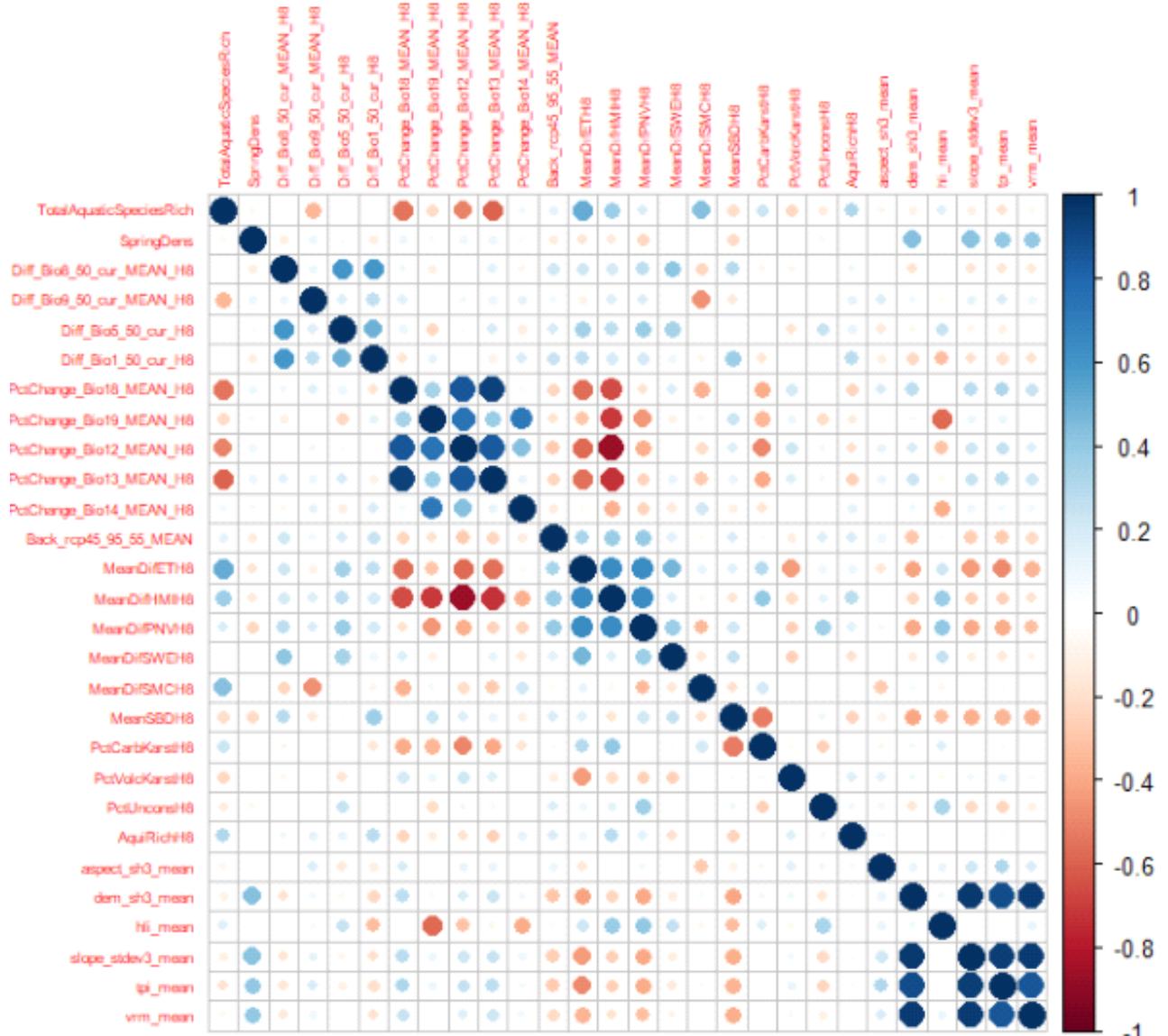
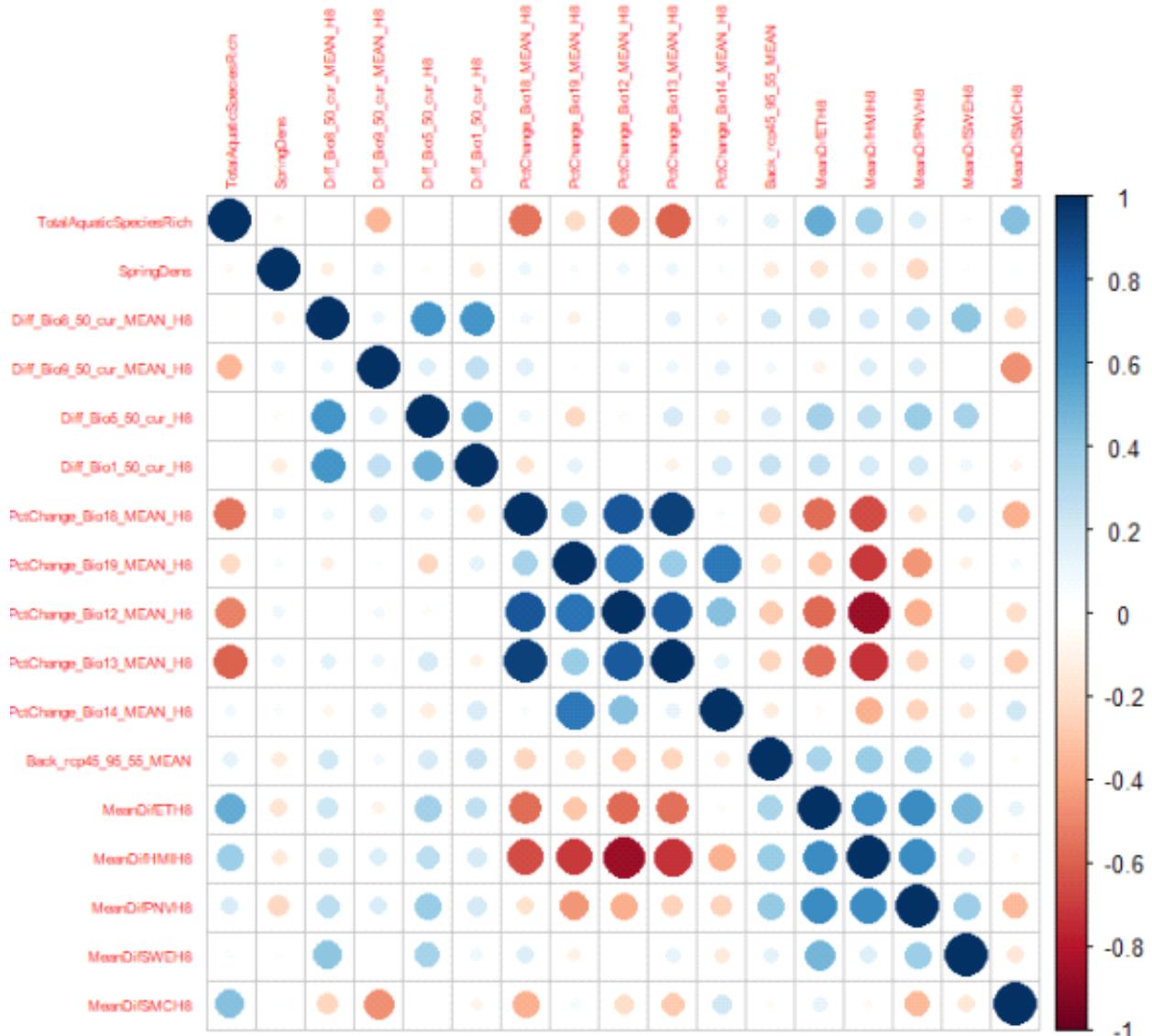


