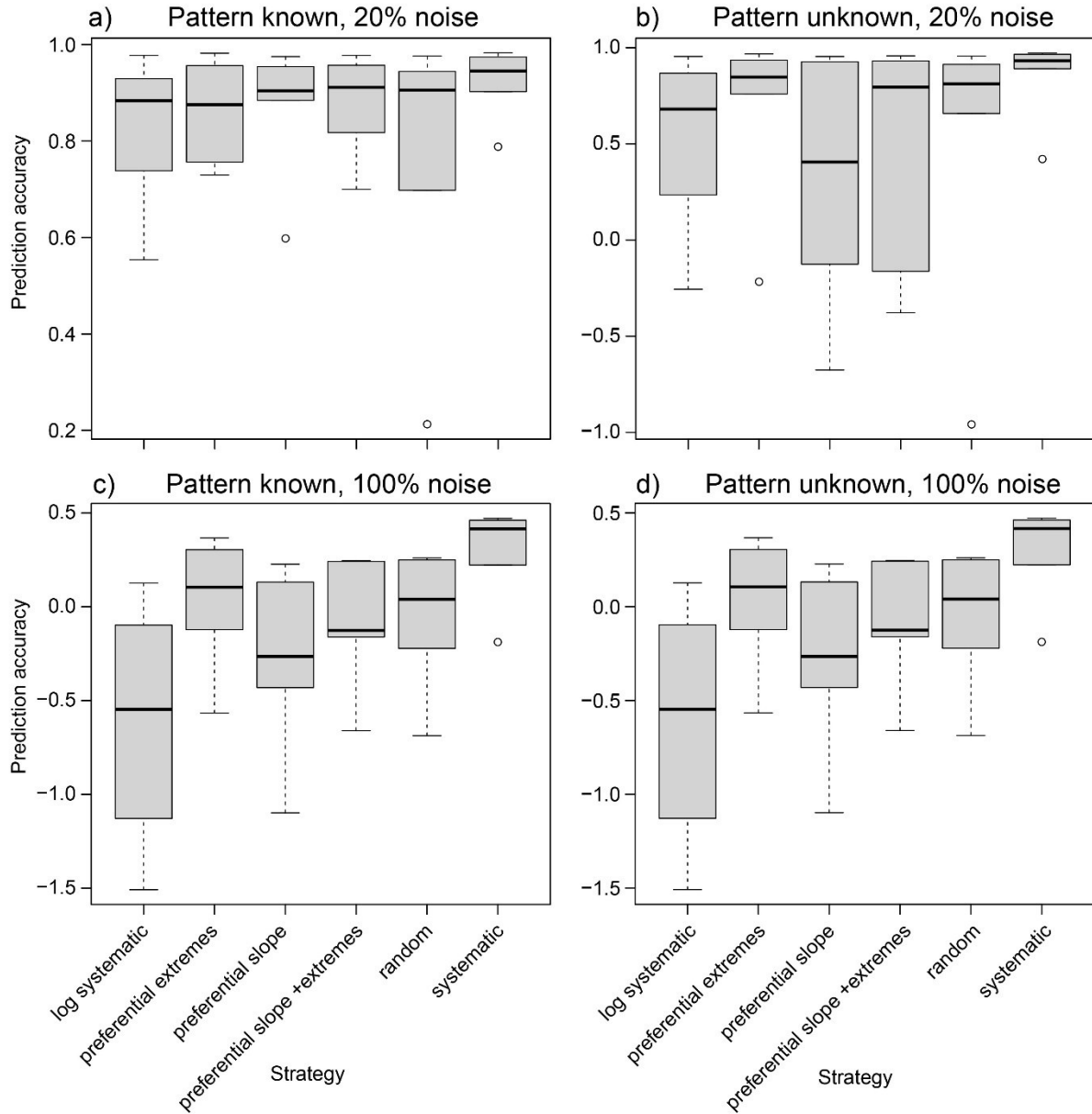


Figure S11. Differences in prediction accuracy between the different sampling strategies. Prediction accuracy is measured as Chalcraft's prediction success. Results are shown for scenarios, where the underlying response pattern is a priori known (a and c for 20% and 100% noise, respectively) as well as scenarios with unknown response patterns (b and d for 20% and 100% noise, respectively). Note that the y-axes cover different ranges.

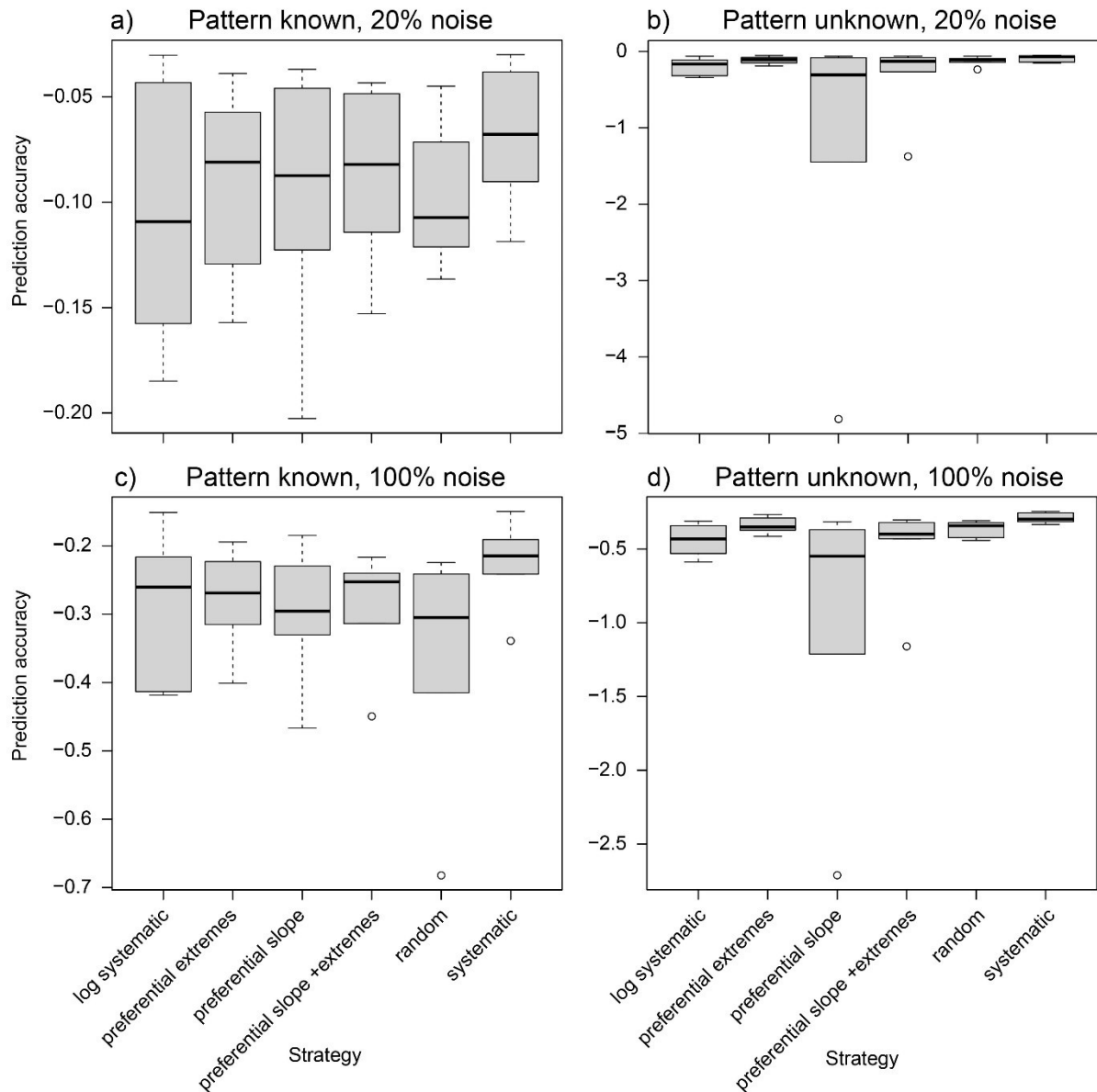


Figure S12. Differences in prediction accuracy between the different sampling strategies. Prediction accuracy is measured as RMSE (negative values). Results are shown for scenarios, where the underlying response pattern is a priori known (a and c for 20% and 100% noise, respectively) as well as scenarios with unknown response patterns (b and d for 20% and 100% noise, respectively). Note that the y-axes cover different ranges.

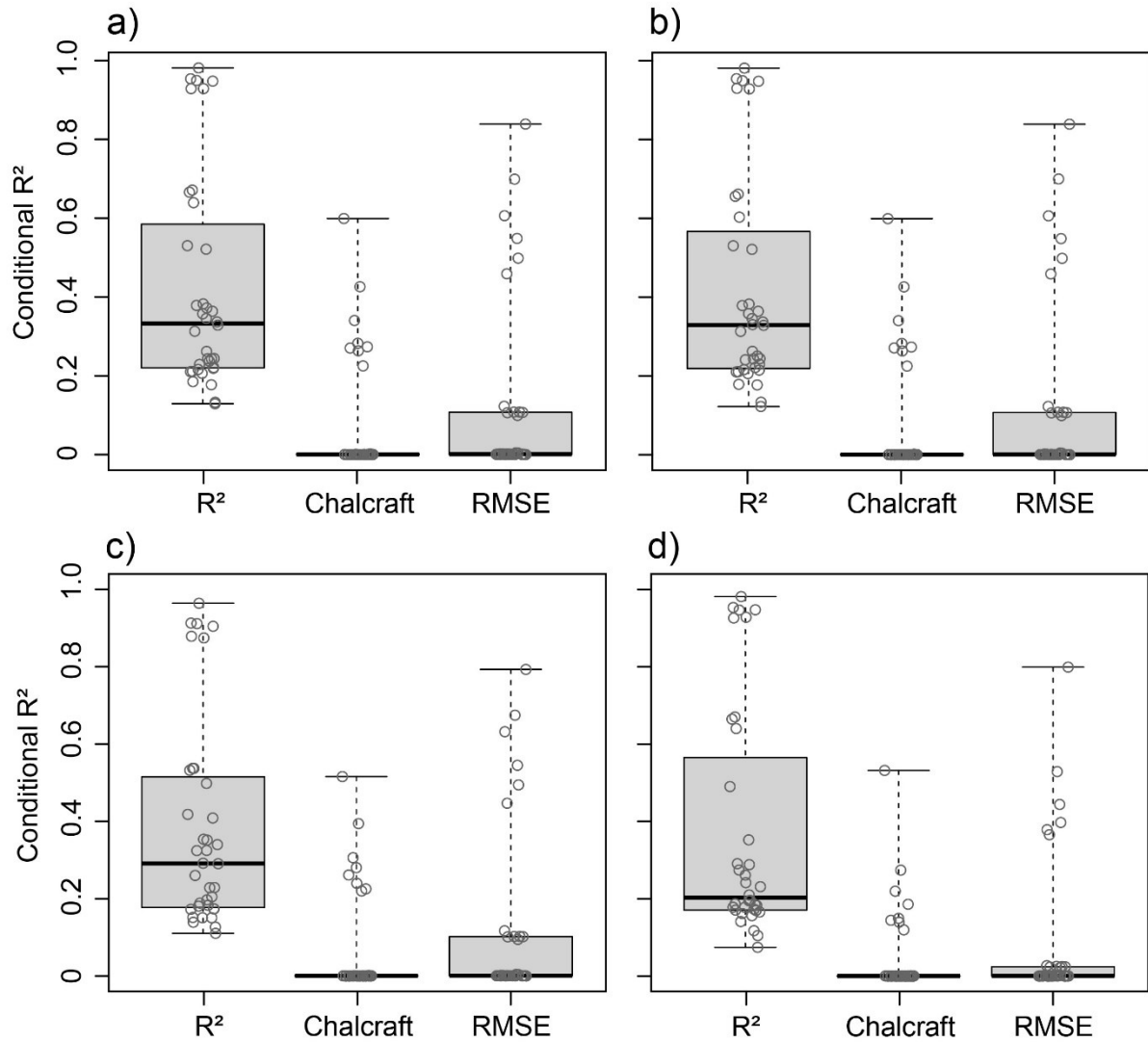


Figure S13. Sensitivity of the three measures of prediction accuracy applied in this study (i.e. multiple R^2 , Chalcraft's prediction accuracy and negative RMSE) for four different models reflecting the different simulation settings (i.e. sampling effort, sampling strategy and sampling procedure), a) model 1: Prediction accuracy \sim number of replicates + (1|total sample size) + (1|predictor extremes included [yes/no]) + (1|a priori knowledge on the underlying response shape [yes/no]), b) model 2: Prediction accuracy \sim nbr of replicates * predictor extremes included + (1|total sample size) + (1| a priori knowledge on the underlying response shape), c) model 3: Prediction accuracy \sim nbr of replicates * a priori knowledge on the underlying response shape + (1|total sample size) + (1|predictor extremes included), d) model 4: Prediction accuracy \sim nbr of replicates * total sample size + (1|predictor extremes included) + (1|a priori knowledge on the underlying response shape). Grey points depict the 36 different scenario combinations of shape and sampling strategy. Based on 20 % of random variation (noise) in the response.

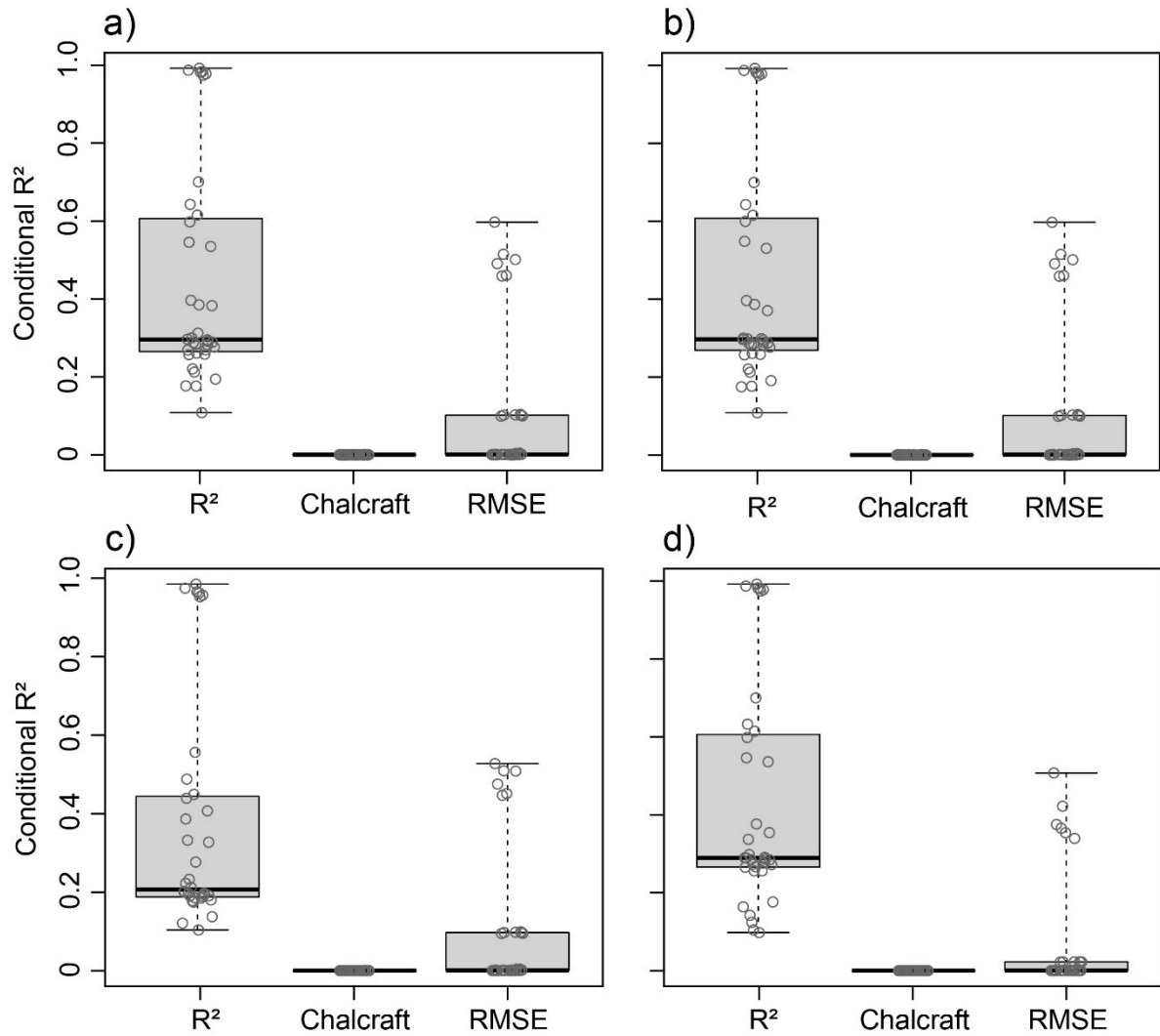


Figure S14. Sensitivity of the three measures of prediction accuracy applied in this study (i.e. multiple R^2 , Chalcraft's prediction accuracy and negative RMSE) for four different models reflecting the different simulation settings (i.e. sampling effort, sampling strategy and sampling procedure), a) model 1: Prediction accuracy \sim number of replicates + (1|total sample size) + (1|predictor extremes included [yes/no]) + (1|a priori knowledge on the underlying response shape [yes/no]), b) model 2: Prediction accuracy \sim nbr of replicates * predictor extremes included + (1|total sample size) + (1| a priori knowledge on the underlying response shape), c) model 3: Prediction accuracy \sim nbr of replicates * a priori knowledge on the underlying response shape + (1|total sample size) + (1|predictor extremes included), d) model 4: Prediction accuracy \sim nbr of replicates * total sample size + (1|predictor extremes included) + (1|a priori knowledge on the underlying response shape). Grey points depict the 36 different scenario combinations of shape and sampling strategy. Based on 100 % of random variation (noise) in the response.

