Analysis Results - Random Forest

importance_mean
regression
0.7717896264711473
0.04100490849197083
199.71057043817805
27.66868732695838
m.', 'Spatial confounding risk: coordinate column(s) LAT, LONG rank among the most important features. The model may be learning field
TAL_AUG', 'COVER_SHANNON_AUG', 'ENV_AIRTEMP', 'PC_SHOOTMASS', 'PC_WOODMASS', 'PC_HEIGHT', 'PASTURE_TOTALARE
33333324, 86.72499999999997, 36.73888888888887, 7.655555555555553, 7.383333333333334, 48.57222222222222, 92.508333333333
0.5986334428732829
0.1090613312236021
0.04834387117658237
0.03068409084100431
0.023806514720658298
0.023695822416751566
0.021388287807192832
0.009661674707881906
0.009084223628073268
0.00878980707604684
0.008391079118545891
0.008378725664791841
0.007976895664949918
0.007894636573305292
0.0074910472128942454
0.007385355828955452
0.006835134790161908
0.006714388836488239
0.0066048260981184164
0.006371856059651143
0.006350788124375871
0.005744653319244835
0.0055945647184818285

0.004396571444838655
0.003844137128380005
0.003505604599720463
0.0031305496599970915
0.0030219463810297297
0.0029266963517242603
0.0015319982850082875
0.0014821217460542734
0.001277355922206056

Pre-Modeling Statistics

Feature	Pearson r	Pearson FDR	Spearman rho	Spearman FDR	ANOVA F	ANOVA FDR	Sig?
PLOT	0.7889	0.0000	0.7476	0.0000	359.3138	0.0000	Yes
ENV_SOILNH4	-0.0426	0.6058	-0.1940	0.0059	0.3955	0.6058	Yes
ENV_SOILNO3	-0.0199	0.7875	-0.0766	0.3054	0.0864	0.7875	No
ENV_SOILP	-0.1793	0.0112	-0.1434	0.0466	7.2381	0.0112	Yes
ENV_SOILOC	-0.6560	0.0000	-0.6859	0.0000	164.6414	0.0000	Yes
ENV_SOILTN	-0.6862	0.0000	-0.7478	0.0000	194.0268	0.0000	Yes
ENV_SOILTC	-0.6836	0.0000	-0.7480	0.0000	191.2160	0.0000	Yes
ENV_PH	0.0183	0.7875	-0.0116	0.9216	0.0729	0.7875	No
ENV_SOILCLAY	-0.6971	0.0000	-0.6572	0.0000	206.0559	0.0000	Yes
ENV_SOILSILT	-0.7121	0.0000	-0.6923	0.0000	224.2286	0.0000	Yes
ENV_SOILSAND	0.7357	0.0000	0.6805	0.0000	257.2186	0.0000	Yes
ENV_SOILMOIS	-0.6759	0.0000	-0.6762	0.0000	183.3840	0.0000	Yes
COVER_RICHNESS_JUN	-0.0368	0.6482	0.0243	0.7948	0.2952	0.6482	No
COVER_TOTAL_JUN	-0.3482	0.0000	-0.4848	0.0000	30.0740	0.0000	Yes
COVER_SHANNON_JUN	-0.0202	0.7875	0.0458	0.5702	0.0890	0.7875	No
COVER_RICHNESS_JUL	-0.0551	0.5119	-0.0081	0.9345	0.6643	0.5119	No
COVER_TOTAL_JUL	-0.3212	0.0000	-0.4040	0.0000	25.0791	0.0000	Yes
COVER_SHANNON_JUL	-0.0446	0.6054	0.0032	0.9620	0.4339	0.6054	No
COVER_RICHNESS_AUG	-0.1298	0.0752	-0.0795	0.2959	3.7330	0.0752	No
COVER_TOTAL_AUG	-0.3896	0.0000	-0.4391	0.0000	39.0059	0.0000	Yes
COVER_SHANNON_AUG	-0.1250	0.0821	-0.0871	0.2533	3.4610	0.0821	No