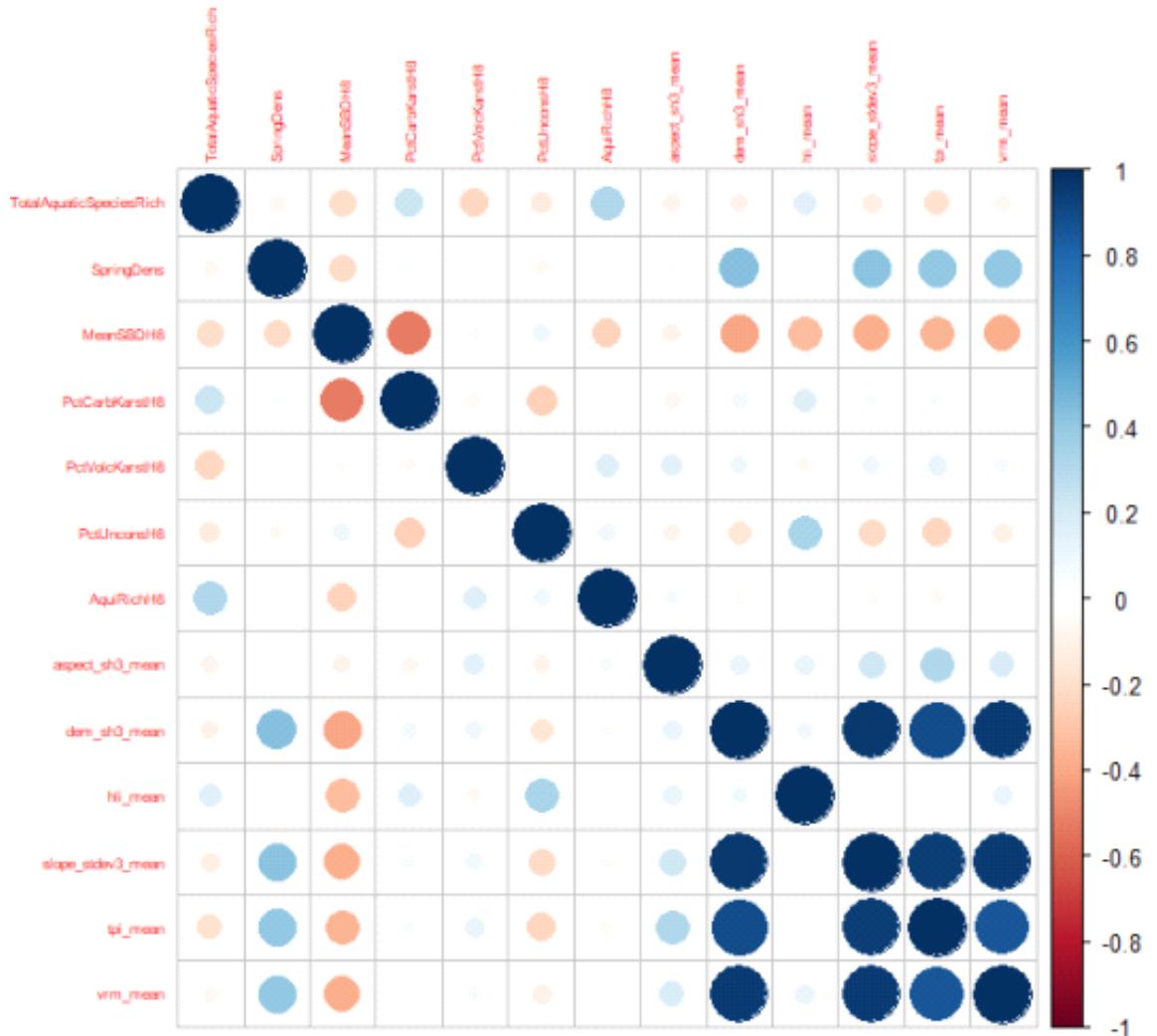
New correlations

Tuesday, April 8, 2025 11:43 AM

Pearson correlations between variables considered for assessment of springs







Keeping HLI and VRM, removing aspect diversity, which is redundant with VRM , and other hydro Indicators that are correlated with VRM

New FBBC

Monday, April 7, 2025 6:00 PM

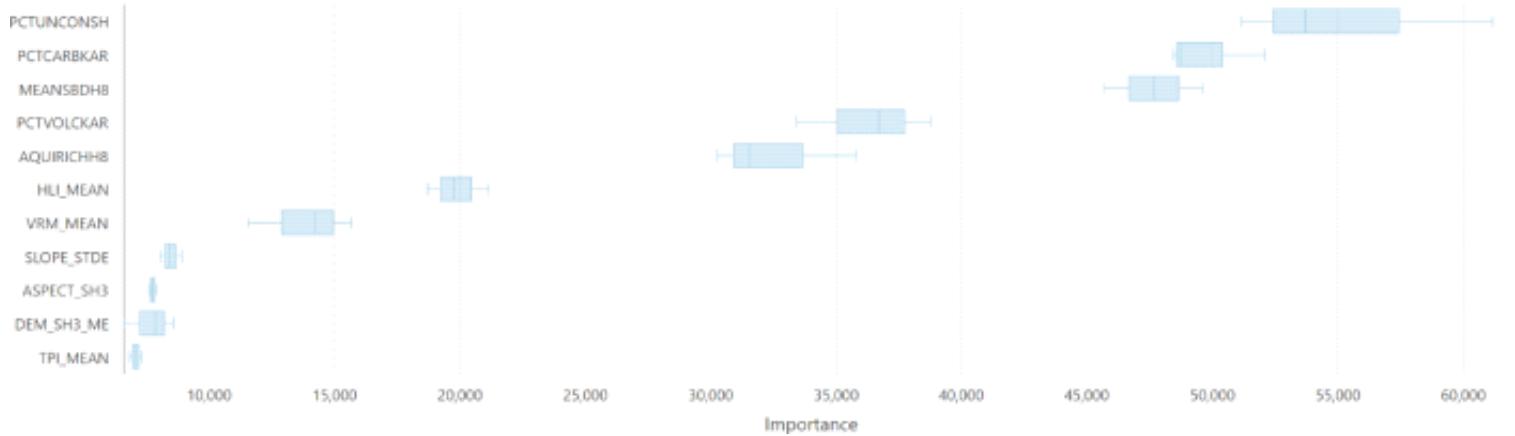
Forest-Based and Boosted Classification results for perennial streams. Lithology, soil, and topography variables were assessed for their ability to predict species richness and percent of streams classified as perennial.