For multiple R^2

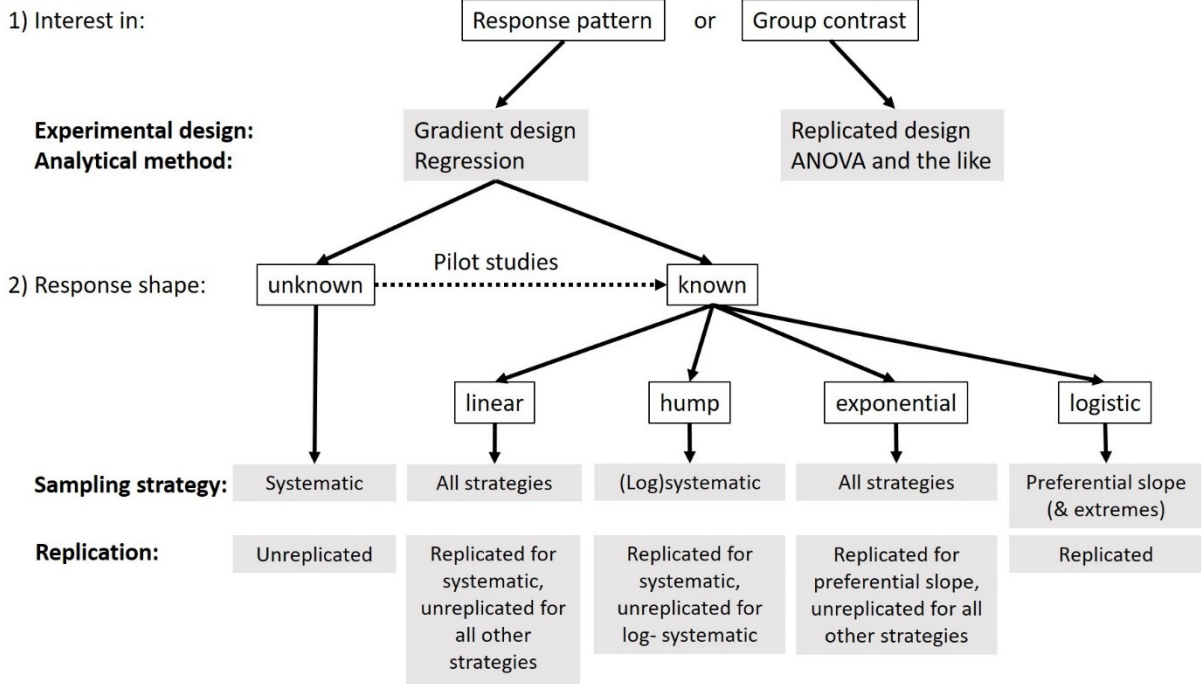


Figure S15. Decision tree for ecological experimenters based on general considerations and conclusions drawn from simulation results based on multiple R^2 .

For Chalcraft's prediction success

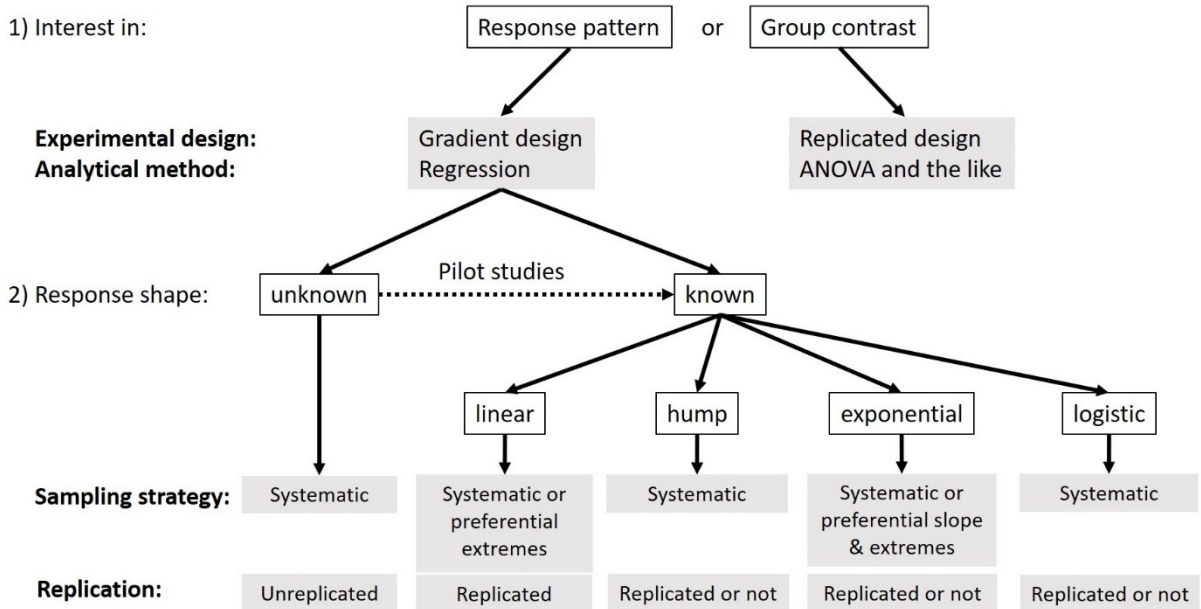
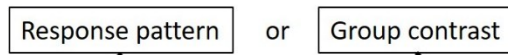


Figure S16. Decision tree for ecological experimenters based on general considerations and conclusions drawn from simulation results based on Chalcraft's prediction success.

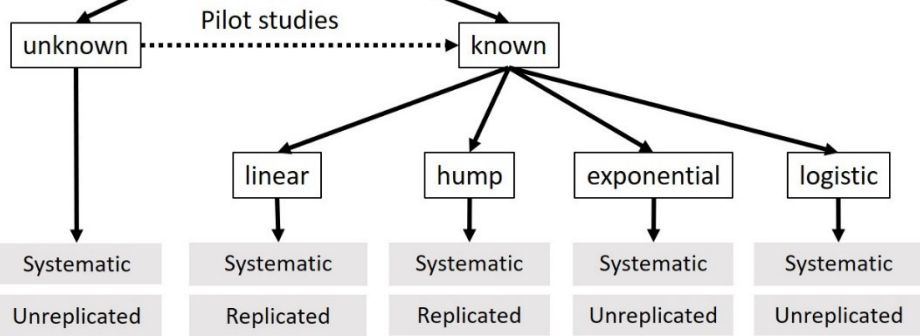
For RMSE

1) Interest in:



Experimental design:
Analytical method:

2) Response shape:



Sampling strategy:
Replication:

Figure S17. Decision tree for ecological experimenters based on general considerations and conclusions drawn from simulation results based on RMSE (negative values).

Table S1. Effect of replication on prediction accuracy. The effect of replication was tested by using a linear mixed effect model with replicate and a priori knowledge on the underlying response pattern as fixed effects (i.e. model 3 in Table 1). 0 indicates non-significant effects of replication with a level of significance of alpha=0.05.

Strategy	Shape	Multiple R2		RMSE		Chalcraft's	
		20%	100%	20%	100%	20%	100%
syst	linear	-0,000580912	-0,002167053	-8,57E-05	-0,00042831	-0,000590233	0
syst	exponential1	-0,003770799	-0,000909137	-0,001674524	-0,002006468	0	0
syst	exponential2	-0,001722166	-0,002018447	-0,003265305	-0,002289946	-0,004526149	0
syst	hump_centered	-0,000243323	0,000928881	5,38E-05	0	-0,000318952	0
syst	hump_noncentered	-0,000737187	-0,002041302	-0,001660443	-0,0011909	-0,003153291	0
syst	logistic	-0,016050596	-0,011911113	-0,011234397	-0,005881065	-2,54E+27	0
log_syst	linear	-0,002408696	-0,001987451	-0,227156688	-1,135783441	-0,010405351	0
log_syst	exponential1	-0,005870967	-0,001406151	-0,242576375	-1,161559134	-0,021751793	0
log_syst	exponential2	-0,005892324	-0,002818587	-0,245775635	-1,166178088	-0,027327689	0
log_syst	hump_centered	-0,004669037	0,000425308	-0,28250949	-1,203549727	0	0
log_syst	hump_noncentered	-0,003197912	-0,00250791	-0,243741515	-1,139657834	-0,017420764	0
log_syst	logistic	-0,014400252	0,001280994	-0,250601222	-1,153403828	-0,042933558	0
pref_extremes	linear	-0,001848114	-0,002361502	0	0	0	0
pref_extremes	exponential1	-0,003597766	-0,000459646	0	0	0	0
pref_extremes	exponential2	-0,003778909	-0,001626295	0	0	0	0
pref_extremes	hump_centered	-0,006776166	-0,006858633	0	0	0	0
pref_extremes	hump_noncentered	-0,002087973	-0,002001699	0	0	-1021,978993	0
pref_extremes	logistic	-0,015222638	-0,00998539	0	0	0	0
pref_slope	linear	-0,001752416	-0,0015549	0	0	0	0
pref_slope	exponential1	-0,000480404	-0,000221779	-15748,38002	-77092,14769	0	0
pref_slope	exponential2	0	-0,000221917	0	0	0	0
pref_slope	hump_centered	-0,00591763	-0,001099901	0	0	0	0
pref_slope	hump_noncentered	-0,002272644	-0,001122741	0	0	0	0
pref_slope	logistic	0	-0,002864238	-56,71292654	-282,3181911	0	0
pref_slope_extremes	linear	-0,001757926	-0,001798763	0	0	0	0
pref_slope_extremes	exponential1	-0,002954917	-0,000459681	0	0	0	0
pref_slope_extremes	exponential2	-0,003823305	-0,00169604	0	0	0	0
pref_slope_extremes	hump_centered	-0,006025224	-0,00249104	0	0	0	0
pref_slope_extremes	hump_noncentered	-0,002228315	-0,001653765	0	0	-2,818711008	0
pref_slope_extremes	logistic	-0,000857224	-0,003966295	0	0	0	0
random	linear	-0,002412914	-0,002096561	0	0	0	0
random	exponential1	-0,003848907	-0,00012147	-3,36214E+15	-1,68108E+16	0	0
random	exponential2	-0,005271458	-0,00166908	0	0	0	0
random	hump_centered	-0,010789232	-0,012797069	0	0	0	0
random	hump_noncentered	-0,002869509	-0,00203143	0	0	0	0
random	logistic	-0,011720931	-0,007354695	0	0	0	0

Table S2

For Chalcraft's prediction accuracy and 20% noise

Depicted are the direction of single and interactive effects (first two are the individual effects of predictor A and B and third one is the interactive effect) as well as marginal and conditional R2 values for the respective models (in parentheses)

		Effect: Model 1	Model 2 ~Replicates*Predictor extremes (excluded/included)	Model 3 ~Replicates*Pattern (known/unknown)	Model 4
Sampling strategy systematic	Response shape	~Replicates			~Replicates*Total sample size
	Linear	+*(0.000221,0.225)	+*,n.s.,n.s.(0.000221,0.225)	-, -, +*(0.0108,0.22)	+*, +*, -(0.101,0.119)
	Exponential1	n.s.(1.01e-05,6.62e-05)	n.s.,n.s.,n.s.(1.01e-05,6.62e-05)	n.s.,n.s.,n.s.(3.6e-05,7.21e-05)	n.s.,n.s.,n.s.(1.49e-05,3.49e-05)
	Exponential2	-(0.0102,0.34)	-,n.s.,n.s.(0.0102,0.34)	-, +*, +*(0.0696,0.306)	+*, +*, -(0.101,0.22)
	Hump centered	+*(0.000314,0.283)	+*,n.s.,n.s.(0.000314,0.283)	-, -, +*(0.00642,0.28)	+*, +*, -(0.139,0.149)
log systematic	Hump non-centered	-(0.00237,0.27)	-,n.s.,n.s.(0.00236,0.271)	-, +*, +*(0.0303,0.261)	+*, +*, -(0.0973,0.144)
	Logistic	n.s.(3.61e-05,0.000157)	n.s.,n.s.,n.s.(3.61e-05,0.000157)	-,n.s.,n.s.(8.86e-05,0.000166)	n.s.,n.s.,n.s.(4.09e-05,8.55e-05)
	Linear	-(0.0046,0.274)	-,n.s.,n.s.(0.0046,0.273)	-, -, +*(0.0732,0.225)	+*, +*, -(0.0502,0.186)
	Exponential1	-(0.0514,0.599)	-,n.s.,n.s.(0.0514,0.599)	-, -, -(0.346,0.516)	-, +*, +*(0.0733,0.532)
	Exponential2	-(0.0805,0.426)	-,n.s.,n.s.(0.0805,0.426)	-, -, -(0.156,0.394)	-, +*, +*(0.128,0.274)
preferential extremes	Hump centered	-(4.41e-05,0.000116)	n.s.,n.s.,n.s.(4.41e-05,0.000116)	n.s.,n.s.,n.s.(9.91e-05,0.000138)	-,n.s., +*(0.000242,0.000275)
	Hump non-centered	-(0.023,0.263)	-,n.s.,n.s.(0.023,0.263)	-, -, +*(0.0564,0.24)	-, +*, -(0.0695,0.14)
	Logistic	-(0.000302,0.00132)	-,n.s.,n.s.(0.000302,0.00132)	-,n.s., -(0.000365,0.00138)	n.s., +*,n.s.(0.00045,0.000462)
	Linear	n.s.(1.94e-05,0.000242)	n.s.,n.s.,n.s.(9.65e-05,0.000191)	n.s.,n.s.,n.s.(1.95e-05,0.000242)	-,n.s., +*(0.000129,0.000257)
	Exponential1	n.s.(3.35e-06,4.13e-06)	n.s.,n.s.,n.s.(1.56e-05,1.59e-05)	n.s.,n.s.,n.s.(1.59e-05,1.67e-05)	n.s.,n.s.,n.s.(7.23e-06,7.73e-06)
preferential slope	Exponential2	n.s.(9.45e-07,7.58e-06)	n.s.,n.s.,n.s.(1.09e-05,1.74e-05)	n.s.,n.s.,n.s.(1.09e-05,1.74e-05)	n.s.,n.s.,n.s.(7.68e-06,8.04e-06)
	Hump centered	-(0.000175,0.000391)	n.s.,n.s., -(0.000339,0.000525)	n.s.,n.s., -(0.000397,0.000457)	-,n.s.,n.s.(0.000199,0.000384)
	Hump non-centered	-(0.000106,0.000121)	-,n.s., +*(0.000228,0.000228)	-,n.s., +*(0.000216,0.00023)	n.s.,n.s.,n.s.(0.000125,0.00014)
	Logistic	n.s.(1.24e-07,0.000112)	n.s.,n.s.,n.s.(2.12e-05,0.000108)	n.s.,n.s.,n.s.(2.13e-05,0.000108)	n.s.,n.s.,n.s.(9.28e-06,5.87e-05)
	Linear	n.s.(4.63e-08,0.000922)	n.s., +*,n.s.(4.47e-05,0.000913)	n.s.,n.s.,n.s.(4.75e-08,0.000922)	n.s., +*,n.s.(4.88e-05,0.000102)
preferential slope +extremes	Exponential1	n.s.(8.24e-08,2.52e-05)	n.s.,n.s.,n.s.(9.26e-06,3.44e-05)	n.s.,n.s.,n.s.(9.26e-06,3.44e-05)	n.s.,n.s.,n.s.(8.74e-06,8.75e-06)
	Exponential2	n.s.(1.92e-07,1.14e-05)	n.s.,n.s.,n.s.(1.36e-05,1.57e-05)	n.s.,n.s.,n.s.(1.07e-05,2.19e-05)	n.s.,n.s.,n.s.(9.67e-06,1.87e-05)
	Hump centered	-(4.82e-05,0.000362)	-,n.s.,n.s.(0.000138,0.000335)	n.s.,n.s.,n.s.(0.000137,0.000336)	n.s.,n.s.,n.s.(7.13e-05,0.000304)
	Hump non-centered	n.s.(7.15e-06,0.000135)	n.s.,n.s.,n.s.(5.98e-05,0.000103)	n.s.,n.s.,n.s.(7.45e-06,0.000135)	-,n.s., +*(9.71e-05,0.000182)
	Logistic	n.s.(2.94e-07,8.67e-06)	n.s.,n.s.,n.s.(9.39e-06,1.77e-05)	n.s.,n.s.,n.s.(9.58e-06,1.78e-05)	n.s.,n.s.,n.s.(1.11e-05,1.13e-05)
random	Linear	n.s.(8.61e-06,0.000238)	n.s., +*,n.s.(7.68e-05,0.000187)	n.s.,n.s.,n.s.(1.52e-05,0.000244)	n.s., +*,n.s.(4.99e-05,0.000169)
	Exponential1	n.s.(3.88e-06,9.47e-05)	n.s.,n.s.,n.s.(4.28e-05,8.07e-05)	n.s.,n.s.,n.s.(3.68e-05,8.97e-05)	n.s.,n.s.,n.s.(1.63e-05,0.000107)
	Exponential2	n.s.(2e-05,9.81e-05)	-,n.s.,n.s.(6.75e-05,9.97e-05)	n.s.,n.s.,n.s.(5.1e-05,0.000108)	-,n.s., +*(0.000141,0.000208)
	Hump centered	n.s.(1.06e-09,2.03e-05)	n.s.,n.s.,n.s.(1.16e-05,2.61e-05)	n.s.,n.s.,n.s.(1.16e-05,2.61e-05)	n.s.,n.s.,n.s.(1.42e-05,2.58e-05)
	Hump non-centered	-(0.000103,0.000322)	-,n.s., +*(0.000254,0.000312)	-,n.s.,n.s.(0.000104,0.000323)	n.s., +*,n.s.(0.000107,0.000268)
random	Logistic	n.s.(3.43e-08,0.00038)	n.s.,n.s.,n.s.(3.51e-07,0.00038)	n.s.,n.s.,n.s.(2.26e-05,0.000384)	n.s.,n.s.,n.s.(2.46e-05,4.28e-05)
	Linear	n.s.(4.48e-06,0.000543)	n.s.,n.s.,n.s.(4.48e-06,0.000543)	n.s., +*,n.s.(3.87e-05,0.000544)	n.s., +*,n.s.(0.000125,0.000159)
	Exponential1	n.s.(1.59e-05,0.000133)	n.s.,n.s.,n.s.(1.59e-05,0.000133)	n.s.,n.s.,n.s.(5.24e-05,0.000114)	n.s., -,n.s.(5.5e-05,0.00011)
	Exponential2	n.s.(3.07e-08,0.000375)	n.s.,n.s.,n.s.(3.07e-08,0.000375)	n.s.,n.s.,n.s.(2.2e-05,0.00038)	n.s.,n.s.,n.s.(2.39e-05,4.12e-05)
	Hump centered	n.s.(1.72e-05,0.000508)	n.s.,n.s.,n.s.(1.72e-05,0.000508)	n.s., -,n.s.(0.000115,0.000428)	n.s.,n.s.,n.s.(7.65e-05,0.000254)
random	Hump non-centered	-(7.42e-05,0.000512)	n.s.,n.s.,n.s.(7.42e-05,0.000512)	n.s.,n.s.,n.s.(8.65e-05,0.00052)	n.s., +*,n.s.(8.35e-05,8.78e-05)
	Logistic	n.s.(4.04e-08,0.000374)	n.s.,n.s.,n.s.(4.04e-08,0.000374)	n.s.,n.s.,n.s.(2.2e-05,0.000379)	n.s.,n.s.,n.s.(1.95e-05,3.68e-05)