ENV_AIRTEMP	0.1288	0.0752	0.1291	0.0744	3.6786	0.0752	No
PC_SHOOTMASS	-0.4104	0.0000	-0.4546	0.0000	44.1448	0.0000	Yes
PC_WOODMASS	-0.2104	0.0026	-0.1848	0.0087	10.0997	0.0026	Yes
PC_HEIGHT	-0.4866	0.0000	-0.5260	0.0000	67.6302	0.0000	Yes
PASTURE_TOTALAREA	0.7460	0.0000	0.7106	0.0000	273.5428	0.0000	Yes
PASTURE_FORESTAREA	-0.6601	0.0000	-0.6574	0.0000	168.3847	0.0000	Yes
LAT	-0.7813	0.0000	-0.7662	0.0000	341.6048	0.0000	Yes
LONG	-0.7812	0.0000	-0.7097	0.0000	341.3497	0.0000	Yes
ENV_PROBEMOIS_AUG	-0.7407	0.0000	-0.7882	0.0000	264.9153	0.0000	Yes
ENV_PROBEMOIS_JUL	-0.6653	0.0000	-0.6787	0.0000	173.1313	0.0000	Yes
ENV_PROBEMOIS_JUN	-0.4157	0.0000	-0.5135	0.0000	45.5412	0.0000	Yes

Permutation Importance

Feature	Mean	SD
LONG	0.6961	0.1163
LAT	0.1350	0.0843
ENV_SOILMOIS	0.0182	0.0154
ENV_SOILTC	0.0181	0.0096
ENV_SOILTN	0.0169	0.0116
ENV_PROBEMOIS_JUN	0.0142	0.0130
ENV_PROBEMOIS_AUG	0.0140	0.0142
ENV_SOILSAND	0.0121	0.0001
PC_HEIGHT	0.0082	0.0030
COVER_TOTAL_AUG	0.0060	0.0029
ENV_SOILSILT	0.0058	0.0018
ENV_SOILP	0.0046	0.0029
PASTURE_FORESTAREA	0.0031	0.0051
ENV_AIRTEMP	0.0030	0.0013
ENV_SOILOC	0.0025	0.0046
ENV_PROBEMOIS_JUL	0.0019	0.0049
PC_SHOOTMASS	0.0018	0.0022
COVER_SHANNON_AUG	0.0016	0.0030
PASTURE_TOTALAREA	0.0015	0.0002

COVER_TOTAL_JUL	0.0008	0.0005
PLOT	0.0008	0.0089
COVER_TOTAL_JUN	0.0006	0.0027
COVER_SHANNON_JUN	0.0004	0.0017
COVER_SHANNON_JUL	0.0002	0.0011
ENV_SOILCLAY	-0.0001	0.0009
ENV_PH	-0.0004	0.0004
ENV_SOILNH4	-0.0004	0.0020
ENV_SOILNO3	-0.0005	0.0041
PC_WOODMASS	-0.0006	0.0009
COVER_RICHNESS_AUG	-0.0007	0.0013
COVER_RICHNESS_JUL	-0.0008	0.0015
COVER_RICHNESS_JUN	-0.0012	0.0011

SHAP Values

Feature	Mean |Abs|
LONG	14.9013
LAT	6.1385
ENV_PROBEMOIS_AUG	2.9282
ENV_SOILMOIS	2.0237
ENV_SOILOC	0.8542
ENV_SOILSAND	0.7792
COVER_SHANNON_AUG	0.7482
COVER_TOTAL_AUG	0.7287
PC_HEIGHT	0.5997
ENV_SOILTC	0.5717
ENV_PROBEMOIS_JUN	0.4980
PLOT	0.4711
ENV_AIRTEMP	0.4619
ENV_PROBEMOIS_JUL	0.4527
ENV_SOILTN	0.3582
ENV_SOILP	0.3509
PC_SHOOTMASS	0.3218

COVER_RICHNESS_JUL	0.3162
ENV_SOILCLAY	0.2994
ENV_SOILSILT	0.2902
ENV_SOILNH4	0.2157
ENV_PH	0.2142
COVER_TOTAL_JUN	0.1863
COVER_RICHNESS_AUG	0.1792
PASTURE_TOTALAREA	0.1725
COVER_TOTAL_JUL	0.1568
ENV_SOILNO3	0.1362
COVER_SHANNON_JUL	0.1233
COVER_RICHNESS_JUN	0.1205
COVER_SHANNON_JUN	0.1070
PC_WOODMASS	0.0912
PASTURE_FORESTAREA	0.0445

Per-Split Model Metrics

Split	R^2	MSE
	0.7459	234.1973
	0.7398	198.4776
	0.8297	166.4568
Mean ± SD	**0.7718 ± 0.0410**	**199.7106 ± 27.6687**