Predictors of aquatic species richness

Top Variable Importance

Variable	Importance	%
PctUnconsH8	53705.70	19
PctCarbKarsth8	48717.08	17
MeanSDDH8	47665.87	17
PctVolcKarsth8	38762.71	13
AquiRichH8	35788.69	12
hli_mean	21138.48	7
vrm_mean	11557.82	4
slope_stdev3_mean	8911.39	3
aspect_sh3_mean	7599.58	3
tpi_mean	7294.82	3
dem_sh3_mean	6605.85	2

Distribution of Variable Importance

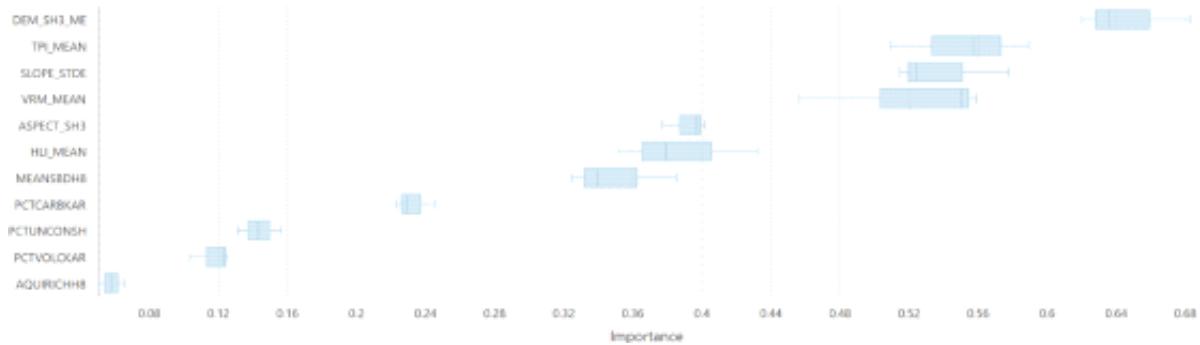


Predictors of spring density

Top Variable Importance

Variable	Importance	%
dem_sh3_mean	0.68	17
tpi_mean	0.56	14
vrm_mean	0.55	14
slope_stdev3_mean	0.52	13
aspect_sh3_mean	0.48	10
hli_mean	0.38	9
MeanSBDHB	0.34	8
PctCarbKarsth8	0.23	6
PctUnconsH8	0.16	4
PctVolcKarstH8	0.12	3
AquiRichH8	0.06	1

Distribution of Variable Importance



Exploratory Regression

Tuesday, February 4, 2025 3:07 PM

Assessment of lithology, soil, and topography variables

Response variable: native aquatic species richness

Choose 1 of 5 Summary

Highest Adjusted R-Squared Results

AdjR2	AICc	Df	K(SP)	VIF	SA	Model
0.10	23716.89	0.00	0.00	1.00	0.00	+AQUIRICH#***
0.06	23873.15	0.00	0.04	1.00	0.00	+PCTCARBOKARSTH#***
0.05	23891.27	0.00	0.00	1.00	0.00	-PCTVOLCKARSTH#***

Passing Models

AdjR2	AICc	Df	K(SP)	VIF	SA	Model
0.10	23716.89	0.00	0.00	1.00	0.00	+AQUIRICH#***

Choose 2 of 5 Summary

Highest Adjusted R-Squared Results

AdjR2	AICc	Df	K(SP)	VIF	SA	Model
0.18	23626.71	0.00	0.00	1.03	0.00	-PCTVOLCKARSTH#*** +AQUIRICH#***
0.16	23521.45	0.00	0.00	1.00	0.00	+PCTCARBOKARSTH#*** +AQUIRICH#***
0.13	23617.71	0.00	0.00	1.01	0.00	-PCTUNCONS#*** +AQUIRICH#***

Passing Models

AdjR2	AICc	Df	K(SP)	VIF	SA	Model
0.18	23626.71	0.00	0.00	1.03	0.00	-PCTVOLCKARSTH#*** +AQUIRICH#***

Choose 3 of 5 Summary

Highest Adjusted R-Squared Results

AdjR2	AICc	Df	K(SP)	VIF	SA	Model
0.23	23299.94	0.00	0.00	1.03	0.00	+PCTCARBOKARSTH#*** -PCTVOLCKARSTH#*** +AQUIRICH#***
0.21	23305.26	0.00	0.00	1.04	0.00	-PCTVOLCKARSTH#*** -PCTUNCONS#*** +AQUIRICH#***
0.20	23364.26	0.00	0.00	1.09	0.00	-MEANSBDH#*** -PCTVOLCKARSTH#*** +AQUERICH#***

Passing Models

AdjR2	AICc	Df	K(SP)	VIF	SA	Model
0.23	23299.94	0.00	0.00	1.03	0.00	+PCTCARBOKARSTH#*** -PCTVOLCKARSTH#*** +AQUIRICH#***

Choose 4 of 5 Summary

Highest Adjusted R-Squared Results

AdjR2	AICc	Df	K(SP)	VIF	SA	Model
0.24	23179.08	0.00	0.00	1.08	0.00	+PCTCARBOKARSTH#*** -PCTVOLCKARSTH#*** -PCTUNCONS#*** +AQUIRICH#***
0.23	23241.48	0.00	0.00	1.51	0.00	-MEANSBDH#*** +PCTCARBOKARSTH#*** -PCTVOLCKARSTH#*** +AQUIRICH#***
0.22	23261.47	0.00	0.00	1.11	0.00	-MEANSBDH#*** -PCTVOLCKARSTH#*** -PCTUNCONS#*** +AQUIRICH#***

Passing Models

AdjR2	AICc	Df	K(SP)	VIF	SA	Model
0.24	23179.08	0.00	0.00	1.08	0.00	+PCTCARBOKARSTH#*** -PCTVOLCKARSTH#*** -PCTUNCONS#*** +AQUIRICH#***

Choose 5 of 5 Summary

Highest Adjusted R-Squared Results

AdjR2	AICc	JB	K(BP)	VIF	SA	Model
0.24	23188.23	0.00	0.00	1.51	0.00	-MEANSRDHB +PCTCARBKARSTHB*** -PCTVOLCKARSTHB*** -PCTUNCONSHB*** +AQUIRICHHB***

Passing Models

AdjR2	AICc	JB	K(BP)	VIF	SA	Model
-------	------	----	-------	-----	----	-------

Writing Results to Output Table....

Exploratory Regression Global Summary (TOTALAQUATICSPECIESRICH)

Percentage of Search Criteria Passed

Search Criterion	Cutoff	Trials	# Passed	% Passed
Min Adjusted R-Squared	> 0.50	31	0	0.00
Max Coefficient p-value	< 0.05	31	27	87.10
Max VIF value	< 7.50	31	31	100.00
Min Jarque-Bera p-value	> 0.10	31	0	0.00
Min spatial autocorrelation p-value	> 0.10	14	0	0.00

Summary of Variable Significance

Variable	% Significant	% Negative	% Positive
PCTCARBKARSTHB	100.00	0.00	100.00
PCTVOLCKARSTHB	100.00	100.00	0.00
PCTUNCONSHB	100.00	100.00	0.00
AQUIRICHHB	100.00	0.00	100.00
MEANSRDHB	75.00	100.00	0.00

Summary of Multicollinearity

Variable	VIF	Violations	Covariates
MEANSRDHB	1.51	0	-----
PCTCARBKARSTHB	1.51	0	-----
PCTVOLCKARSTHB	1.84	0	-----
PCTUNCONSHB	1.08	0	-----
AQUIRICHHB	1.12	0	-----