Table S3

For Chalcraft's prediction accuracy and 100% noise

Depicted are the direction of single and interactive effects (first two are the individual effects of predictor A and B and third one is the interactive effect) as well as marginal and conditional R2 values for the respective models (in parentheses)

		Effect: Model 1	Model 2 ~Replicates*Predictor extremes (excluded/included)	Model 3 ~Replicates*Pattern (kown/unknown)	Model 4 ~Replicates*Total sample size
Sampling strategy systematic	Response shape	~Replicates			
	Linear	n.s.(6.07e-06,0.000811)	n.s.,n.s.,n.s.(6.07e-06,0.000811)	n.s.,n.s.,n.s.(1.13e-05,0.000816)	+, +, -(0.000269,0.000269)
	Exponential1	n.s.(1.01e-05,6.62e-05)	n.s.,n.s.,n.s.(5.42e-06,0.000302)	n.s., +, n.s.(9.39e-05,0.000266)	n.s., +, n.s.(5.53e-05,0.000179)
	Exponential2	n.s.(2.24e-05,7.77e-05)	n.s.,n.s.,n.s.(2.24e-05,7.75e-05)	n.s.,n.s.,n.s.(4.39e-05,7.95e-05)	n.s., -, n.s.(6.14e-05,8.09e-05)
	Hump centered	n.s.(6.76e-06,6.19e-05)	n.s.,n.s.,n.s.(6.76e-06,6.19e-05)	n.s.,n.s.,n.s.(3.17e-05,6.49e-05)	n.s.,n.s.,n.s.(9.15e-06,3.12e-05)
	Hump non-centered	n.s.(3.3e-06,0.000204)	n.s.,n.s.,n.s.(3.3e-06,0.000204)	n.s.,n.s.,n.s.(6.43e-06,0.000207)	n.s.,n.s.,n.s.(4.82e-05,4.82e-05)
log systematic	Logistic	n.s.(2.56e-06,0.000159)	n.s.,n.s.,n.s.(2.56e-06,0.000159)	n.s.,n.s.,n.s.(4.46e-05,0.000135)	n.s.,n.s.,n.s.(3.66e-05,0.000104)
	Linear	n.s.(4.56e-07,9.24e-05)	n.s.,n.s.,n.s.(4.56e-07,9.24e-05)	n.s.,n.s.,n.s.(2.07e-05,9.47e-05)	n.s.,n.s.,n.s.(6.81e-06,2.46e-05)
	Exponential1	n.s.(1.4e-06,9.13e-05)	n.s.,n.s.,n.s.(1.4e-06,9.13e-05)	n.s.,n.s.,n.s.(2.33e-05,9.61e-05)	n.s.,n.s.,n.s.(1.72e-05,3.42e-05)
	Exponential2	n.s.(1.21e-07,0.000381)	n.s.,n.s.,n.s.(1.2e-07,0.00038)	n.s.,n.s.,n.s.(2.42e-05,0.000383)	n.s.,n.s.,n.s.(2.46e-05,4.5e-05)
	Hump centered	n.s.(2.73e-05,0.000109)	n.s.,n.s.,n.s.(2.73e-05,0.000109)	n.s.,n.s.,n.s.(8.27e-05,0.00011)	-, n.s., +(0.000139,0.000193)
	Hump non-centered	n.s.(6.33e-06,0.000222)	n.s.,n.s.,n.s.(6.41e-06,0.000206)	n.s.,n.s.,n.s.(6.41e-06,0.000206)	n.s.,n.s.,n.s.(3.37e-05,3.37e-05)
preferential extremes	Logistic	n.s.(8.4e-08,9.98e-05)	n.s.,n.s.,n.s.(8.4e-08,9.97e-05)	n.s.,n.s.,n.s.(1.97e-05,1e-04)	n.s.,n.s.,n.s.(2.25e-05,4.16e-05)
	Linear	n.s.(1.29e-06,1.32e-05)	n.s.,n.s.,n.s.(2.75e-05,3.38e-05)	n.s.,n.s.,n.s.(1.73e-05,2.29e-05)	n.s.,n.s.,n.s.(7.2e-06,1.91e-05)
	Exponential1	n.s.(1.62e-06,2.33e-06)	n.s.,n.s.,n.s.(1.2e-05,1.2e-05)	n.s.,n.s.,n.s.(1.09e-05,1.16e-05)	n.s.,n.s.,n.s.(2.87e-06,3.57e-06)
	Exponential2	n.s.(6.23e-06,2.13e-05)	n.s.,n.s.,n.s.(2.25e-05,3.01e-05)	n.s.,n.s.,n.s.(2.4e-05,3.15e-05)	n.s.,n.s.,n.s.(8.12e-06,2.32e-05)
	Hump centered	n.s.(3.12e-05,9.74e-05)	n.s.,n.s.,n.s.(6.62e-05,0.000132)	n.s.,n.s.,n.s.(0.000104,0.000104)	-, n.s., +(8.66e-05,0.000152)
	Hump non-centered	n.s.(2.54e-05,0.000255)	n.s., -, n.s.(0.000116,0.00023)	n.s.,n.s.,n.s.(3.08e-05,0.00026)	n.s.,n.s.,n.s.(3.94e-05,0.000155)
preferential slope	Logistic	n.s.(1.69e-05,0.000131)	n.s.,n.s.,n.s.(5.18e-05,0.000136)	n.s.,n.s.,n.s.(5.28e-05,0.000134)	n.s.,n.s.,n.s.(3.21e-05,9.74e-05)
	Linear	n.s.(5.97e-06,0.000101)	n.s.,n.s.,n.s.(4.04e-05,9.58e-05)	n.s.,n.s.,n.s.(5.97e-06,0.000101)	n.s.,n.s.,n.s.(6.9e-06,4.64e-05)
	Exponential1	n.s.(1.63e-06,3.53e-05)	n.s.,n.s.,n.s.(9.06e-06,4.27e-05)	n.s.,n.s.,n.s.(1.63e-05,4.42e-05)	n.s.,n.s.,n.s.(1.17e-05,1.75e-05)
	Exponential2	n.s.(1.21e-07,1.22e-05)	n.s.,n.s.,n.s.(8.77e-06,2.08e-05)	n.s.,n.s.,n.s.(8.68e-06,2.08e-05)	n.s.,n.s.,n.s.(1.91e-05,1.91e-05)
	Hump centered	n.s.(1.07e-05,0.00011)	n.s.,n.s.,n.s.(4.36e-05,0.000108)	n.s.,n.s.,n.s.(6.2e-05,9.67e-05)	n.s.,n.s.,n.s.(2.56e-05,0.000124)
	Hump non-centered	n.s.(3.04e-05,4.9e-05)	n.s.,n.s.,n.s.(4.56e-05,6.23e-05)	n.s.,n.s.,n.s.(3.59e-05,5.44e-05)	n.s.,n.s.,n.s.(5.69e-05,5.88e-05)
preferential slope +extremes	Logistic	n.s.(1.54e-05,4.21e-05)	n.s.,n.s.,-1*(6.43e-05,9.11e-05)	n.s.,n.s.,n.s.(5.32e-05,5.32e-05)	n.s.,n.s.,n.s.(3.86e-05,6.54e-05)
	Linear	n.s.(4.27e-06,7.13e-05)	n.s.,n.s.,n.s.(1.92e-05,8.27e-05)	n.s.,n.s.,n.s.(5.64e-06,7.27e-05)	n.s.,n.s.,n.s.(2.39e-05,2.74e-05)
	Exponential1	n.s.(2.19e-06,6.91e-06)	n.s.,n.s.,n.s.(1.29e-05,1.77e-05)	n.s.,n.s.,n.s.(1.33e-05,1.79e-05)	n.s.,n.s.,n.s.(8.9e-06,9.03e-06)
	Exponential2	n.s.(3.55e-06,7.81e-06)	n.s.,n.s.,n.s.(1.57e-05,1.99e-05)	n.s.,n.s.,n.s.(1.62e-05,2e-05)	n.s.,n.s.,n.s.(8.57e-06,9.01e-06)
	Hump centered	n.s.(3.63e-07,0.000118)	n.s.,n.s.,n.s.(8.77e-06,0.000126)	n.s.,n.s.,n.s.(5.46e-05,8.06e-05)	n.s.,n.s.,n.s.(9.14e-06,1e-04)
	Hump non-centered	-(4.29e-05,0.000101)	-, n.s., n.s.(9.21e-05,0.000131)	n.s.,n.s.,n.s.(4.29e-05,0.000101)	-, n.s., +(0.000232,0.00025)
random	Logistic	n.s.(1.54e-05,0.00014)	n.s.,n.s.,-*(5.24e-05,0.000177)	n.s.,n.s.,n.s.(4.44e-05,0.000145)	n.s.,n.s.,n.s.(3.11e-05,5.47e-05)
	Linear	n.s.(1.75e-05,0.000123)	n.s.,n.s.,n.s.(1.75e-05,0.000123)	n.s.,n.s.,n.s.(1.75e-05,0.000123)	n.s.,n.s.,n.s.(1.79e-05,1.79e-05)
	Exponential1	n.s.(2.85e-07,0.000338)	n.s.,n.s.,n.s.(2.86e-07,0.000338)	n.s.,n.s.,n.s.(2.61e-05,0.000333)	n.s.,n.s.,n.s.(8.58e-06,3.95e-05)
	Exponential2	n.s.(4.17e-06,0.000111)	n.s.,n.s.,n.s.(3.07e-08,0.000375)	n.s.,n.s.,n.s.(2.8e-05,0.000134)	n.s.,n.s.,n.s.(5.07e-05,5.33e-05)
	Hump centered	n.s.(7.81e-07,0.000159)	n.s.,n.s.,n.s.(7.76e-07,0.000159)	n.s.,n.s.,n.s.(2.34e-05,0.000163)	n.s.,n.s.,n.s.(1.4e-05,3.24e-05)
	Hump non-centered	-(7.42e-05,0.000512)	n.s.,n.s.,n.s.(2.81e-08,0.000421)	n.s.,n.s.,n.s.(1.73e-07,0.000421)	n.s., +, n.s.(0.000103,0.000103)
	Logistic	n.s.(4.04e-08,0.000374)	n.s.,n.s.,n.s.(4.86e-08,9.84e-05)	n.s.,n.s.,n.s.(2.11e-05,9.77e-05)	n.s.,n.s.,n.s.(2.33e-05,4.51e-05)

Table S4

For multiple R2 and 20% random variation

Depicted are the direction of single and interactive effects (first two are the individual effects of predictor A and B and third one is the interactive effect) as well as marginal and conditional R2 values for the respective models (in parentheses)

		Effect:	Model 2	Model 3	Model 4
		Model 1	~Replicates*Predictor extremes (excluded/included)	~Replicates*Pattern (known/unknown)	~Replicates*Total sample size
Sampling strategy systematic	Response shape	~Replicates			
	Linear	+(0.00101,0.21)	+,n.s., n.s.(0.00101,0.21)	-, -, +(0.086,0.172)	+, +, -(0.0463,0.178)
	Exponential1	n.s.(1.01e-05,6.62e-05)	-, n.s., n.s.(0.0172,0.93)	-, -, -(0.832,0.879)	-, +, +(0.0185,0.926)
	Exponential2	-(0.00572,0.53)	-, n.s., n.s.(0.00572,0.53)	-, +, +(0.268,0.418)	+, +, -(0.0646,0.49)
	Hump centered	+(0.00168,0.244)	+, n.s.,n.s.(0.00168,0.244)	-, -, +(0.0358,0.229)	+, +, -(0.126,0.183)
	Hump non-centered	+(0.00188,0.313)	+,n.s., n.s.(0.00188,0.313)	-, +, +(0.151,0.26)	+, +, -(0.0732,0.291)
log systematic	Logistic	-(0.163,0.364)	-, n.s.,n.s.(0.163,0.364)	-, -, +(0.217,0.409)	-, +, +(0.17,0.185)
	Linear	-(0.00361,0.262)	-, n.s.,n.s.(0.00361,0.262)	-, -, +(0.0994,0.197)	+, +, -(0.0331,0.21)
	Exponential1	-(0.0168,0.949)	-, n.s.,n.s.(0.0169,0.949)	-, -, -(0.865,0.911)	-, +, +(0.0184,0.947)
	Exponential2	-(0.0467,0.379)	-, n.s.,n.s.(0.0467,0.379)	-, -, -(0.141,0.324)	-, +, -(0.0907,0.274)
	Hump centered	-(0.00882,0.357)	-, n.s.,n.s.(0.00881,0.358)	-, -, +(0.115,0.292)	-, +, -(0.0559,0.261)
	Hump non-centered	-(0.0123,0.216)	-,n.s., n.s.(0.0123,0.216)	-, -, +(0.0597,0.181)	n.s., +, -(0.0471,0.141)
preferential extremes	Logistic	-(0.195,0.521)	-, n.s.,n.s.(0.195,0.521)	-, -, -(0.254,0.498)	-, +, +(0.231,0.352)
	Linear	-(0.000812,0.219)	-, +, -(0.00629,0.215)	-, -, +(0.071,0.174)	+, +, -(0.0322,0.17)
	Exponential1	-(0.00824,0.929)	-, +, -(0.0184,0.928)	-, -, -(0.822,0.874)	-, +, +(0.00802,0.928)
	Exponential2	-(0.044,0.237)	-, +, +(0.0723,0.221)	-, -, -(0.0593,0.228)	-, +, n.s.(0.0754,0.156)
	Hump centered	-(0.0331,0.372)	-, +, +(0.111,0.33)	-, -, n.s.(0.0669,0.352)	-, +, +(0.0716,0.288)
	Hump non-centered	-(0.00304,0.129)	-, +, n.s.(0.0107,0.122)	-, -, +(0.0155,0.127)	+, +, -(0.0422,0.0743)
preferential slope	Logistic	-(0.134,0.337)	-, +, -(0.136,0.337)	-, -, +(0.137,0.34)	-, +, +(0.163,0.166)
	Linear	n.s.(5.87e-06,0.211)	-, +, +(0.000793,0.211)	-, -, +(0.0912,0.152)	+, +, -(0.0269,0.187)
	Exponential1	+(4.74e-06,0.981)	+, +, n.s.(0.00593,0.981)	-, -, +(0.941,0.964)	+, +, -(0.000199,0.981)
	Exponential2	+(0.00265,0.639)	+, +, +(0.104,0.603)	n.s., -, +(0.299,0.537)	+, +, -(0.00467,0.64)
	Hump centered	-(0.0116,0.229)	-, -, +(0.0272,0.241)	-, -, +(0.0708,0.188)	-, +, -(0.0456,0.162)
	Hump non-centered	-(4.9e-05,0.185)	-, +, +(0.00873,0.179)	-, -, +(0.0726,0.139)	+, +, -(0.0295,0.171)
preferential slope +extremes	Logistic	+(0.0048,0.666)	+, +, -(0.0373,0.656)	n.s., -, +(0.439,0.532)	+, -, -(0.0045,0.665)
	Linear	n.s.(6.11e-06,0.206)	-, +, +(0.000584,0.206)	-, -, +(0.0864,0.151)	+, +, -(0.0274,0.178)
	Exponential1	-(0.00342,0.954)	-, -, +(0.00407,0.954)	-, -, -(0.903,0.913)	-, +, n.s.(0.00412,0.953)
	Exponential2	-(0.0157,0.221)	-, -, +(0.025,0.23)	-, -, +(0.0779,0.174)	n.s., +, -(0.0487,0.17)
	Hump centered	-(0.0135,0.243)	-, -, +(0.0324,0.25)	-, -, +(0.0694,0.205)	-, +, -(0.0523,0.173)
	Hump non-centered	-(0.000305,0.133)	-, n.s., +(0.00165,0.133)	-, -, +(0.0425,0.11)	+, +, -(0.0357,0.105)
random	Logistic	+(0.00342,0.671)	+, +, -(0.035,0.661)	-, -, +(0.446,0.537)	+, +, -(0.00352,0.67)
	Linear	-(0.00209,0.243)	-, n.s., n.s.(0.00209,0.243)	-, -, +(0.091,0.183)	+, +, -(0.033,0.196)
	Exponential1	-(0.00756,0.948)	-, n.s.,n.s.(0.00756,0.948)	-, -, -(0.89,0.904)	-, +, +(0.00738,0.947)
	Exponential2	-(0.0661,0.328)	n.s.,n.s.,n.s.(3.07e-08,0.000375)	-, -, -(0.139,0.29)	-, +, +(0.0966,0.231)
	Hump centered	-(0.0653,0.346)	-, n.s., n.s.(0.0653,0.346)	-, -, n.s.(0.0995,0.325)	-, +, +(0.122,0.195)
	Hump non-centered	-(7.42e-05,0.000512)	-,n.s., n.s.(0.00706,0.177)	-, -, +(0.0449,0.151)	+, +, -(0.0458,0.117)
	Logistic	n.s.(4.04e-08,0.000374)	-, n.s.,n.s.(0.109,0.382)	-, -, n.s.(0.161,0.354)	-, +, +(0.136,0.242)