Summary of Residual Normality (JB)

JB	AdjR2	AICc	K(BP)	VIF	SA	Model
0.000000	0.050329	23891.270905	0.000000	1.000000	0.000000	-PCTVOLCKARSTHB***
0.000000	0.055744	23873.152915	0.035509	1.000000	0.000000	+PCTCARBKARSTHB***
0.000000	0.039994	23925.560492	0.013228	1.000000	0.000000	-MEANSRDHB***

Summary of Residual Spatial Autocorrelation (SA)

SA	AdjR2	AICc	JB	K(BP)	VIF	Model
0.000000	0.242249	23179.075300	0.000000	0.000000	1.082513	+PCTCARBKARSTHB*** -PCTVOLCKARSTHB*** -PCTUNCONSHB*** +AQUIRICHMB***
0.000000	0.242213	23180.233890	0.000000	0.000000	1.508354	-MEANSDB +PCTCARBKARSTHB*** -PCTVOLCKARSTHB*** -PCTUNCONSHB*** +AQUIRICHMB***
0.000000	0.227303	23239.944926	0.000000	0.000000	1.032486	+PCTCARBKARSTHB*** -PCTVOLCKARSTHB*** +AQUIRICHMB***

Table Abbreviations

AdjR2	Adjusted R-Squared
AICc	Akaike's Information Criterion
JB	Jarque-Bera p-value
K(BP)	Koenker (BP) Statistic p-value
VIF	Max Variance Inflation Factor
SA	global Moran's I p-value
Model	Variable sign (+/-)
Model	variable significance (* = 0.10; ** = 0.05; *** = 0.01)

Succeeded at Tuesday, February 4, 2025 3:10:47 PM (Elapsed Time: 22.32 seconds)

New predictors of aquatic species richness

Summary of Variable Significance

Variable	% Significant	% Negative	% Positive
PCTCARBKARSTHB	100.00	0.00	100.00
PCTVOLCKARSTHB	100.00	100.00	0.00
PCTUNCONSHB	100.00	100.00	0.00
AQUIRICHMB	100.00	0.00	100.00
HLT_MEAN	100.00	0.00	100.00
VRM_MEAN	100.00	100.00	0.00
MEANSDB	87.72	94.74	5.26

New predictors of spring density

Summary of Variable Significance

Variable	% Significant	% Negative	% Positive
MEANSDB	100.00	100.00	0.00
VRM_MEAN	100.00	0.00	100.00
PCTUNCONSHB	50.00	94.74	5.26
HLT_MEAN	42.11	71.95	28.87
PCTCARBKARSTHB	26.32	45.61	54.39
AQUIRICHMB	26.32	42.11	57.89
PCTVOLCKARSTHB	12.28	91.23	8.77

Dropping unconsolidated aquifers because not showing expected effects and no literature to back up its inclusion.

Climate variables

Response variable: native aquatic species richness

Choose 1 of 15 Summary

Highest Adjusted R-Squared Results

AdjR2	AICc	JB	K(BP)	VIF	SA	Model
0.35	22667.16	0.00	0.00	1.00	0.00	-PCTCHANGE_B1013_MEAN_H8***
0.30	22914.88	0.00	0.00	1.00	0.00	-PCTCHANGE_B1010_MEAN_H8***
0.26	23081.91	0.00	0.00	1.00	0.00	+MEANDIFETH8***

Passing Models

AdjR2	AICc	JB	K(BP)	VIF	SA	Model
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Choose 2 of 15 Summary

Highest Adjusted R-Squared Results

AdjR2	AICc	JB	K(BP)	VIF	SA	Model
0.44	22243.26	0.00	0.00	1.08	0.00	-PCTCHANGE_B1013_MEAN_H8*** +MEANDIFSMCH8***
0.43	22251.53	0.00	0.00	1.01	0.00	-DIFF_B109_50_CUR_MEAN_H8*** -PCTCHANGE_B1012_MEAN_H8***
0.41	22406.37	0.00	0.00	1.02	0.00	+MEANDIFETH8*** +MEANDIFSMCH8***

Passing Models

AdjR2	AICc	JB	K(BP)	VIF	SA	Model
-------	------	----	-------	-----	----	-------

Choose 3 of 15 Summary

Highest Adjusted R-Squared Results

AdjR2	AICc	JB	K(BP)	VIF	SA	Model
0.49	21908.36	0.00	0.00	1.25	0.00	-DIFF_B109_50_CUR_MEAN_H8*** -PCTCHANGE_B1012_MEAN_H8*** +PCTCHANGE_B1014_MEAN_H8***
0.49	21929.35	0.00	0.00	1.54	0.00	-PCTCHANGE_B1013_MEAN_H8*** +MEANDIFETH8*** +MEANDIFSMCH8***
0.48	21908.97	0.00	0.00	1.45	0.00	-DIFF_B109_50_CUR_MEAN_H8*** -PCTCHANGE_B1013_MEAN_H8*** +MEANDIFETH8***

Passing Models

AdjR2	AICc	JB	K(BP)	VIF	SA	Model
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Choose 4 of 15 Summary

Highest Adjusted R-Squared Results

AdjR2	AICc	JB	K(BP)	VIF	SA	Model
0.52	21736.66	0.00	0.00	1.18	0.00	-DIFF_B109_50_CUR_MEAN_H8*** +DIFF_B105_50_CUR_MEAN_H8*** -PCTCHANGE_B1013_MEAN_H8*** +PCTCHANGE_B1014_MEAN_H8***
0.52	21768.01	0.00	0.00	1.06	0.00	-DIFF_B109_50_CUR_MEAN_H8*** -PCTCHANGE_B1012_MEAN_H8*** +PCTCHANGE_B1014_MEAN_H8*** +MEANDIFETH8***
0.52	21756.83	0.00	0.00	1.46	0.00	-DIFF_B109_50_CUR_MEAN_H8*** -PCTCHANGE_B1013_MEAN_H8*** +PCTCHANGE_B1014_MEAN_H8*** +MEANDIFETH8***

Passing Models

AdjR2	AICc	JB	K(BP)	VIF	SA	Model
-------	------	----	-------	-----	----	-------

Choose 5 of 15 Summary

Highest Adjusted R-Squared Results

AdjR2	AICc	JB	K(BP)	VIF	SA	Model
0.56	21455.46	0.52	0.00	12.27	0.00	-DIFF_B109_50_CUR_MEAN_H8*** +PCTCHANGE_B1018_MEAN_H8*** -PCTCHANGE_B1012_MEAN_H8*** -PCTCHANGE_B1013_MEAN_H8*** +PCTCHANGE_B1014_MEAN_H8***
0.55	21544.93	0.00	0.00	9.51	0.00	-DIFF_B109_50_CUR_MEAN_H8*** +DIFF_B105_50_CUR_MEAN_H8*** +PCTCHANGE_B1018_MEAN_H8*** -PCTCHANGE_B1013_MEAN_H8*** +PCTCHANGE_B1014_MEAN_H8***
0.54	21576.92	0.00	0.00	2.70	0.00	-DIFF_B109_50_CUR_MEAN_H8*** -PCTCHANGE_B1019_MEAN_H8*** -PCTCHANGE_B1013_MEAN_H8*** +PCTCHANGE_B1014_MEAN_H8*** +MEANDIFETH8***

Choose 5 of 15 Summary

Highest Adjusted R-Squared Results

AdjR2	AICc	JB	K(BP)	VIF	SA	Model
0.56	21455.46	0.52	0.00	12.27	0.00	-DTFF_BIO9_50_CUR_MEAN_HB*** +PCTCHANGE_BIO18_MEAN_HB*** -PCTCHANGE_BIO12_MEAN_HB*** -PCTCHANGE_BIO13_MEAN_HB*** +PCTCHANGE_BIO14_MEAN_HB***
0.55	21544.93	0.06	0.00	9.51	0.00	-DTFF_BIO9_50_CUR_MEAN_HB*** +DTFF_BIO5_50_CUR_MEAN_HB*** +PCTCHANGE_BIO18_MEAN_HB*** -PCTCHANGE_BIO13_MEAN_HB*** +PCTCHANGE_BIO14_MEAN_HB***
0.54	21576.92	0.00	0.00	2.70	0.00	-DTFF_BIO9_50_CUR_MEAN_HB*** -PCTCHANGE_BIO19_MEAN_HB*** -PCTCHANGE_BIO13_MEAN_HB*** +PCTCHANGE_BIO14_MEAN_HB*** +MEANDIFFETHB***

Passing Models

AdjR2	AICc	JB	K(BP)	VIF	SA	Model
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Writing Results to Output Table....

Exploratory Regression Global Summary (TOTALAQUATICSPECIESRICH)

Percentage of Search Criteria Passed

Search Criterion	Cutoff	Trials	# Passed	% Passed
Min Adjusted R-Squared	> 0.50	4943	138	2.79
Max Coefficient p-value	< 0.05	4943	2651	53.63
Max VIF Value	< 7.50	4943	4258	86.14
Min Jarque-Bera p-value	> 0.10	4943	17	0.34
Min spatial Autocorrelation p-value	> 0.10	18	8	0.00

Summary of Variable Significance

Variable	% Significant	% Negative	% Positive
DIFF_BIO9_50_CUR_MEAN_HB	100.00	100.00	0.00
PCTCHANGE_BIO13_MEAN_HB	100.00	100.00	0.00
MEANDIFFETHB	100.00	0.00	100.00
MEANDIFSMCHB	100.00	0.00	100.00
PCTCHANGE_BIO14_MEAN_HB	97.35	0.82	99.18
PCTCHANGE_BIO18_MEAN_HB	91.64	73.01	26.99
MEANDIFSWHRB	90.41	26.78	73.22
PCTCHANGE_BIO12_MEAN_HB	88.85	85.72	14.28
MEANDIFFPNVHB	87.56	33.45	66.55
MEANDIFFMHB	87.02	43.10	56.90
PCTCHANGE_BIO19_MEAN_HB	86.68	56.76	43.24
DIFF_BIO1_50_CUR_HB	80.83	72.00	27.68
DIFF_BIO5_50_CUR_HB	79.95	45.62	54.38
DIFF_BIO8_50_CUR_MEAN_HB	75.46	60.44	39.56
BACK_RCP45_95_55_MEAN	43.17	39.56	60.44

Summary of Multicollinearity

Variable	VIF	Violations	Covariates
DIFF_BIO8_50_CUR_MEAN_HB	2.32	0	-----
DIFF_BIO9_50_CUR_MEAN_HB	1.68	0	-----
DIFF_BIO5_50_CUR_MEAN_HB	3.00	0	-----
DIFF_BIO1_50_CUR_MEAN_HB	2.45	0	-----
PCTCHANGE_BIO18_MEAN_HB	18.87	456	PCTCHANGE_BIO13_MEAN_HB (99.74), PCTCHANGE_BIO12_MEAN_HB (29.29), PCTCHANGE_BIO19_MEAN_HB (28.84), MEANDIFHMEHB (0.53)
PCTCHANGE_BIO19_MEAN_HB	8.75	79	PCTCHANGE_BIO18_MEAN_HB (20.84), PCTCHANGE_BIO12_MEAN_HB (20.84), PCTCHANGE_BIO13_MEAN_HB (3.17), MEANDIFHMEHB (0.26)
PCTCHANGE_BIO12_MEAN_HB	39.47	296	PCTCHANGE_BIO18_MEAN_HB (29.29), PCTCHANGE_BIO19_MEAN_HB (20.84), PCTCHANGE_BIO13_MEAN_HB (12.14), MEANDIFHMEHB (3.17)
PCTCHANGE_BIO13_MEAN_HB	18.69	391	PCTCHANGE_BIO18_MEAN_HB (99.74), PCTCHANGE_BIO12_MEAN_HB (12.14), PCTCHANGE_BIO19_MEAN_HB (3.17), MEANDIFHMEHB (0.26)
PCTCHANGE_BIO14_MEAN_HB	2.61	0	-----
BACK_RCP45_95_55_MEAN	1.27	0	-----
MEANDIFETHB	4.90	0	-----
MEANDIFHMEHB	10.02	56	PCTCHANGE_BIO12_MEAN_HB (3.17), PCTCHANGE_BIO18_MEAN_HB (0.53), PCTCHANGE_BIO19_MEAN_HB (0.26), PCTCHANGE_BIO13_MEAN_HB (0.26)
MEANDIFPNWHB	3.58	0	-----
MEANDIFSWEHB	2.33	0	-----
MEANDIFSMCHB	1.99	0	-----

Summary of Residual Normality (JB)

JB	AdjR2	AICc	K(BP)	VIF	SA	Model
0.885513	0.403880	21901.337790	0.000000	9.782805	0.000000	-DIFF_BIO9_50_CUR_MEAN_HB*** +DIFF_BIO5_50_CUR_MEAN_HB*** +PCTCHANGE_BIO18_MEAN_HB*** -PCTCHANGE_BIO13_MEAN_HB*** +MEANDIFETHB*** -DIFF_BIO9_50_CUR_MEAN_HB*** +PCTCHANGE_BIO18_MEAN_HB*** -
0.521840	0.560355	21455.460533	0.000000	12.269013	0.000000	PCTCHANGE_BIO12_MEAN_HB*** -PCTCHANGE_BIO13_MEAN_HB*** +PCTCHANGE_BIO14_MEAN_HB***
0.486866	0.485671	21952.511260	0.000000	2.187783	0.000000	-DIFF_BIO9_50_CUR_MEAN_HB*** +DIFF_BIO5_50_CUR_MEAN_HB*** -DIFF_BIO1_50_CUR_MEAN_HB*** -PCTCHANGE_BIO13_MEAN_HB*** +MEANDIFETHB***

Summary of Residual Spatial Autocorrelation (SA)

SA	AdjR2	AICc	JB	K(BP)	VIF	Model
0.000000	0.560355	21455.460533	0.521840	0.000000	12.269013	-DIFF_BIO9_50_CUR_MEAN_HB*** +PCTCHANGE_BIO18_MEAN_HB*** -PCTCHANGE_BIO12_MEAN_HB*** -PCTCHANGE_BIO13_MEAN_HB*** +PCTCHANGE_BIO14_MEAN_HB***
0.000000	0.547763	21544.925098	0.058450	0.000000	9.510089	-DIFF_BIO9_50_CUR_MEAN_HB*** +DIFF_BIO5_50_CUR_MEAN_HB*** +PCTCHANGE_BIO18_MEAN_HB*** -PCTCHANGE_BIO13_MEAN_HB*** +PCTCHANGE_BIO14_MEAN_HB***
0.000000	0.543172	21576.923531	0.000723	0.000000	2.701358	-DIFF_BIO9_50_CUR_MEAN_HB*** -PCTCHANGE_BIO10_MEAN_HB*** -PCTCHANGE_BIO13_MEAN_HB*** +PCTCHANGE_BIO14_MEAN_HB*** +MEANDIFETHB***