Table S5

For multiple R2 and 100% random variation

Depicted are the direction of single and interactive effects (first two are the individual effects of predictor A and B and third one is the interactive effect) as well as marginal and conditional R2 values for the respective models (in parentheses)

Effect:		Model 1	Model 2	Model 3	Model 4
		~Replicates	~Replicates*Predictor extremes (excluded/included)	~Replicates*Pattern (kown/unknown)	~Replicates*Total sample size
Sampling strategy systematic	Response shape				
	Linear	+*(0.00297,0.283)	+*, n.s.,n.s.(0.00297,0.283)	-*, -, +*(0.162,0.197)	+*, +*, -(0.0307,0.28)
	Exponential1	n.s.(1.01e-05,6.62e-05)	+*, n.s.,n.s.(0.000582,0.974)	-*, -, +*(0.952,0.952)	+*, +*, -(0.00165,0.974)
	Exponential2	+*(0.00941,0.535)	+*, n.s.,n.s.(0.00949,0.53)	-*, -, +*(0.384,0.407)	+*, +*, -(0.0377,0.536)
	Hump centered	+*(0.0115,0.257)	+*, n.s., n.s.(0.0115,0.257)	+*, -, +*(0.0776,0.222)	+*, +*, -(0.185,0.289)
	Hump non-centered	+*(0.00373,0.258)	+*,n.s., n.s.(0.00373,0.258)	-*, -, +*(0.148,0.185)	+*, +*, -(0.0344,0.256)
log systematic	Logistic	-*(0.0305,0.221)	-*, n.s.,n.s.(0.0305,0.221)	-*, -, +*(0.0526,0.233)	-*, +*,n.s.(0.13,0.142)
	Linear	-*(8.79e-05,0.283)	-*, n.s.,n.s.(8.79e-05,0.283)	-*, -, +*(0.153,0.178)	+*, +*, -(0.0105,0.273)
	Exponential1	-*(0.000301,0.987)	-*, n.s.,n.s.(3e-04,0.987)	-*, -,n.s.(0.972,0.975)	n.s., +*, -(0.000702,0.987)
	Exponential2	-*(0.00204,0.643)	-*, n.s.,n.s.(0.00204,0.643)	-*, -, +*(0.442,0.488)	+*, +*, -(0.0151,0.633)
	Hump centered	-*(0.00454,0.385)	-*, n.s.,n.s.(0.00453,0.387)	+*, -, +*(0.202,0.277)	+*, +*, -(0.0526,0.377)
	Hump non-centered	-*(0.00155,0.312)	-*,n.s., n.s.(0.00161,0.285)	-*, -, +*(0.144,0.186)	+*, +*, -(0.016,0.267)
preferential extremes	Logistic	-*(0.00212,0.108)	-*,n.s., n.s.(0.00212,0.108)	+*, +*, -(0.0216,0.104)	+*, +*, -(0.0721,0.0977)
	Linear	+*(0.000776,0.297)	+*, +*, n.s.(0.00174,0.296)	-*, -, +*(0.162,0.201)	+*, +*, -(0.024,0.29)
	Exponential1	n.s.(3.66e-07,0.978)	-*, -, +*(0.00027,0.978)	-*, -, +*(0.957,0.957)	n.s., +*,n.s.(0.000122,0.978)
	Exponential2	+*(0.000327,0.546)	-*, -, +*(0.00383,0.548)	-*, -, +*(0.371,0.386)	+*, +*, -(0.012,0.546)
	Hump centered	-*(0.0149,0.383)	-*, +*, +*(0.0662,0.371)	-*, -,n.s.(0.106,0.327)	n.s., +*, -(0.105,0.354)
	Hump non-centered	+*(0.00096,0.261)	+*, +*,n.s.(0.00123,0.261)	-*, -, +*(0.142,0.175)	+*, +*, -(0.0237,0.256)
preferential slope	Logistic	-*(0.0368,0.212)	-*,n.s., -*(0.0369,0.213)	-*, +*, +*(0.048,0.212)	n.s., +*, -(0.111,0.124)
	Linear	+*(0.00179,0.289)	+*, +*, n.s.(0.00374,0.288)	-*, -, +*(0.162,0.191)	+*, +*, -(0.0173,0.284)
	Exponential1	+*(9.98e-05,0.992)	+*, +*, +*(0.00049,0.992)	-*, -, +*(0.983,0.985)	+*, +*, -(0.000217,0.992)
	Exponential2	+*(0.00568,0.701)	+*, +*, +*(0.012,0.7)	-*, -, +*(0.534,0.556)	+*, +*, -(0.00848,0.7)
	Hump centered	+*(0.000462,0.269)	-*, -, +*(0.0299,0.299)	-*, -, +*(0.114,0.19)	+*, +*, -(0.0764,0.276)
	Hump non-centered	+*(0.00313,0.3)	+*, +*, n.s.(0.0059,0.298)	-*, -, +*(0.174,0.197)	+*, +*, -(0.0143,0.298)
preferential slope +extremes	Logistic	-*(0.000388,0.177)	-*, +*, +*(0.00316,0.175)	-*, -, +*(0.0765,0.121)	+*, +*, -(0.022,0.164)
	Linear	+*(0.00143,0.291)	+*, +*, -*(0.00433,0.289)	-*, -, +*(0.161,0.194)	+*, +*, -(0.0182,0.286)
	Exponential1	n.s.(1.16e-08,0.982)	-*, -, +*(0.000289,0.982)	-*, -, +*(0.965,0.965)	+*, +*, -(0.000109,0.982)
	Exponential2	+*(0.000812,0.598)	-*, -, +*(0.00298,0.6)	-*, -, +*(0.424,0.439)	+*, +*, -(0.0124,0.598)
	Hump centered	-*(4.96e-05,0.269)	-*, -, +*(0.0321,0.3)	-*, -, +*(0.0956,0.202)	+*, +*, -(0.0925,0.265)
	Hump non-centered	+*(0.00176,0.288)	+*, +*, n.s.(0.00365,0.287)	-*, -, (0.163,0.19)	+*, +*, -(0.0182,0.285)
random	Logistic	-*(0.00139,0.194)	-*, +*, +*(0.00577,0.191)	-*, -, +*(0.0835,0.138)	+*, +*, -(0.0227,0.176)
	Linear	+*(0.000743,0.295)	+*, n.s.,n.s.(0.000743,0.295)	-*, -, +*(0.165,0.194)	+*, +*, -(0.0201,0.291)
	Exponential1	-*(4.44e-05,0.984)	-*, n.s.,n.s.(5.26e-05,0.981)	-*, -, -*(0.962,0.962)	-*,n.s., +*(5.13e-05,0.981)
	Exponential2	-*(0.000535,0.615)	n.s.,n.s.,n.s.(3.07e-08,0.000375)	-*, -, +*(0.436,0.449)	+*, +*, -(0.00689,0.614)
	Hump centered	-*(0.0552,0.396)	-*,n.s., n.s.(0.0552,0.396)	-*, -, -*(0.168,0.332)	-*, +*, +*(0.126,0.337)
	Hump non-centered	-*(7.42e-05,0.000512)	+*,n.s., n.s.(0.000379,0.277)	-*, -, +*(0.152,0.18)	+*, +*, -(0.02,0.272)
	Logistic	n.s.(4.04e-08,0.000374)	-*,n.s., n.s.(0.0285,0.177)	-*, -, +*(0.0313,0.177)	+*, +*, -(0.101,0.105)

Table S6

For negative RMSE (-RMSE) and 20% random variation

Depicted are the direction of single and interactive effects (first two are the individual effects of predictor A and B and third one is the interactive effect) as well as marginal and conditional R2 values for the respective models (in parentheses)

		Effect:	Model 2	Model 3	Model 4
		Model 1	~Replicates*Predictor extremes (excluded/included)	~Replicates*Pattern (known/unknown)	~Replicates*Total sample size
Sampling strategy systematic	Response shape	~Replicates			
	Linear	+*(0.00205,0.459)	+*, n.s.,n.s.(0.00205,0.459)	-, -, +*(0.035,0.447)	+*, +*, -(0.305,0.366)
	Exponential1	n.s.(1.01e-05,6.62e-05)	-,n.s., n.s.(0.0694,0.839)	-, -, -(0.618,0.793)	-, +*, +*(0.0946,0.799)
	Exponential2	-(0.106,0.699)	-,n.s., n.s.(0.105,0.7)	-, +*, +*(0.244,0.675)	-, +*, n.s.(0.251,0.529)
	Hump centered	+*(0.00266,0.498)	+*,n.s., n.s.(0.00266,0.498)	+*, -, +*(0.0166,0.494)	+*, +*, -(0.371,0.397)
	Hump non-centered	-(0.00379,0.549)	-,n.s., n.s.(0.00379,0.549)	-, +*, +*(0.161,0.545)	+*, +*, -(0.222,0.444)
log systematic	Logistic	-(0.281,0.606)	-,n.s., n.s.(0.281,0.606)	-, -, +*(0.312,0.632)	-, +*, +*(0.369,0.379)
	Linear	-(5.26e-05,0.0994)	n.s., n.s.,n.s.(5.26e-05,0.0994)	-, -, +*(0.00866,0.0947)	+*, +*, -(0.00775,0.0223)
	Exponential1	-(1e-04,0.108)	-,n.s., n.s.(1e-04,0.108)	-, -, +*(0.00986,0.102)	+*, +*, -(0.00806,0.0252)
	Exponential2	-(0.000104,0.107)	-,n.s., n.s.(0.000104,0.107)	-, -, +*(0.00932,0.102)	+*, +*, -(0.00809,0.024)
	Hump centered	-(0.000125,0.123)	-, n.s.,n.s.(0.000125,0.123)	-, -, +*(0.0104,0.117)	+*, +*, -(0.00912,0.027)
	Hump non-centered	-(8.91e-05,0.106)	-, n.s.,n.s.(8.91e-05,0.106)	-, -, +*(0.00903,0.101)	+*, +*, -(0.00791,0.0233)
preferential extremes	Logistic	-(0.000123,0.108)	-, n.s.,n.s.(0.000123,0.108)	-, -, +*(0.00963,0.102)	+*, +*, -(0.00801,0.0245)
	Linear	n.s.(1.95e-07,0.000142)	n.s.,n.s., n.s.(1.62e-05,0.000148)	n.s., n.s.,n.s.(1.63e-05,0.000148)	n.s.,n.s., n.s.(1.22e-05,3.12e-05)
	Exponential1	n.s.(6.86e-07,8.74e-05)	n.s.,n.s.,n.s.(3.17e-05,7.5e-05)	n.s.,n.s.,n.s.(3.17e-05,7.5e-05)	-,n.s.,+(4.85e-05,0.000135)
	Exponential2	n.s.(2.23e-06,0.00125)	n.s., +*, n.s.(0.000154,0.00115)	n.s., -,n.s.(0.000163,0.00114)	n.s., +*, n.s.(0.00012,0.000631)
	Hump centered	n.s.(3.89e-06,0.000306)	n.s., +*, n.s.(7.41e-05,0.000253)	n.s., -,n.s.(6.51e-05,0.000262)	n.s.,n.s.,n.s.(5.15e-05,0.000279)
	Hump non-centered	n.s.(4.95e-07,0.000569)	n.s., +*, n.s.(7.16e-05,0.00053)	n.s., -,n.s.(7.42e-05,0.000528)	n.s., +*, n.s.(4.87e-05,0.000273)
preferential slope	Logistic	n.s.(1.29e-06,0.000812)	n.s., +*, n.s.(0.000103,0.000754)	n.s., -,n.s.(0.000109,0.000751)	n.s., +*, n.s.(8.54e-05,0.000411)
	Linear	n.s.(4.69e-07,0.000312)	n.s.,n.s., n.s.(3.45e-05,0.000303)	n.s., -,n.s.(8.48e-05,0.00027)	n.s., +*, n.s.(6.34e-05,0.000233)
	Exponential1	n.s.(2.3e-07,0.00391)	+*, +*, -(0.000437,0.00369)	-, -, +*(0.000437,0.00369)	+*, +*, -(0.000441,0.00175)
	Exponential2	n.s.(1.84e-07,0.00138)	n.s., +*, n.s.(0.000138,0.00131)	n.s., -,n.s.(0.000139,0.00131)	n.s., +*, n.s.(0.00011,0.000526)
	Hump centered	n.s.(2.92e-07,0.000482)	n.s., +*, n.s.(6e-05,0.000451)	n.s., -,n.s.(6.91e-05,0.000454)	n.s., +*, n.s.(6.46e-05,0.000252)
	Hump non-centered	n.s.(3.89e-07,0.000672)	n.s., +*, n.s.(9.81e-05,0.000616)	n.s., -,n.s.(0.000114,0.000606)	n.s., +*, n.s.(7.82e-05,0.000412)
preferential slope +extremes	Logistic	n.s.(1.08e-06,0.00434)	n.s., +*, -(0.000496,0.00404)	-, -, +*(0.000497,0.00404)	+*, +*, -(0.000389,0.00199)
	Linear	n.s.(1.95e-06,0.000761)	n.s., +*, n.s.(0.000109,0.000684)	n.s., -,n.s.(0.000133,0.000665)	n.s., +*, n.s.(8.87e-05,0.000499)
	Exponential1	n.s.(2.29e-05,0.000471)	n.s., +*,n.s.(9.99e-05,0.000415)	n.s., +*,n.s.(9.99e-05,0.000415)	-,n.s.,n.s.(9.2e-05,0.000359)
	Exponential2	n.s.(3e-06,0.00149)	n.s., +*, n.s.(7.2e-05,0.00145)	n.s., -,n.s.(0.00014,0.0014)	n.s., +*, n.s.(9.53e-05,0.000427)
	Hump centered	n.s.(5.02e-06,0.0015)	n.s., +*, n.s.(0.00015,0.0014)	n.s., -,n.s.(0.000177,0.00141)	n.s., +*, n.s.(0.000175,0.000681)
	Hump non-centered	n.s.(1.1e-07,0.000264)	n.s.,n.s., n.s.(1.84e-05,0.00027)	n.s., n.s.,n.s.(1.86e-05,0.00027)	n.s.,n.s., n.s.(1.6e-05,3.98e-05)
random	Logistic	n.s.(7.71e-08,0.00056)	n.s., +*, n.s.(4.8e-05,0.000549)	n.s., -,n.s.(4.81e-05,0.000549)	n.s.,n.s., n.s.(4.15e-05,0.000159)
	Linear	n.s.(4.15e-08,0.000635)	n.s., n.s.,n.s.(4.14e-08,0.000635)	n.s., -,n.s.(3.98e-05,0.000628)	n.s.,n.s., n.s.(3.3e-05,8.06e-05)
	Exponential1	-(0.000237,0.000334)	-, n.s., n.s.(0.000237,0.000334)	-, n.s., +*(0.000519,0.000525)	-,n.s.,n.s.(0.00028,0.000372)
	Exponential2	n.s.(6.14e-08,0.00064)	n.s.,n.s.,n.s.(3.07e-08,0.000375)	n.s., -,n.s.(4.03e-05,0.000631)	n.s.,n.s., n.s.(3.32e-05,8.18e-05)
	Hump centered	n.s.(1.48e-07,0.000635)	n.s.,n.s., n.s.(1.48e-07,0.000635)	n.s., -,n.s.(4.03e-05,0.000628)	n.s.,n.s., n.s.(3.56e-05,8.32e-05)
	Hump non-centered	-(7.42e-05,0.000512)	n.s., n.s.,n.s.(4.59e-08,0.000629)	n.s., -,n.s.(3.95e-05,0.000621)	n.s.,n.s., n.s.(3.28e-05,7.99e-05)
	Logistic	n.s.(4.04e-08,0.000374)	n.s.,n.s., n.s.(1.33e-07,0.00064)	n.s., -,n.s.(4.11e-05,0.000631)	n.s.,n.s., n.s.(3.34e-05,8.35e-05)

Table S7

For negative RMSE (-RMSE) and 100% random variation

Depicted are the direction of single and interactive effects (first two are the individual effects of predictor A and B and third one is the interactive effect) as well as marginal and conditional R2 values for the respective models (in parentheses)

		Effect:	Model 1	Model 2	Model 3	Model 4
systematic	Response shape	~Replicates		~Replicates*Predictor extremes (excluded/included)	~Replicates*Pattern (kown/unknown)	~Replicates*Total sample size
	Linear		+*(0.00205,0.459)	+*,n.s., n.s.(0.00205,0.459)	-, -, +*(0.035,0.447)	+*, +*, -(0.305,0.366)
	Exponential1		n.s.(1.01e-05,6.62e-05)	-, n.s., n.s.(0.00453,0.597)	-, -, -(0.179,0.528)	+*, +*, -(0.181,0.508)
	Exponential2		-(7.57e-05,0.491)	-, n.s., n.s.(7.57e-05,0.491)	-, -, +*(0.0464,0.475)	+*, +*, -(0.288,0.375)
	Hump centered		+*(0.00301,0.515)	+*, n.s., n.s.(0.003,0.515)	n.s., -, +*(0.0234,0.509)	+*, +*, -(0.385,0.422)
	Hump non-centered		+*(0.000749,0.461)	+*, n.s., n.s.(0.000749,0.46)	-, -, +*(0.032,0.451)	+*, +*, -(0.298,0.354)
	Logistic		-(0.0124,0.501)	-, n.s., n.s.(0.0124,0.501)	-, -, +*(0.021,0.508)	+*, +*, -(0.337,0.339)
log systematic	Linear		-(5.26e-05,0.0994)	n.s., n.s., n.s.(5.26e-05,0.0994)	-, -, +*(0.00866,0.0947)	+*, +*, -(0.00775,0.0223)
	Exponential1		-(5.9e-05,0.102)	n.s., n.s., n.s.(5.9e-05,0.102)	-, -, +*(0.00889,0.0972)	+*, +*, -(0.00781,0.0228)
	Exponential2		-(5.8e-05,0.103)	n.s., n.s., n.s.(5.8e-05,0.103)	-, -, +*(0.00885,0.0979)	+*, +*, -(0.00785,0.0228)
	Hump centered		-(9.19e-05,0.104)	-, n.s., n.s.(9.19e-05,0.104)	-, -, +*(0.00885,0.099)	+*, +*, -(0.00795,0.0229)
	Hump non-centered		-(5.66e-05,0.0998)	n.s., n.s., n.s.(5.66e-05,0.0998)	-, -, +*(0.00868,0.0951)	+*, +*, -(0.00772,0.0223)
	Logistic		-(5.57e-05,0.101)	n.s., n.s., n.s.(5.57e-05,0.101)	-, -, +*(0.00875,0.0967)	+*, +*, -(0.00783,0.0225)
	preferential extremes	Linear		n.s.(1.95e-07,0.000142)	n.s., n.s., n.s.(1.62e-05,0.000148)	n.s., n.s., n.s.(1.63e-05,0.000148)
Exponential1			n.s.(6.86e-07,8.74e-05)	n.s., n.s., n.s.(3.17e-05,7.5e-05)	n.s., n.s., n.s.(3.17e-05,7.5e-05)	-, n.s., +*(4.85e-05,0.000135)
Exponential2			n.s.(1.82e-06,0.00124)	n.s., +*, n.s.(0.000153,0.00115)	n.s., -, n.s.(0.000163,0.00114)	n.s., +*, n.s.(0.000119,0.000632)
Hump centered			n.s.(3.58e-06,0.000301)	n.s., +*, n.s.(7.32e-05,0.000249)	n.s., -, n.s.(6.33e-05,0.000259)	n.s., n.s., n.s.(5.11e-05,0.000274)
Hump non-centered			n.s.(3.23e-07,0.000563)	n.s., +*, n.s.(7.13e-05,0.000526)	n.s., -, n.s.(7.41e-05,0.000524)	n.s., +*, n.s.(4.92e-05,0.00027)
Logistic			n.s.(4.48e-07,0.000748)	n.s., +*, n.s.(9.77e-05,0.000696)	n.s., -, n.s.(1e-04,0.000697)	n.s., +*, n.s.(8.13e-05,0.000383)
preferential slope		Linear		n.s.(4.69e-07,0.000312)	n.s., n.s., n.s.(3.45e-05,0.000303)	n.s., -, n.s.(8.48e-05,0.00027)
	Exponential1		n.s.(1.96e-07,0.00382)	+, +*, -(0.000417,0.00362)	-, -, +*(0.000417,0.00362)	+*, +*, -(0.000425,0.00167)
	Exponential2		n.s.(1.79e-07,0.00136)	n.s., +*, n.s.(0.000137,0.00129)	n.s., -, n.s.(0.000137,0.00129)	n.s., +*, n.s.(0.000109,0.000519)
	Hump centered		n.s.(1.84e-07,0.000465)	n.s., +*, n.s.(5.93e-05,0.000435)	n.s., -, n.s.(6.66e-05,0.00044)	n.s., +*, n.s.(6.33e-05,0.000244)
	Hump non-centered		n.s.(3.57e-07,0.000665)	n.s., +*, n.s.(9.81e-05,0.00061)	n.s., -, n.s.(0.000113,6e-04)	n.s., +*, n.s.(7.76e-05,0.000409)
	Logistic		n.s.(1.15e-06,0.0043)	n.s., +*, -(0.000489,0.004)	-, -, +*(0.000489,0.004)	+*, +*, -(0.000385,0.00196)
	preferential slope +extremes	Linear		n.s.(1.95e-06,0.000761)	n.s., +*, n.s.(0.000109,0.000684)	n.s., -, n.s.(0.000133,0.000665)
Exponential1			n.s.(2.29e-05,0.000471)	n.s., +*, n.s.(9.99e-05,0.000415)	n.s., +*, n.s.(9.99e-05,0.000415)	-, n.s., n.s.(9.2e-05,0.000359)
Exponential2			n.s.(2.31e-06,0.00145)	n.s., +*, n.s.(7.45e-05,0.00141)	n.s., -, n.s.(0.000134,0.00137)	n.s., +*, n.s.(9.21e-05,0.000419)
Hump centered			n.s.(4.89e-06,0.00139)	n.s., +*, n.s.(0.000139,0.0013)	n.s., -, n.s.(0.000159,0.00131)	n.s., +*, n.s.(0.000159,0.00062)
Hump non-centered			n.s.(1.1e-07,0.000264)	n.s., n.s., n.s.(1.85e-05,0.00027)	n.s., n.s., n.s.(1.86e-05,0.00027)	n.s., n.s., n.s.(1.6e-05,3.98e-05)
Logistic			n.s.(9.14e-08,0.000536)	n.s., +*, n.s.(4.57e-05,0.000527)	n.s., -, n.s.(4.57e-05,0.000527)	n.s., n.s., n.s.(4.07e-05,0.00015)
random		Linear		n.s.(4.15e-08,0.000635)	n.s., n.s., n.s.(4.14e-08,0.000635)	n.s., -, n.s.(3.98e-05,0.000628)
	Exponential1		-(0.000237,0.000334)	-, n.s., n.s.(0.000237,0.000334)	-, n.s., +*(0.000519,0.000525)	-, n.s., n.s.(0.00028,0.000372)
	Exponential2		n.s.(4.37e-08,0.000636)	n.s., n.s., n.s.(3.07e-08,0.000375)	n.s., -, n.s.(3.98e-05,0.000628)	n.s., n.s., n.s.(3.31e-05,8.07e-05)
	Hump centered		n.s.(1.15e-07,0.000623)	n.s., n.s., n.s.(1.15e-07,0.000623)	n.s., -, n.s.(3.77e-05,0.000617)	n.s., n.s., n.s.(3.39e-05,7.68e-05)
	Hump non-centered		-(7.42e-05,0.000512)	n.s., n.s., n.s.(4.01e-08,0.000628)	n.s., -, n.s.(3.95e-05,0.00062)	n.s., n.s., n.s.(3.28e-05,7.99e-05)
	Logistic		n.s.(4.04e-08,0.000374)	n.s., n.s., n.s.(7.48e-08,0.000627)	n.s., -, n.s.(3.9e-05,0.000621)	n.s., n.s., n.s.(3.29e-05,7.85e-05)

Table S8. Mean prediction accuracy for the different sampling strategies and underlying response shapes as well as for different levels of noise and a priori knowledge on the underlying response shape. Prediction accuracy is measured as Chalcraft's prediction success (median of 1000 model runs per scenario).

Sampling strategy:	Noise:	20		100	
	Pattern:	known	unknown	known	unknown
systematic	Response shape:				
	Linear	0,982825765	0,971738169	0,64037098	0,471478727
	Exponential1	0,93032578	0,42083389	-0,694202966	-0,187709612
	Exponential2	0,788237756	0,899764149	0,407992462	0,222848635
	Hump centered	0,974432342	0,965800228	0,525210237	0,416220211
	Hump non-centered	0,902390095	0,962821724	0,568800577	0,462310652
log systematic	Logistic	0,959795427	0,890533129	0,479851657	0,416925457
	Linear	0,977810786	0,954085581	0,529994706	0,127291708
	Exponential1	0,929319926	-0,255886251	-0,713557945	-1,508316006
	Exponential2	0,553812089	0,569371149	0,116604443	-0,871094778
	Hump centered	0,925812934	0,866690624	-0,191269771	-1,128460478
	Hump non-centered	0,738327515	0,79091213	0,217804322	-0,09717776
preferential extremes	Logistic	0,841724016	0,233903138	-0,428009078	-0,222420486
	Linear	0,982099083	0,966686389	0,615825272	0,367400536
	Exponential1	0,756379489	-0,216963143	-0,055304784	-0,566253414
	Exponential2	0,729549413	0,769111412	0,156465157	-0,121953012
	Hump centered	0,956577131	0,935123281	0,304601615	-0,049722985
	Hump non-centered	0,884252519	0,924306718	0,501498841	0,304875869
preferential slope	Logistic	0,866808263	0,758791613	0,270404476	0,259845183
	Linear	0,975068885	0,953454263	0,527741704	0,227403564
	Exponential1	0,893915011	-0,675941378	-1,714833883	-1,098359545
	Exponential2	0,598086879	-0,125990513	0,083496673	-0,430822214
	Hump centered	0,954465048	0,926966164	0,306508955	-0,325906756
	Hump non-centered	0,884457503	0,879897362	0,473565983	0,131922692
preferential slope +extremes	Logistic	0,914707635	-0,06881418	0,223306381	-0,204176604
	Linear	0,977769444	0,95708451	0,552814006	0,246706662
	Exponential1	0,81757536	-0,377831824	-0,055955215	-0,660399118
	Exponential2	0,700055021	0,676568383	0,254979623	-0,103053478
	Hump centered	0,9570291	0,930402474	0,321890216	-0,160481719
	Hump non-centered	0,895943617	0,911386326	0,525604994	0,242351225
random	Logistic	0,926817565	-0,162535199	0,327994024	-0,1483867
	Linear	0,976252979	0,955559632	0,542019667	0,260273413
	Exponential1	0,21277895	-0,958484742	-0,054800801	-0,686932192
	Exponential2	0,697816759	0,657414003	-0,029434208	-0,157274199
	Hump centered	0,944513837	0,912856494	0,237427122	-0,221413243
	Hump non-centered	0,891188378	0,897761286	0,473271603	0,23856672
	Logistic	0,920515423	0,723691455	0,337675923	0,249653106

Table S9. Mean prediction accuracy for the different sampling strategies and underlying response shapes as well as for different levels of noise and a priori knowledge on the underlying response shape. Prediction accuracy is measured as multiple R2 (median of 1000 model runs per scenario).

Sampling strategy:	Noise:	20		100	
	Pattern:	known	unknown	known	unknown
systematic	Response shape:				
	Linear	1	1	1	1
	Exponential1	1	0,54393252	1	0,147850071
	Exponential2	0,843451075	0,945351454	0,843451075	0,614616539
	Hump centered	0,995498386	0,990806077	0,895975905	0,761077623
	Hump non-centered	0,937383003	0,9909296	0,937383003	0,937383003
log systematic	Logistic	0,978830771	0,928228487	0,791384724	0,723179174
	Linear	1	1	1	1
	Exponential1	1	0,276865539	1	0,147850071
	Exponential2	0,843451075	0,839484999	0,843451075	0,614616539
	Hump centered	0,994541072	0,985759525	0,904090803	0,23136694
	Hump non-centered	0,937383003	0,937383003	0,937383003	0,937383003
preferential extremes	Logistic	0,925485057	0,723179174	0,683105236	0,723179174
	Linear	1	1	1	1
	Exponential1	1	0,292005452	1	0,147850071
	Exponential2	0,843451075	0,902969819	0,843451075	0,614616539
	Hump centered	0,991712825	0,980621784	0,840020157	0,485171722
	Hump non-centered	0,937383003	0,968741224	0,937383003	0,937383003
preferential slope	Logistic	0,918777846	0,886781159	0,702581154	0,723179174
	Linear	1	1	1	1
	Exponential1	1	0,147850071	1	0,147850071
	Exponential2	0,843451075	0,614616539	0,843451075	0,614616539
	Hump centered	0,992313038	0,981870682	0,84379687	0,379488935
	Hump non-centered	0,937383003	0,937383003	0,937383003	0,937383003
preferential slope +extremes	Logistic	0,984224577	0,723179174	0,851507635	0,723179174
	Linear	1	1	1	1
	Exponential1	1	0,255625045	1	0,147850071
	Exponential2	0,843451075	0,863505156	0,843451075	0,614616539
	Hump centered	0,991297356	0,979421987	0,822153027	0,421238284
	Hump non-centered	0,937383003	0,937383003	0,937383003	0,937383003
random	Logistic	0,983575959	0,691065405	0,848414927	0,723179174
	Linear	1	1	1	1
	Exponential1	1	0,147850071	1	0,147850071
	Exponential2	0,843451075	0,860881181	0,843451075	0,614616539
	Hump centered	0,987883649	0,969600575	0,79057174	0,294041353
	Hump non-centered	0,937383003	0,937383003	0,937383003	0,937383003
	Logistic	0,963453269	0,838960608	0,724764804	0,723179174

Table S10. Mean prediction accuracy for the different sampling strategies and underlying response shapes as well as for different levels of noise and a priori knowledge on the underlying response shape. Prediction accuracy is measured as RMSE (negative values; median of 1000 model runs per scenario).