Generalized Linear Regression assessment of lithology, soil, and topography variables
Response variable: fish species richness

Summary of GLR Results [Model Type: Continuous (Gaussian/OLS)]

Variable	Coefficient ^a	StdError	t-statistic	Probability ^b	Robust_SE	Robust_t	Robust_Pr ^b	VIF ^c
Intercept	38.380025	9.105272	4.338521	0.000075*	7.356474	4.110700	0.000047*	-----
MEANS8DH8	-5.407049	3.868970	-1.332394	0.256952	4.831948	-1.319030	0.263211	1.568354
PCTCARBKARSTH8	0.110095	0.012086	9.175335	0.000008*	0.009496	11.678612	0.000000*	1.569813
PCTVOLCKARSTH8	-0.542936	0.030624	-17.729310	0.000000*	0.025597	-21.211140	0.000000*	1.036036
PCTURACONSH8	-0.644003	0.005510	-7.985531	0.000000*	0.005147	-8.549433	0.000000*	1.083398
AQUIRICHH8	4.188565	0.185240	22.610975	0.000000*	0.181109	23.127412	0.000000*	1.120461

GLR Diagnostics

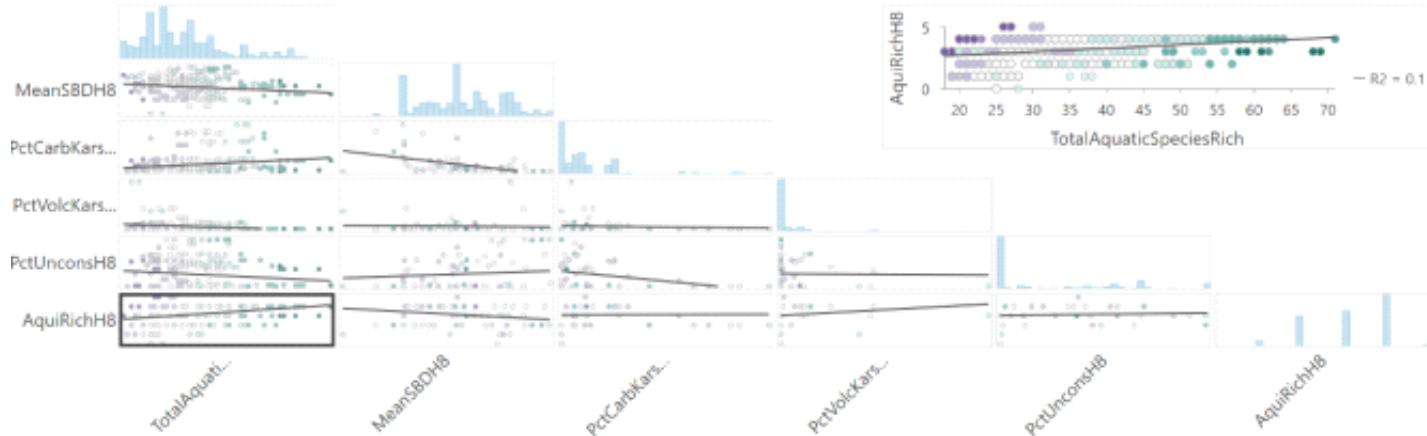
Input Features	HUC12springs20250204 Dependent Variable	TOTALAQUATICSPECIESRICH
Number of Observations	3168 Akaike's Information Criterion (AICc) ^d	23180.233890
Multiple R-Squared ^d	0.243389 Adjusted R-squared ^e	0.242211
Joint F-Statistic ^e	203.454667 Prob(>F), (5,3162) degrees of freedom	0.000000*
Joint Wald Statistic ^f	1875.289500 Prob(>chi-squared), (5) degrees of freedom	0.000000*
Koenker (BP) Statistic ^f	604.833528 Prob(>chi-squared), (5) degrees of freedom	0.000000*
Jarque-Bera Statistic ^g	69.618905 Prob(>chi-squared), (2) degrees of freedom	0.000000*

Notes on Interpretation

- * An asterisk next to a number indicates a statistically significant p-value ($p < 0.01$).
- a Coefficient: Represents the strength and type of relationship between each explanatory variable and the dependent variable.
- b Probability and Robust Probability (Robust_Pr): Asterisk (*) indicates a coefficient is statistically significant ($p < 0.01$); if the Koenker (BP) Statistic [f] is statistically significant, use the Robust Probability column (Robust_Pr) to determine coefficient significance.
- c Variance Inflation Factor (VIF): large variance inflation factor (VIF) values (> 7.5) indicate redundancy among explanatory variables.
- d R-Squared and Akaike's Information Criterion (AICc): Measures of model fit/performance.
- e Joint F and Wald statistics: Asterisk (*) indicates overall model significance ($p < 0.01$); if the Koenker (BP) statistic [f] is statistically significant, use the Wald statistic to determine overall model significance.
- f Koenker (BP) Statistic: When this test is statistically significant ($p < 0.01$), the relationships modeled are not consistent (either due to non-stationarity or heteroskedasticity). You should rely on the Robust Probabilities (Robust_Pr) to determine coefficient significance and on the Wald Statistic to determine overall model significance.
- g Jarque-Bera Statistic: When this test is statistically significant ($p < 0.01$) model predictions are biased (the residuals are not normally distributed).

Succeeded at Tuesday, February 4, 2025 3:29:14 PM (Elapsed Time: 21.06 seconds)