Sampling strategy:	Noise:	20		100	
	Pattern:	known	unknown	known	unknown
systematic	Response shape:				
	Linear	-0,038203529	-0,048890066	-0,191017643	-0,244450329
	Exponential1	-0,029972145	-0,150960092	-0,149860727	-0,333313685
	Exponential2	-0,118646631	-0,078777597	-0,221808469	-0,285570722
	Hump centered	-0,048284575	-0,055662056	-0,241422875	-0,308901048
	Hump non-centered	-0,090247969	-0,058354206	-0,207806819	-0,254620807
log systematic	Logistic	-0,087310644	-0,139687225	-0,339139607	-0,314246797
	Linear	-0,043254636	-0,062268667	-0,21627318	-0,311343333
	Exponential1	-0,030231897	-0,3435602	-0,151159485	-0,529956214
	Exponential2	-0,184896991	-0,198261716	-0,268873719	-0,43665351
	Hump centered	-0,082672552	-0,11143663	-0,413362759	-0,588307428
	Hump non-centered	-0,135710581	-0,131523161	-0,251798662	-0,342294063
preferential extremes	Logistic	-0,157608751	-0,317865431	-0,418532836	-0,42569712
	Linear	-0,038877491	-0,053101178	-0,194387457	-0,265505892
	Exponential1	-0,057332497	-0,148971809	-0,286662483	-0,360270789
	Exponential2	-0,129267531	-0,130207837	-0,25182108	-0,342777961
	Hump centered	-0,063037157	-0,077441182	-0,315185785	-0,414247808
	Hump non-centered	-0,098894535	-0,083117418	-0,223117385	-0,28993155
preferential slope	Logistic	-0,157016132	-0,190157263	-0,401172377	-0,371789091
	Linear	-0,045929748	-0,063097418	-0,229648742	-0,315487089
	Exponential1	-0,036935789	-4,814041205	-0,184678943	-2,711695994
	Exponential2	-0,202629642	-0,506331015	-0,330204071	-0,674303762
	Hump centered	-0,064397703	-0,082148362	-0,321988516	-0,423537166
	Hump non-centered	-0,110351485	-0,109883145	-0,26882929	-0,367959943
preferential slope +extremes	Logistic	-0,122618225	-1,448720424	-0,466518234	-1,211375249
	Linear	-0,04337534	-0,06036564	-0,2168767	-0,301828199
	Exponential1	-0,048435694	-0,266509011	-0,242178472	-0,430629132
	Exponential2	-0,152945884	-0,165225691	-0,263325445	-0,375745958
	Hump centered	-0,062753626	-0,080070062	-0,313768128	-0,42095186
	Hump non-centered	-0,101370214	-0,092055504	-0,24000151	-0,320637612
random	Logistic	-0,1142214	-1,375190596	-0,449482999	-1,159926982
	Linear	-0,044899081	-0,061437837	-0,224495407	-0,307189186
	Exponential1	-0,136441781	-0,128104277	-0,682208907	-0,334264899
	Exponential2	-0,117564979	-0,142027355	-0,252386442	-0,350142341
	Hump centered	-0,071465485	-0,090540846	-0,357327426	-0,441784341
	Hump non-centered	-0,096917086	-0,096811108	-0,24130826	-0,321334656
	Logistic	-0,121170184	-0,235601521	-0,414970323	-0,42254753

Table S11: Papers used for the literature survey on experimental designs used in ecological research. Six papers per year over 35 years from 1988 until 2022 were randomly selected from a literature pool screened in web of science with the topic "experiment* not model" refined by document type "article" and the web of science category "ecology".

Authors	Article title	Source Title	Publication		
			Year	Volume	Issue
Lancaster, J; Hildrew, AG; Townsend, CR	Competition for space by predators in streams - field experiments on a net-spinning caddisfly	FRESHWATER BIOLOGY	1988	20	2
Worthen, WB	Slugs (<i>Arion</i> spp) facilitate Mycophagous drosophilids in laboratory and field experiments	OIKOS	1988	53	2
Arnold, RLB; Ghersa, CM; Sanchez, RA; Fernandez, AEG	The role of fluctuating temperatures in the germination and establishment of <i>Sorghum halepense</i> (L.) Pers. regulation of germination under leaf canopies	FUNCTIONAL ECOLOGY	1988	2	3
Barnes, PW; Jordan, PW; Gold, WG; Flint, SD; Caldwell, MM	Competition, morphology and canopy structure in wheat (<i>Triticum aestivum</i> L.) and wild oat (<i>Avena fatua</i> L.) exposed to enhanced ultraviolet-B radiation	FUNCTIONAL ECOLOGY	1988	2	3
Thronsdon, J; Kristiansen, S	Nanoplankton communities in haltenbanken waters (Norwegian sea) during an oil-spill experiment, July-August 1982	SARSIA	1988	73	1
Dale, T	Oil pollution and plankton dynamics. 6. Controlled ecosystem experiments in lindaspollene, Norway, June 1981 - effects on planktonic ciliates following nutrient addition to natural and oil-polluted enclosed water columns	SARSIA	1988	73	3
Marrs, RH; Rizand, A; Harrison, AF	The effects of removing sheep grazing on soil chemistry, above-ground nutrient distribution, and selected aspects of soil fertility in long-term experiments at Moor House National Nature Reserve	JOURNAL OF APPLIED ECOLOGY	1989	26	2
Woinarski, JCZ; Cullen, JM; Hull, C; Nayudu, R	Lerp-feeding in birds - a smorgasbord experiment	AUSTRALIAN JOURNAL OF ECOLOGY	1989	14	2
Leonard, ML; Horn, AG; Eden, SF	Does juvenile helping enhance breeder reproductive success - a removal experiment on moorhens	ECOLOGY AND SOCIOBIOLOGY	1989	25	5
Gryseels, M	Nature management experiments in a derelict reedmarsh .1. Effects of winter cutting	BIOLOGICAL CONSERVATION	1989	47	3
Meyer, HA; Bell, SS	Response of harpacticoid copepods to detrital accumulation on seagrass blades - a field experiment with metis-holothuriae (<i>edwardsi</i>)	JOURNAL OF EXPERIMENTAL MARINE BIOLOGY AND ECOLOGY	1989	132	2
Geider, RJ	Use of radiolabeled tracers in dilution grazing experiments to estimate bacterial growth and loss rates	MICROBIAL ECOLOGY	1989	17	1
Byrne, M; Mazer, SJ Schulz, S; Francke, W; Kong, WA; Schurig, V; Mori, K; Kittmann, R; Schneider, D	The effect of position on fruit characteristics, and relationships among components of yield in <i>Phytolacca rivinoides</i> (<i>Phytolaccaceae</i>)	BIOTROPICA JOURNAL OF CHEMICAL ECOLOGY	1990	22	4
Wildish, DJ; Miyares, MP	Male pheromone of swift moth, <i>hepialus-hecta</i> l (<i>lepidoptera</i> , <i>hepialidae</i>)	JOURNAL OF EXPERIMENTAL MARINE BIOLOGY AND ECOLOGY	1990	16	12
	Filtration rate of blue mussels as a function of flow velocity - preliminary experiments	JOURNAL OF EXPERIMENTAL MARINE BIOLOGY AND ECOLOGY	1990	142	3
Hall, SJ; Raffaelli, DJ; Basford, DJ; Robertson, MR	The importance of flatfish predation and disturbance on marine benthos - an experiment with dab <i>Limanda limanda</i> (L)	JOURNAL OF EXPERIMENTAL MARINE BIOLOGY AND ECOLOGY	1990	136	1
Hargeby, A	Effects of ph, humic substances and animal interactions on survival and physiological status of <i>asellus-aquaticus</i> l and <i>gammarus-pulex</i> (l) - a field experiment	OECOLOGIA	1990	82	3
Naas, KE; Mangorjensen, A	Positive phototaxis during late yolksac-stage of atlantic halibut larvae <i>Hippoglossus hippoglossus</i> (L)	SARSIA	1990	75	3
Vavrek, MC; McCgraw, JB; Bennington, CC	Ecological Genetic variation in seed banks. 3. Phenotypic and Genetic differences between young and old seed populations of <i>Carex bigelowii</i>	JOURNAL OF ECOLOGY	1991	79	3
Salom, SM; McLean, JA	Flight behavior of scolytid beetle in response to semiochemicals at different wind speeds	JOURNAL OF CHEMICAL ECOLOGY	1991	17	3

Bertness, MD	Interspecific interactions among high marsh perennials in a new-england salt-marsh	ECOLOGY BEHAVIORAL	1991	72	1
Shutler, D; Weatherhead, PJ	Owner and floater red-winged blackbirds - determinants of status	ECOLOGY AND SOCIOBIOLOGY	1991	28	4
Madej, CW; Clay, K	Avian seed preference and weight-loss experiments - the effect of fungal endophyte-infected tall fescue seeds	OECOLOGIA	1991	88	2
Harvey, BC	Interactions among stream fishes - predator-induced habitat shifts and larval survival	OECOLOGIA BEHAVIORAL	1991	87	1
Judson, OP; Bennett, ATD	Anting as food preparation - formic-acid is worse on an empty stomach	ECOLOGY AND SOCIOBIOLOGY	1992	31	6
Mariko, S; Kachi, N; Ishikawa, S; Furukawa, A	Germination ecology of coastal plants in relation to salt environment	ECOLOGICAL RESEARCH	1992	7	3
Salomonson, A; Ohlson, M; Ericson, L	The effect of potassium on growth and nutrient-uptake in 2 forest herbs with different chemical defense systems	OIKOS	1992	65	3
Olafsson, E	Small-scale spatial-distribution of marine meiobenthos - the effects of decaying macrofauna	OECOLOGIA ANNALES	1992	90	1
Helle, T; Aspi, J; Lempa, K; Taskinen, E	Strategies to avoid biting flies by reindeer - field experiments with silhouette traps	ZOOLOGICI FENNICI	1992	29	2
Johnson, LE	Potential and peril of field experimentation - the use of copper to manipulate molluscan herbivores	JOURNAL OF EXPERIMENTAL MARINE BIOLOGY AND ECOLOGY	1992	160	2
Johnson, AS; Sebens, KP	Consequences of a flattened morphology - effects of flow on feeding rates of the scleractinian coral <i>Meandrina meandrites</i>	MARINE ECOLOGY PROGRESS SERIES	1993	99	1-2
Buck, S; Nicholson, M; Dudas, S; Wells, R; Force, A; Baker, GT; Arking, R	Larval regulation of adult longevity in a genetically-selected long-lived strain of <i>Drosophila</i>	HEREDITY	1993	71	
Nolen, JA; Pearson, RG	Factors affecting litter processing by <i>Anisocentropus kirramus</i> (Trichoptera, Calamoceratidae) from an Australian tropical rain-forest stream	FRESHWATER BIOLOGY	1993	29	3
Mountford, JO; Lakhani, KH; Kirkham, FW	Experimental assessment of the effects of nitrogen addition under hay-cutting and aftermath grazing on the vegetation of meadows on a somerset peat moor	JOURNAL OF APPLIED ECOLOGY	1993	30	2
Lumaret, JP; Galante, E; Lumbreras, C; Mena, J; Bertrand, M; Bernal, JL; Cooper, JF; Kadiri, N; Crowe, D	Field effects of ivermectin residues on dung beetles	JOURNAL OF APPLIED ECOLOGY	1993	30	3
Davis, BNK; Lakhani, KH; Brown, MC	Experiments on the effects of fertilizer and rabbit grazing treatments upon the vegetation of a limestone quarry floor	JOURNAL OF APPLIED ECOLOGY BEHAVIORAL ECOLOGY AND SOCIOBIOLOGY	1993	30	4
Johnston, CE	Nest association in fishes - evidence for mutualism		1994	35	6
Barbeau, MA; Scheibling, RE; Hatcher, BG; Taylor, LH; Hennigar, AW	Survival analysis of tethered juvenile sea scallops <i>Placopecten magellanicus</i> in field experiments - effects of predators, scallop size and density, site and season	MARINE ECOLOGY PROGRESS SERIES	1994	115	3
Stuefer, JF; Hutchings, MJ	Environmental heterogeneity and clonal growth - a study of the capacity for reciprocal translocation in <i>Glechoma hederacea</i> L.	OECOLOGIA	1994	100	3
Phelps, TJ; Pfiffner, SM; Sargent, KA; White, DC	Factors influencing the abundance and metabolic capacities of microorganisms in eastern coastal-plain sediments	MICROBIAL ECOLOGY	1994	28	3
Heske, EJ; Brown, JH; Mistry, S	Long-term experimental-study of a chihuahuan desert rodent community - 13 years of competition	ECOLOGY JOURNAL OF	1994	75	2
Zaady, E; Okon, Y; Perevolotsky, A	Growth-response of mediterranean herbaceous swards to inoculation with <i>Azospirillum brasilense</i>	RANGE MANAGEMENT	1994	47	1
Matthies, D	Host-parasite relations in the root hemiparasite <i>Melampyrum arvense</i>	FLORA BEHAVIORAL	1995	190	4
Eklov, P; Persson, L	Species-specific antipredator capacities and prey refuges - interactions between piscivorous perch (<i>Perca fluviatilis</i>) and juvenile perch and roach (<i>Rutilus rutilus</i>)	ECOLOGY AND SOCIOBIOLOGY	1995	37	3

Bradford, MJ; Roff, DA	Genetic and phenotypic sources of life-history variation along a cline in voltinism in the cricket <i>Allonemobius socius</i>	OECOLOGIA	1995	103	3
Wipking, W	Influences of daylength and temperature on the period of diapause and its ending process in dormant larvae of burnet moths (Lepidoptera, Zygaenidae)	OECOLOGIA	1995	102	2
Daldorph, PWG; Thomas, JD	Factors influencing the stability of nutrient-enriched fresh-water macrophyte communities - the role of sticklebacks	FRESHWATER BIOLOGY	1995	33	2
Burslem, DFRP; Grubb, PJ; Turner, IM	<i>Pungitius pungitius</i> and fresh-water snails	JOURNAL OF ECOLOGY	1995	83	1
Lampert, W; Trubetskova, I	Responses to nutrient addition among shade-tolerant tree seedlings of lowland tropical rain-forest in singapore	FUNCTIONAL ECOLOGY	1996	10	5
Guo, QF; Brown, JH	Juvenile growth rate as a measure of fitness in daphnia	OECOLOGIA	1996	107	4
PerkinsVisser, E; Wolcott, TG; Wolcott, DL	Temporal fluctuations and experimental effects in desert plant communities	OECOLOGIA	1996	107	4
PerkinsVisser, E; Wolcott, TG; Wolcott, DL	Nursery role of seagrass beds: enhanced growth of juvenile blue crabs (<i>Callinectes sapidus</i> rathbun)	JOURNAL OF EXPERIMENTAL MARINE BIOLOGY AND ECOLOGY	1996	198	2
Mohammed, AE; Stigter, CJ; Adam, HS	On shelterbelt design for combating sand invasion	AGRICULTURE ECOSYSTEMS & ENVIRONMENT	1996	57	2-3
Sogard, SM; Olla, BL	Food deprivation affects vertical distribution and activity of a marine fish in a thermal gradient: potential energy-conserving mechanisms	MARINE ECOLOGY PROGRESS SERIES	1996	133	1-3
Creed, JC; Norton, TA; Kain, JM	Are neighbours harmful or helpful in <i>fucus vesiculosus</i> populations?	MARINE ECOLOGY PROGRESS SERIES	1996	133	1-3
Marino, PC; Gross, KL; Landis, DA	Weed seed loss due to predation in Michigan maize fields	AGRICULTURE ECOSYSTEMS & ENVIRONMENT	1997	66	3
Brown, SC; Bedford, BL	Restoration of wetland vegetation with transplanted wetland soil: an experimental study	WETLANDS	1997	17	3
Chimbari, MJ; Madsen, H; Ndamba, J	Simulated field trials to evaluate the effect of <i>Sargochromis codringtoni</i> and <i>Tilapia rendalli</i> on snails in the presence and absence of aquatic plants	JOURNAL OF APPLIED ECOLOGY	1997	34	4
Eek, L; Zobel, K	Effects of additional illumination and fertilization on seasonal changes in fine-scale grassland community structure	JOURNAL OF VEGETATION SCIENCE	1997	8	2
Streitwolf Engel, R; Boller, T; Wiemken, A; Sanders, IR	Clonal growth traits of two <i>Prunella</i> species are determined by co-occurring arbuscular mycorrhizal fungi from a calcareous grassland	JOURNAL OF ECOLOGY	1997	85	2
Kennish, R; Williams, GA	Feeding preferences of the herbivorous crab <i>Grapsus albolineatus</i> : The differential influence of algal nutrient content and morphology	MARINE ECOLOGY PROGRESS SERIES	1997	147	1-3
Welsh, HH; Ollivier, LM	Stream amphibians as indicators of ecosystem stress: A case study from California's redwoods	ECOLOGICAL APPLICATIONS	1998	8	4
Jonsson, BG; Esseen, PA	Plant colonisation in small forest-floor patches: importance of plant group and disturbance traits	ECOGRAPHY	1998	21	5
Vaughton, G	Soil seed bank dynamics in the rare obligate seeding shrub, <i>Grevillea barklyana</i> (Proteaceae)	AUSTRALIAN JOURNAL OF ECOLOGY	1998	23	4
Raghukumar, C; Raghukumar, S	Barotolerance of fungi isolated from deep-sea sediments of the Indian Ocean	MICROBIAL ECOLOGY	1998	15	2
Zackrisson, O; Dahlberg, A; Norberg, G; Nilsson, MC; Jaderlund, A	Experiments on the effects of water availability and exclusion of fungal hyphae on nutrient uptake and establishment of <i>Pinus sylvestris</i> seedlings in carpets of the moss <i>Pleurozium schreberi</i>	ECOSCIENCE	1998	5	1
Puvanendran, V; Brown, JA	Effect of light intensity on the foraging and growth of Atlantic cod larvae: interpopulation difference?	MARINE ECOLOGY PROGRESS SERIES	1998	167	
Solbakken, JS; Norberg, B; Watanabe, K; Pittman, K	ENVIRONMENTAL BIOLOGY OF FISHES				
Solbakken, JS; Norberg, B; Watanabe, K; Pittman, K	Thyroxine as a mediator of metamorphosis of Atlantic halibut, <i>Hippoglossus hippoglossus</i>	BIOLOGY OF FISHES	1999	56	1-2

Goodsell, JA; Kats, LB	Effect of introduced mosquitofish on pacific treefrogs and the role of alternative prey	CONSERVATION BIOLOGY	1999	13	4
Briers, RA; Warren, PH	Competition between the nymphs of two regionally co-occurring species of Notonecta (Hemiptera : Notonectidae)	FRESHWATER BIOLOGY	1999	42	1
Arnvist, G; Danielsson, I	Postmating sexual selection: the effects of male body size and recovery period on paternity and egg production rate in a water strider	BEHAVIORAL ECOLOGY	1999	10	4
Lindenmayer, DB; Cunningham, RB; Pope, ML	A large-scale experiment to examine the effects of landscape context and habitat fragmentation on mammals	BIOLOGICAL CONSERVATION JOURNAL OF CHEMICAL ECOLOGY	1999	88	3
Leal, WS	Enantiomeric anosmia in scarab beetles	ECOLOGY J OF THE NORTH AMERICAN BENTHOLOGICAL SOCIETY	1999	25	5
Morrice, JA; Dahm, CN; Valett, HM; Unnikrishna, PV; Campana, ME	Terminal electron accepting processes in the alluvial sediments of a headwater stream	BENTHOLOGICAL SOCIETY	2000	19	4
Cater, TC; Chapin, FS	Differential effects of competition or microenvironment on boreal tree seedling establishment after fire	ECOLOGY	2000	81	4
Jurgens, K; Gasol, JM; Vaque, D	Bacteria-flagellate coupling in microcosm experiments in the Central Atlantic Ocean	JOURNAL OF EXPERIMENTAL MARINE BIOLOGY AND ECOLOGY J OF THE NORTH AMERICAN BENTHOLOGICAL SOCIETY	2000	245	1
Vos, JH; Ooijevaar, MAG; Postma, JF; Admiraal, W	Interaction between food availability and food quality during growth of early instar chironomid larvae	BENTHOLOGICAL SOCIETY	2000	19	1
Stiling, P; Bowdish, TI	Direct and indirect effects of plant clone and local environment on herbivore abundance	ECOLOGY	2000	81	1
Bostrom, C; Bonsdorff, E	Zoobenthic community establishment and habitat complexity - the importance of seagrass shoot-density, morphology and physical disturbance for faunal recruitment	MARINE ECOLOGY PROGRESS SERIES PROCEEDINGS OF THE ROYAL SOCIETY B-BIOLOGICAL SCIENCES JOURNAL OF TROPICAL ECOLOGY	2000	205	
Buckling, A; Read, AF	The effect of partial host immunity on the transmission of malaria parasites	SCIENCES JOURNAL OF TROPICAL ECOLOGY	2001	268	1483
Midgley, JJ; Bond, WJ	A synthesis of the demography of African acacias	ECOLOGY	2001	17	
Kamjunke, N; Mehner, T	Coupling the microbial food web with fish: are bacteria attached to cyanobacteria an important food source for underyearling roach?	FRESHWATER BIOLOGY	2001	46	5
Tanner, JC; Holden, SJ; Owen, E; Winugroho, M; Gill, M	Livestock sustaining intensive smallholder crop production through traditional feeding practices for generating high quality manure-compost in upland Java	AGRICULTURE ECOSYSTEMS & ENVIRONMENT AGRICULTURE	2001	84	1
Kollmann, J; Bassin, S	Effects of management on seed predation in wildflower strips in northern Switzerland	ECOSYSTEMS & ENVIRONMENT JOURNAL OF EVOLUTIONARY BIOLOGY	2001	83	3
Brakefield, PM; El Filali, E; Van der Laan, R; Breuker, CJ; Saccheri, IJ; Zwaan, B	Effective population size, reproductive success and sperm precedence in: the butterfly, <i>Bicyclus anynana</i> , in captivity	EVOLUTIONARY BIOLOGY	2001	14	1
Stien, A; Irvine, RJ; Ropstad, E; Halvorsen, O; Langvatn, R; Albon, SD	The impact of gastrointestinal nematodes on wild reindeer: experimental and cross-sectional studies	JOURNAL OF ANIMAL ECOLOGY	2002	71	6
Guilloy-Froget, H; Muller, E; Barsoum, N; Hughes, FMR	Dispersal, germination, and survival of <i>Populus nigra</i> L. (Salicaceae) in changing hydrologic conditions	WETLANDS	2002	22	3
Rankin, AE; Weller, SG; Sakai, AK	Mating system instability in <i>Schiedea menziesii</i> (Caryophyllaceae)	EVOLUTION	2002	56	8
Morris, PA; Hill, NM; Reekie, EG; Hewlin, HL	Lakeshore diversity and rarity relationships along interacting disturbance gradients: catchment area, wave action and depth	BIOLOGICAL CONSERVATION ANIMAL CONSERVATION	2002	106	1
Amar, A; Redpath, SM	Determining the cause of the hen harrier decline on the Orkney Islands: an experimental test of two hypotheses	CONSERVATION	2002	5	
Greenslade, P; Simpson, JA; Grgurinovic, CA	Collembola associated with fungal fruit-bodies in Australia	PEDOBIOLOGIA JOURNAL OF ECOLOGY	2002	46	3-4
Hastwell, GT; Facelli, JM	Differing effects of shade-induced facilitation on growth and survival during the establishment of a chenopod shrub	ECOLOGY	2003	91	6

Zimmer, M; Kautz, G; Topp, W	Leaf litter-colonizing microbiota: supplementary food source or indicator of food quality for <i>Porcellio scaber</i> (Isopoda : Oniscidea)?	EUROPEAN JOURNAL OF SOIL BIOLOGY	2003	39	4
Campbell, CAM; Cook, FJ; Pickett, JA; Pope, TW; Wadhams, LJ; Woodcock, CM	Responses of the aphids <i>Phorodon humuli</i> AND <i>Rhopalosiphum padi</i> to sex pheromone stereochemistry in the field	JOURNAL OF CHEMICAL ECOLOGY	2003	29	10
Tu, C; Koening, SR; Hu, S	Root-parasitic nematodes enhance soil microbial activities and nitrogen mineralization	MICROBIAL ECOLOGY	2003	46	1
Parker, IM; Rodriguez, J; Loik, ME	An evolutionary approach to understanding the biology of invasions: Local adaptation and general-purpose genotypes in the weed <i>Verbascum thapsus</i>	CONSERVATION BIOLOGY	2003	17	1
Neideman, R; Wenngren, J; Olafsson, E	Competition between the introduced polychaete <i>Marenzelleria</i> sp and the native amphipod <i>Monoporeia affinis</i> in Baltic soft bottoms	MARINE ECOLOGY PROGRESS SERIES	2003	264	
Faveri, SB; Vasconcelos, HL	The Azteca-Cecropia Association: Are ants always necessary for their host plants?	BIOTROPICA	2004	36	4
Ida, H; Hotta, M; Ezaki, Y	Predispersal predation by rodents to beechnuts (<i>Fagus crenata</i> Blume)	ECOLOGICAL RESEARCH ACTA OECOLOGICA-INTERNATIONAL	2004	19	5
Saracino, A; D'Alessandro, CM; Borghetti, M	Seed colour and post-fire bird predation in a Mediterranean pine forest	JOURNAL OF ECOLOGY	2004	26	3
Li, B; Shibuya, T; Yogo, Y; Hara, T	Effects of ramet clipping and nutrient availability on growth and biomass allocation of yellow nutsedge	ECOLOGICAL RESEARCH	2004	19	6
Morgan, JA; Mosier, AR; ...; Parton, WJ	CO ₂ enhances productivity, alters species composition, and reduces digestibility of shortgrass steppe vegetation	ECOLOGICAL APPLICATIONS	2004	14	1
Dobson, SL; Rattanadechakul, W; Marsland, EJ	Fitness advantage and cytoplasmic incompatibility in <i>Wolbachia</i> single- and superinfected <i>Aedes albopictus</i>	HEREDITY JOURNAL OF VEGETATION SCIENCE	2004	93	2
Soudzilovskaia, NA; Onipchenko, VG; Cornelissen, JHC; Aerts, R	Biomass production, N : P ratio and nutrient limitation in a Caucasian alpine tundra plant community		2005	16	4
Joshi, J; Vrieling, K	The enemy release and EICA hypothesis revisited: incorporating the fundamental difference between specialist and generalist herbivores	ECOLOGY LETTERS	2005	8	7
Plenchette, C; Duponnois, R	Growth response of the saltbush <i>Atriplex nummularia</i> L. to inoculation with the arbuscular mycorrhizal fungus <i>Glomus intraradices</i>	JOURNAL OF ARID ENVIRONMENTS	2005	61	4
Fels, D	The effect of food on microparasite transmission in the waterflea <i>Daphnia magna</i>	OIKOS	2005	109	2
Avery, DE	Induction of embryonic dormancy in the calanoid copepod <i>Acartia hudsonica</i> : heritability and phenotypic plasticity in two geographically separated populations	JOURNAL OF EXPERIMENTAL MARINE BIOLOGY AND ECOLOGY	2005	314	2
Tyler, AC; McGlathery, KJ; Macko, SA	Uptake of urea and amino acids by the macroalgae <i>Ulva lactuca</i> (Chlorophyta) and <i>Gracilaria vermiculophylla</i> (Rhodophyta)	MARINE ECOLOGY PROGRESS SERIES	2005	294	
Bernot, RJ; Dodds, WK; Quist, MC; Guy, CS	Temperature and kairomone induced life history plasticity in coexisting <i>Daphnia</i>	AQUATIC ECOLOGY	2006	40	3
Wipf, S; Rixen, C; Mulder, CPH	Advanced snowmelt causes shift towards positive neighbour interactions in a subarctic tundra community	GLOBAL CHANGE BIOLOGY	2006	12	8
Fomina, M; Charnock, JM; Hillier, S; Alexander, IJ; Gadd, GM	Zinc phosphate transformations by the <i>Paxillus involutus</i> /pine ectomycorrhizal association	MICROBIAL ECOLOGY	2006	52	2
Chen, JS; Lei, NF; Yu, D; Dong, M	Differential effects of clonal integration on performance in the stoloniferous herb <i>Duchesnea indica</i> , as growing at two sites with different altitude	PLANT ECOLOGY	2006	183	1
Olson, MH; Colip, MR; Gerlach, JS; Mitchell, DL	Quantifying ultraviolet radiation mortality risk in bluegill larvae: Effects of nest location	ECOLOGICAL APPLICATIONS	2006	16	1
Verweij, MC; Nagelkerken, I; de Graaff, D; Peeters, M; Bakker, EJ; van der Velde, G	Structure, food and shade attract juvenile coral reef fish to mangrove and seagrass habitats: a field experiment	MARINE ECOLOGY PROGRESS SERIES	2006	306	

Rosa, S; Granadeiro, JP; Cruz, M; Palmeirim, JM Gilbert, F; Hulth, S; Grossi, V; Poggiale, JC; Desrosiers, G;	Invertebrate prey activity varies along the tidal cycle and depends on sediment drainage: Consequences for the foraging behaviour of waders	JOURNAL OF EXPERIMENTAL MARINE BIOLOGY AND ECOLOGY	2007	353	1
Rosenberg, R; Gerino, M; Francois-Carcaillet, F; Michaud, E; Stora, G Mohan, JE; Clark, JS; Schlesinger, WH	Sediment reworking by marine benthic species from the Gullmar Fjord (Western Sweden): Importance of faunal biovolume Long-term CO2 enrichment of a forest ecosystem: Implications for forest regeneration and succession Species richness and evenness respond in a different manner to propagule density in developing prairie microcosm communities	JOURNAL OF EXPERIMENTAL MARINE BIOLOGY AND ECOLOGY ECOLOGICAL APPLICATIONS PLANT ECOLOGY	2007	348 1-2	4
Wilsey, B; Stirling, G Kazakou, E; Garnier, E; Navas, ML; Roumet, C; Collin, C; Laurent, G	Components of nutrient residence time and the leaf economics spectrum in species from Mediterranean old-fields differing in successional status Comparisons of mycorrhizal responsiveness with field soil and commercial inoculum for six native montane species and <i>Bromus tectorum</i>	FUNCTIONAL ECOLOGY RESTORATION ECOLOGY	2007	21	2
Rowe, HI; Brown, CS; Claassen, VP Bridgham, SD; Pastor, J; Dewey, B; Weltzin, JF; Updegraff, K	RAPID CARBON RESPONSE OF PEATLANDS TO CLIMATE CHANGE Potential of double-cropped rice ecology to conserve organic carbon under subtropical climate	ECOLOGY GLOBAL CHANGE BIOLOGY	2008	89	11
Adhya, TK; ...; Misra, AK Coleman, A; Richardson, D; Schechter, R; Blumstein, DT de la Fuente, J; Blouin, EF; Manzano-Roman, R; ...; Massung, RF; Jongejan, F; Kocan, KM	Does habituation to humans influence predator discrimination in Gunther's dik-diks (<i>Madoqua guentheri</i>)? Differential Expression of the Tick Protective Antigen Subolesin in <i>Anaplasma marginale</i> - and <i>A-phagocytophilum</i> -infected Host Cells	BIOLOGY LETTERS ANIMAL BIODIVERSITY AND EMERGING DISEASES ANIMAL BIODIVERSITY AND EMERGING DISEASES: PREDICTION AND PREVENTION	2008	4	3
Avila, G; Aguilar, L; Romero-Valdovinos, M; Garcia-Vazquez, F; Flisser, A	Cytokine Response in the Intestinal Mucosa of Hamsters Infected with <i>Taenia solium</i>	PREDICTION AND PREVENTION	2008	1149	
Glatzel, S; Forbrich, I; Kruger, C; Lemke, S; Gerold, G	Small scale controls of greenhouse gas release under elevated N deposition rates in a restoring peat bog in NW Germany	BIOGEOSCIENCES	2008	5	3
McLean, S; Richards, SM; Cover, SL; Brandon, S; Davies, NW; Bryant, JP; Clausen, TP Rinnan, R; Stark, S; Tolvanen, A Esmaeili, MM; Bonis, A; Bouzille, JB; Mony, C; Benot, ML	Papyriferic Acid, An Antifeedant Triterpene From Birch Trees, Inhibits Succinate Dehydrogenase From Liver Mitochondria Responses of vegetation and soil microbial communities to warming and simulated herbivory in a subarctic heath Consequence of ramet defoliation on plant clonal propagation and biomass allocation: Example of five rhizomatous grassland species Ectomycorrhizal fungi associated with <i>Pinus sylvestris</i> seedlings respond differently to increased carbon and nitrogen availability: implications for ecosystem responses to global change	JOURNAL OF CHEMICAL ECOLOGY JOURNAL OF ECOLOGY FLORA GLOBAL CHANGE BIOLOGY	2009	35	10
Alberton, O; Kuyper, TW			2009	97	4
McCall, DD; Rakocinski, CF; Pinckney, JL Eisenhauer, N; Schuy, M; Butenschoen, O; Scheu, S Keith, AR; Bailey, JK; Whitham, TG Bots, J; Van Dongen, S; De Bruyn, L; Van Houtte, N; Van Gossom, H	Effects of grass shrimp versus nutrient addition on epiphytic algae associated with the ephemeral widegrass <i>Ruppia maritima</i> Direct and indirect effects of endogeic earthworms on plant seeds A genetic basis to community repeatability and stability Clutch size and reproductive success in a female polymorphic insect	MARINE ECOLOGY PROGRESS SERIES PEDOBIOLOGIA ECOLOGY EVOLUTIONARY ECOLOGY J OF THE NORTH AMERICAN BENTHOLOGICAL SOCIETY	2009	379	3
Predick, KI; Stanley, EH	Influence of vegetation and seasonal flow patterns on parafluvial nitrogen retention in a 7(th)-order river	BENTHOLOGICAL SOCIETY	2010	91	11
			2010	24	5
			2010	29	3