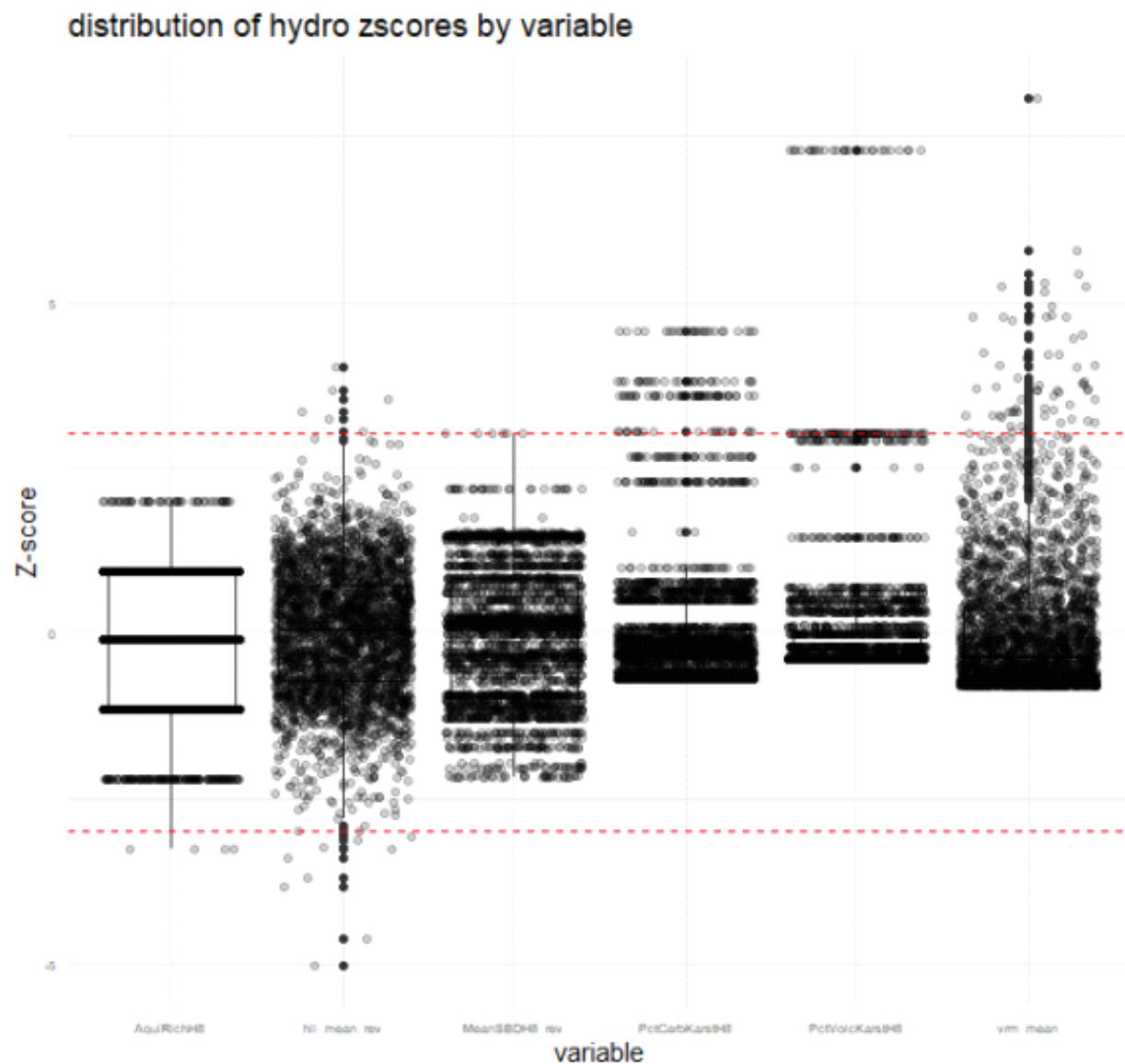
Relationships between Variables



Z-scores

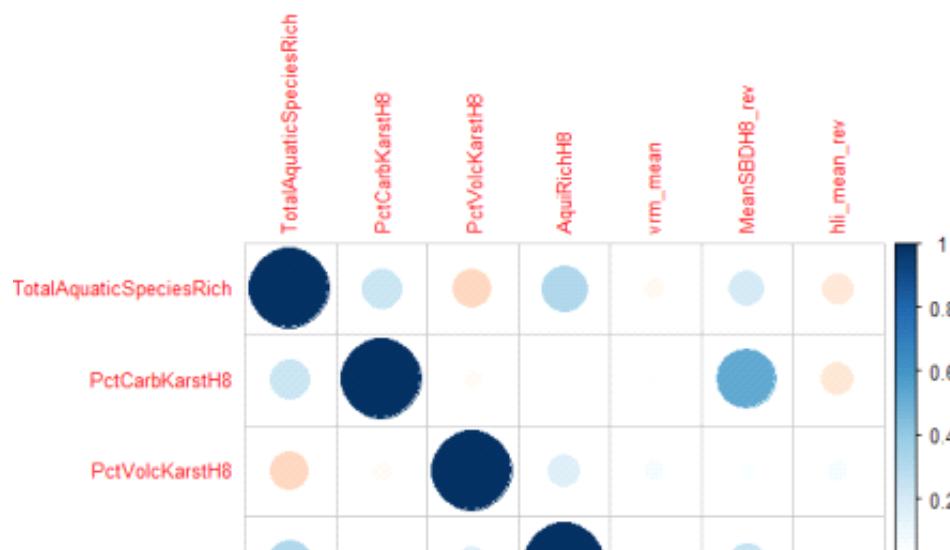
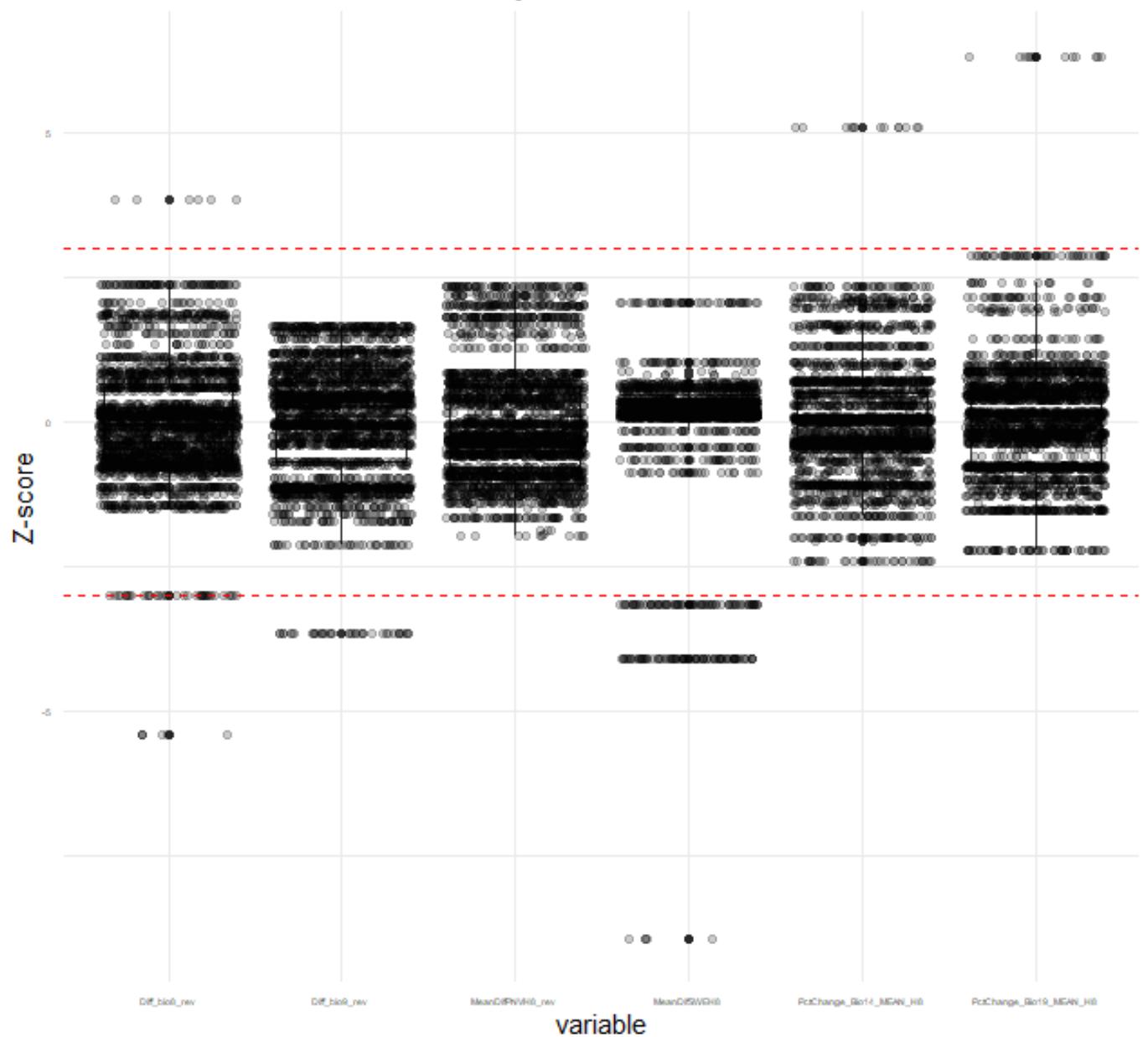
Tuesday, February 4, 2025 3:43 PM