Levy, G; Shaish, L; Haim, A; Rinkevich, B	Mid-water rope nursery Testing design and performance of a novel reef restoration instrument	ECOLOGICAL ENGINEERING	2010	36	4
Stolle, C; Nagel, K; Labrenz, M; Jurgens, K	Succession of the sea-surface microlayer in the coastal Baltic Sea under natural and experimentally induced low-wind conditions	BIOGEOSCIENCES	2010	7	9
Nayak, KG; Davidar, P	Pollination and breeding systems of woody plant species in tropical dry evergreen forests, southern India	FLORA EVOLUTIONARY	2010	205	11
Perotti, MG; Jara, FG; Ubeda, CA	Adaptive plasticity of life-history traits to pond drying in three species of Patagonian anurans	ECOLOGY RESEARCH	2011	13	4
Kitade, O; Hoshi, M; Odaira, S; Asano, A; Shimizu, M; Hayashi, Y; Lo, N	Evidence for genetically influenced caste determination in phylogenetically diverse species of the termite genus <i>Reticulitermes</i>	BIOLOGY LETTERS EVOLUTIONARY	2011	7	2
Prasai, K; Karlsson, B	Variation in immune defence in relation to developmental pathway in the green-veined white butterfly, <i>Pieris napi</i>	ECOLOGY RESEARCH ACTA OECOLOGICA-INTERNATIONAL	2011	13	3
Scheper, J; Smit, C	The role of rodents in the seed fate of a thorny shrub in an ancient wood pasture	JOURNAL OF ECOLOGY	2011	37	2
Cushman, JH; Lortie, CJ; Christian, CE	Native herbivores and plant facilitation mediate the performance and distribution of an invasive exotic grass	JOURNAL OF ECOLOGY	2011	99	2
Grol, MGG; Nagelkerken, I; Rypel, AL; Layman, CA	Simple ecological trade-offs give rise to emergent cross-ecosystem distributions of a coral reef fish	OECOLOGIA JOURNAL OF	2011	165	1
Kruidhof, HM; Allison, JD; Hare, JD	Abiotic Induction Affects the Costs and Benefits of Inducible Herbivore Defenses in <i>Datura wrightii</i>	CHEMICAL ECOLOGY	2012	38	10
Hoppe, PD; Rosi-Marshall, EJ; Bechtold, HA	The antihistamine cimetidine alters invertebrate growth and population dynamics in artificial streams	FRESHWATER SCIENCE ACTA OECOLOGICA-INTERNATIONAL	2012	31	2
MacNeil, C; Dick, JTA	Intraguild predation may reinforce a species-environment gradient	JOURNAL OF ECOLOGY	2012	41	
Engstedt, O; Koch-Schmidt, P; Larsson, P	Strontium (Sr) uptake from water and food in otoliths of juvenile pike (<i>Esox lucius</i> L.)	JOURNAL OF EXPERIMENTAL MARINE BIOLOGY AND ECOLOGY	2012	418	
Yun, MS; Chung, KH; Zimmermann, S; Zhao, JP; Joo, HM; Lee, SH	Phytoplankton productivity and its response to higher light levels in the Canada Basin	POLAR BIOLOGY	2012	35	2
Armitage, HF; Britton, AJ; van der Wal, R; Pearce, ISK; Thompson, DBA; Woodin, SJ	Nitrogen deposition enhances moss growth, but leads to an overall decline in habitat condition of mountain moss-sedge heath	GLOBAL CHANGE BIOLOGY	2012	18	1
Byrne, M; Foo, S; Soars, NA; Wolfe, KDL; Nguyen, HD; Hardy, N; Dworjanyn, SA	Ocean warming will mitigate the effects of acidification on calcifying sea urchin larvae (<i>Heliocidaris tuberculata</i>) from the Australian global warming hot spot	JOURNAL OF EXPERIMENTAL MARINE BIOLOGY AND ECOLOGY	2013	448	
Magbanua, FS; Townsend, CR; Hageman, KJ; Matthaei, CD Da Silva, EM; King, VM;	Individual and combined effects of fine sediment and the herbicide glyphosate on benthic macroinvertebrates and stream ecosystem function	FRESHWATER BIOLOGY	2013	58	8
Russell-Mercier, JL; Sargent, RD	Evidence for pollen limitation of a native plant in invaded communities	OECOLOGIA	2013	172	2
Alday, JG; Cox, ES; Pakeman, RJ; Harris, MPK; Le Duc, MG; Marrs, RH	Effectiveness of <i>Calluna</i> -heathland restoration methods after invasive plant control	ECOLOGICAL ENGINEERING	2013	54	
Adkins, JK; Barnes, TG	Herbicide Treatment and Timing for Controlling Kentucky Bluegrass (<i>Poa pratensis</i>) and Tall Fescue (<i>Festuca arundinacea</i>) in Cool Season Grasslands of Central Kentucky, USA	NATURAL AREAS JOURNAL	2013	33	1
Ponsard, J; Cambon-Bonavita, MA; Zbinden, M; ...; Compere, P	Inorganic carbon fixation by chemosynthetic ectosymbionts and nutritional transfers to the hydrothermal vent host-shrimp <i>Rimicaris exoculata</i>	ISME JOURNAL	2013	7	1

Speed, JDM; Martinsen, V; Mysterud, A; Mulder, J; Holand, O; Austrheim, G	Long-Term Increase in Aboveground Carbon Stocks Following Exclusion of Grazers and Forest Establishment in an Alpine Ecosystem	ECOSYSTEMS FRESHWATER BIOLOGY	2014	17	7
Wellnitz, T	Can current velocity mediate trophic cascades in a mountain stream?	BIOLOGY	2014	59	11
Lagroe, C; Podgorniak, T; Lecerf, A; Bollache, L	An invasive species may be better than none: invasive signal and native noble crayfish have similar community effects	FRESHWATER BIOLOGY	2014	59	9
Holman, L; Kahn, AT; Backwell, PRY	Fiddlers on the roof: elevation muddles mate choice in fiddler crabs	BEHAVIORAL ECOLOGY	2014	25	2
Wan, NF; Ji, XY; Gu, XJ; Jiang, JX; Wu, JH; Li, B	Ecological engineering of ground cover vegetation promotes biocontrol services in peach orchards	ECOLOGICAL ENGINEERING	2014	64	
Loranger, H; Weisser, WW; Ebeling, A; Eggers, T; De Luca, E; Loranger, J; Roscher, C; Meyer, ST	Invertebrate herbivory increases along an experimental gradient of grassland plant diversity	OECOLOGIA ECOLOGICAL ENGINEERING	2014	174	1
Jones, BEH; Haynes, RJ; Phillips, IR	Influence of amendments on acidification and leaching of Na from bauxite processing sand	ENGINEERING	2015	84	
Roth, F; Stuhldreier, I; Sanchez-Noguera, C; Morales-Ramirez, A; Wild, C	Effects of simulated overfishing on the succession of benthic algae and invertebrates in an upwelling-influenced coral reef of Pacific Costa Rica	JOURNAL OF EXPERIMENTAL MARINE BIOLOGY AND ECOLOGY	2015	468	
Yoon, S; Cruz-Garcia, C; Sanford, R; Ritalahti, KM; Loffler, FE	Denitrification versus respiratory ammonification: environmental controls of two competing dissimilatory NO ₃ -/NO ₂ - reduction pathways in <i>Shewanella loihica</i> strain PV-4	ISME JOURNAL	2015	9	5
Stockwell, MP; Clulow, J; Mahony, MJ	Evidence of a salt refuge: chytrid infection loads are suppressed in hosts exposed to salt	OECOLOGIA LIMNOPERNA FORTUNEI	2015	177	3
Ohkawa, K; Nomura, T	Control of <i>Limnoperna fortunei</i> Fouling: Antifouling Materials and Coatings	FORTUNEI	2015	10	
Van Dyck, H; Bonte, D; Puls, R; Gotthard, K; Maes, D	The lost generation hypothesis: could climate change drive ectotherms into a developmental trap?	OIKOS JOURNAL OF CHEMICAL ECOLOGY	2015	124	1
Wilson, BE; Beuzelin, JM; Allison, JD; Reagan, TE	The Active Space of Mexican Rice Borer Pheromone Traps Individual differences in foraging decisions: information-gathering strategies or flexibility?	BEHAVIORAL ECOLOGY	2016	42	9
Arvidsson, LK; Matthysen, E Muchate, NS; Nikalje, GC; Rajurkar, NS; Suprasanna, P; Nikam, TD	Physiological responses of the halophyte <i>Sesuvium portulacastrum</i> to salt stress and their relevance for saline soil bio-reclamation	FLORA JOURNAL OF CHEMICAL ECOLOGY	2016	224	
Gregg, PC; Del Socorro, AP; Binns, MR	Non-Target Impacts of an Attract-and-Kill Formulation Based on Plant Volatiles: Responses of some Generalist Predators	CHEMICAL ECOLOGY	2016	42	7
Rothenberger, MB; Calomeni, AJ	Complex interactions between nutrient enrichment and zooplankton in regulating estuarine phytoplankton assemblages: Microcosm experiments informed by an environmental dataset	JOURNAL OF EXPERIMENTAL MARINE BIOLOGY AND ECOLOGY	2016	480	
Caldwell, ML; Zanatta, DT; Woolnough, DA	A multi-basin approach determines variability in host fish suitability for unionids in tributaries of the Laurentian Great Lakes	FRESHWATER BIOLOGY	2016	61	7
Urbanek, E; Doerr, SH	CO ₂ efflux from soils with seasonal water repellency	BIOGEOSCIENCES	2017	14	20
Gale, NV; Halim, MA; Horsburgh, M; Thomas, SC	Comparative responses of early-successional plants to charcoal soil amendments	ECOSPHERE	2017	8	10
Legendijk, DDG; Howison, RA; Esselink, P; Ubels, R; Smit, C	Rotation grazing as a conservation management tool: Vegetation changes after six years of application in a salt marsh ecosystem	AGRICULTURE ECOSYSTEMS & ENVIRONMENT	2017	246	
Cerny-Chipman, EB; Sullivan, JM; Menge, BA	Whelk predators exhibit limited population responses and community effects following disease-driven declines of the keystone predator <i>Pisaster ochraceus</i>	MARINE ECOLOGY PROGRESS SERIES	2017	570	
Yannelli, FA; Hughes, P; Kollmann, J	Preventing plant invasions at early stages of revegetation: The role of limiting similarity in seed size and seed density	ECOLOGICAL ENGINEERING	2017	100	
Souza, CV; Nepi, M; Machado, SR; Guimaraes, E	Floral biology, nectar secretion pattern and fruit set of a threatened Bignoniaceae tree from Brazilian tropical forest	FLORA	2017	227	
Tuzun, N; Op de Beeck, L; Oliarinony, R; Van Dievel, M; Stoks, R	Warming under seminatural outdoor conditions in the larval stage negatively affects insect flight performance	BIOLOGY LETTERS	2018	14	5

Soilwedel, T; Guilini, K; Sauter, E; Schewe, I; Hasemann, C	Local effects of large food-falls on nematode diversity at an arctic deep-sea site: Results from an &IT in situ&IT experiment at the deep-sea observatory HAUSGARTEN	JOURNAL OF EXPERIMENTAL MARINE BIOLOGY AND ECOLOGY	2018	502	
Bailes, EJ; Patrrick, JG; Glover, BJ	An analysis of the energetic reward offered by field bean (<i>Vicia faba</i>) flowers: Nectar, pollen, and operative force	ECOLOGY AND EVOLUTION	2018	8	6
Santschi, F; Gounand, I; Harvey, E; Altermatt, F	Leaf litter diversity and structure of microbial decomposer communities modulate litter decomposition in aquatic systems	FUNCTIONAL ECOLOGY COMPOST SCIENCE & UTILIZATION	2018	32	2
Reddy, N; Crohn, DM; Brown, NEM; Milazzo, M; Rastrick, SPS; Hall-Spencer, JM; Therriault, TW; Harley, CDG	Effect of Composted Greenwaste and Rockwool on Plant Growth of Okra, Tomato, and Chili Peppers	GLOBAL CHANGE BIOLOGY	2018	26	4
Overbeek, CC; Harpenslager, SF; van Zuidam, JP; ...; van der Geest, HG	Natural acidification changes the timing and rate of succession, alters community structure, and increases homogeneity in marine biofouling communities	ECOSYSTEMS	2018	24	1
McCormick, AR; Phillips, JS; Ives, AR	Drivers of Vegetation Development, Biomass Production and the Initiation of Peat Formation in a Newly Constructed Wetland	FRESHWATER BIOLOGY	2019	23	5
El-Hacen, EHM; Bouma, TJ; Oomen, P; Piersma, T; Olf, H; Feyten, LEA; Demers, EEEM; Ramnarine, IW; Chivers, DP; Ferrari, MCO; Brown, GE	Responses of benthic algae to nutrient enrichment in a shallow lake: Linking community production, biomass, and composition	OIKOS BEHAVIORAL ECOLOGY AND SOCIOBIOLOGY	2019	128	5
Martinkova, Z; Koprdova, S; Kulfan, J; Zach, P; Honek, A	Who's where? Ecological uncertainty shapes neophobic predator avoidance in Trinidadian guppies	FOLIA OECOLOGICA BIODIVERSITY AND CONSERVATION BASIC AND APPLIED ECOLOGY	2019	73	5
Gaume, L; Bazile, V; Bousses, P; Le Moguedec, G; Marshall, DJ	Ground beetles (Coleoptera: Carabidae) as predators of conifer seeds	ECOLOGY AND EVOLUTION	2019	46	1
Huais, PY; Grilli, G; Amarilla, LD; Torres, C; Fernandez, L; Galetto, L	The biotic and abiotic drivers of living' diversity in the deadly traps of <i>Nepenthes</i> pitcher plants	APPLIED ECOLOGY	2019	28	2
Izhar, R; Gilboa, C; Ben-Ami, F	Forest fragments influence pollination and yield of soybean crops in Chaco landscapes	FUNCTIONAL ECOLOGY	2020	48	
Cunningham-Minnick, MJ; Peters, VE; Crist, TO	Disentangling the steps of the infection process responsible for juvenile disease susceptibility	ECOLOGICAL APPLICATIONS	2020	34	8
Webster, TUM; Rodriguez-Barreto, D; Castaldo, G; Gough, P; Consuegra, S; de Leaniz, CG	Bee communities and pollination services in adjacent crop fields following flower removal in an invasive forest shrub	MOLECULAR ECOLOGY EVOLUTIONARY ECOLOGY	2020	30	4
Wathne, I; Enberg, K; Jensen, KH; Heino, M	Environmental plasticity and colonisation history in the Atlantic salmon microbiome: A translocation experiment	ECOSYSTEMS	2020	29	5
Jean, M; Melvin, AM; Mack, MC; Johnstone, JF	Rapid life-history evolution in a wild <i>Daphnia pulex</i> population in response to novel size-dependent predation	ECOLOGY AND EVOLUTION	2020	34	2
Morrissey, KL; Ivesa, L; Delva, S; D'Hondt, S; Willems, A; De Clerck, O	Broadleaf Litter Controls Feather Moss Growth in Black Spruce and Birch Forests of Interior Alaska	ECOLOGY AND EVOLUTION	2020	23	1
Prather, RM; Welti, EAR; Kaspari, M	Impacts of environmental stress on resistance and resilience of algal-associated bacterial communities	ECOLOGY	2021	11	21
Haynes, KR; Friedman, J; Stella, JC; Leopold, DJ	Trophic differences regulate grassland food webs: herbivores track food quality and predators select for habitat volume	ECOLOGIA	2021	102	9
Nowicki, RJ; Thomson, JA; Fourqurean, JW; Wirsing, AJ; Heithaus, MR	Assessing climate change tolerance and the niche breadth-range size hypothesis in rare and widespread alpine plants	JOURNAL OF ANIMAL ECOLOGY	2021	196	4
Neubauer, D; Kolmakova, O; ...; Grossart, HP	Loss of predation risk from apex predators can exacerbate marine tropicalization caused by extreme climatic events	ISME JOURNAL APPLIED ECOLOGY AND ENVIRONMENTAL RESEARCH	2021	90	9
Can, M; Katar, D; Katar, N; Bagci, M; Subasi, I	Zooplankton carcasses stimulate microbial turnover of allochthonous particulate organic matter	ECOLOGY AND EVOLUTION	2021	15	6
	Yield and fatty acid composition of black cumin (<i>Nigella sativa</i> L.) populations collected from region under different ecological conditions	ECOLOGY AND ENVIRONMENTAL RESEARCH	2021	19	2

Gong, JR; Zhang, ZH; Zhu, CC; Shi, JY; Zhang, WY; Song, LY; Li, Y; Zhang, SQ; Dong, JJ; Li, XB	The response of litter decomposition to phosphorus addition in typical temperate grassland in Inner Mongolia	JOURNAL OF ARID ENVIRONMENTS	2022	197	
Podgaiski, LR; Guimaraes, GD; Drose, W; Almerao, MP	Ants benefit from the Japanese raisin tree invasion and favor its invasiveness in the subtropical Atlantic Rainforest	BIOTROPICA	2022		
De Lisle, SP; Maenpaa, MI; Svensson, EI Balakrishnan, M; Selvam, Y;	Phenotypic plasticity is aligned with phenological adaptation on both micro- and macroevolutionary timescales	ECOLOGY LETTERS ENVIRONMENTAL	2022		
Anto, V; Ashokraj, A; Chellandi, M Lopez-Rojo, N; Boyero, L;	Macroalgal susceptibility to grazing by herbivore fish <i>Siganus</i> spp. at Gulf of Mannar reef, Indian Ocean	BIOLOGY OF FISHES	2022	105	1
Perez, J; Basaguren, A; Cardinale, BJ	No evidence of biodiversity effects on stream ecosystem functioning across green and brown food web pathways	FRESHWATER BIOLOGY	2022		
Bohnen, JL; Galatowitsch, SM; Perry, LG	Seed persistence of three species, <i>Carex stricta</i> , <i>Carex</i> <i>hystericina</i> and <i>Phalaris arundinacea</i> , in a restored wetland	FLORA	2022	286	