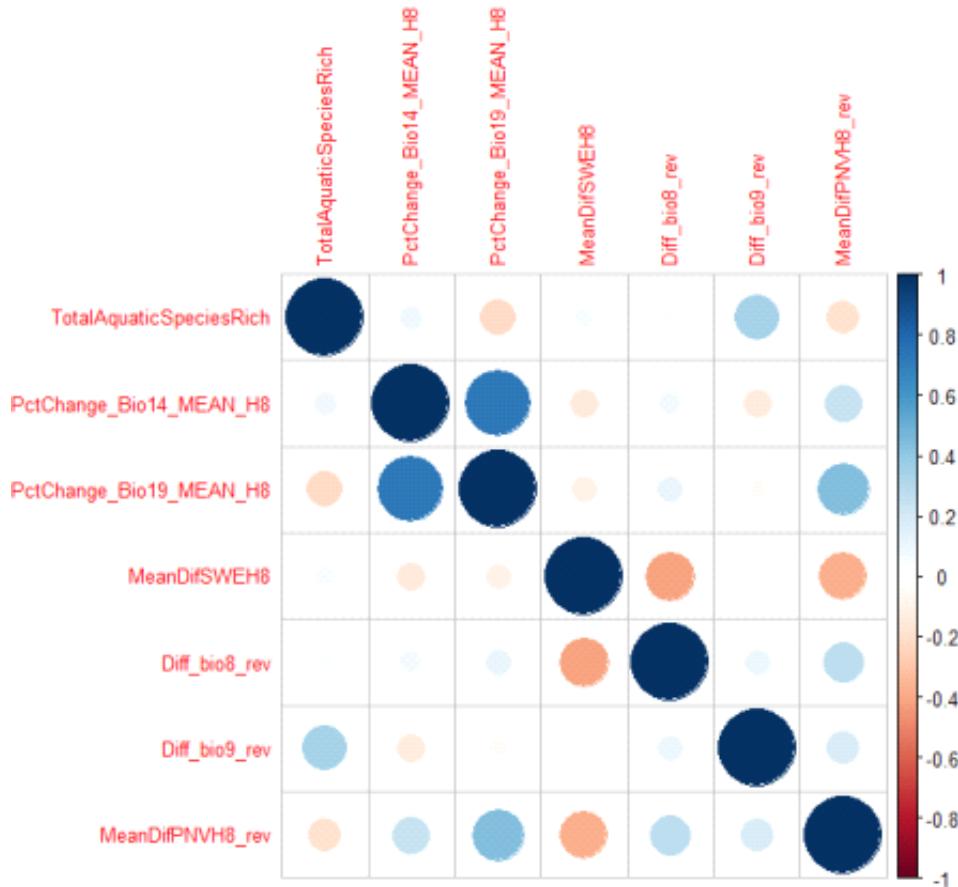
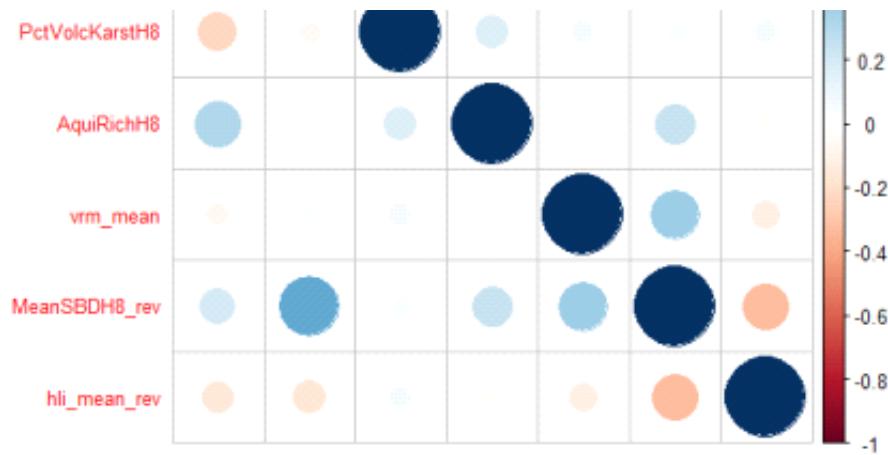
Distribution of Z scores calculated for lithology, soil, and topography indicators for springs



Distribution of Z scores calculated for climate indicators of springs

distribution of climate zscores by variable





Bio 19 and Bio 14 are correlated, so dropping Bio 14.

Indicator Weights

Tuesday, June 3, 2025 3:53 PM

Weights calculated for lithology, soil, topography, and vegetation indicators
Weights and Z scores were multiplied and then summed to calculate a composite index for each HUC12 watershed.

Optimized Weights and Variable Characteristics:

	variable	weight	variance	mean_correlation	cv
PctCarbKarstH8	PctCarbKarstH8	0.18476543	0	0.36013120	0.48616855
PctVolcKarstH8	PctVolcKarstH8	0.26829674	0	0.00000000	1.00000000
AquiRichH8	AquiRichH8	0.05000000	0	0.07723677	0.00000000
vrm_mean	vrm_mean	0.11241088	0	0.18430150	0.26531640
MeanSBDH8_rev	MeanSBDH8_rev	0.30000000	1	1.00000000	0.03694071
h11_mean_rev	h11_mean_rev	0.08452695	0	0.28302078	0.06456086

Weight Statistics:

Min.	1st Qu.	Median	Mean	3rd Qu.	Max.
0.0500	0.0915	0.1486	0.1667	0.2474	0.3000

From <<http://127.0.0.1:43883/>>

Weights calculated for climate indicators

Weights and Z scores were multiplied and then summed to calculate a composite index for each HUC12 watershed.

Optimized Weights and Variable Characteristics:

	variable	weight	variance	mean_correlation	cv
PctChange_Bio19_MEAN_H8	PctChange_Bio19_MEAN_H8	0.0500000	0	0.3921441	0.12337739
MeanDiffSWEH8	MeanDiffSWEH8	0.2368609	0	0.9117815	1.00000000
Diff_bio8_rev	Diff_bio8_rev	0.2620037	1	0.6009161	0.08250080
Diff_bio9_rev	Diff_bio9_rev	0.1511355	1	0.0000000	0.01541326
MeanDiffPNVH8_rev	MeanDiffPNVH8_rev	0.3000000	1	1.0000000	0.00000000

From <<http://127.0.0.1:43883/>>