Appendix S1

Variable definitions and summary statistics

Table S1. Full suite of variables evaluated in the random forest analyses. For each variable the abbreviated variable name (as it appears in the figures and tables), a brief description, and the source (GIS or National Lake Assessment) are shown with summary statistics (mean and standard error).

Variable Name	Description	Source	Mean	Std. Error
AlbersX	Longitude (Albers meters)	GIS	126757.1	34305.5
AlbersY	Latitude (Albers meters)	GIS	436908.1	17367.2
BarrenPer_3000m	% Barren	GIS	0.7	0.1
BASINAREA	Watershed Area (sq. meters)	GIS	3208.5	788.1
CropsPer_3000m	% Cropland	GIS	13.3	0.6
DDs45	Growing Degree Days (Days)	GIS	2750.0	41.0
DeciduousPer_3000m	% Decidous Forest	GIS	17.1	0.6
DevHighPer_3000m	% High Intensity Development	GIS	0.4	0.0
DevLowPer_3000m	% Low Intensity Development	GIS	3.0	0.2
DevMedPer_3000m	% Medium Intensity Development	GIS	1.4	0.1
DevOpenPer_3000m	% Developed Open Space	GIS	5.4	0.2
ELEV_PT	Elevation (meters)	GIS	607.6	20.1
EvergreenPer_3000m	% Evergreen Forest	GIS	12.2	0.6
FetchE	Fetch from East (m)	GIS	1652.8	80.3
FetchN	Fetch from North (m)	GIS	2009.6	106.9
FetchNE	Fetch form Northeast (m)	GIS	1645.0	80.9
FetchSE	Fetch from Southeast (m)	GIS	1642.0	80.5
GrassPer_3000m	% Grassland	GIS	13.8	0.7

HerbWetPer_3000m	% Herbaceuos Wetland	GIS	1.7	0.1
IceSnowPer_3000m	% Ice/Snow	GIS	0.0	0.0
LakeArea	Lake Surface Area (sq. meters)	GIS	12.2	2.3
LakePerim	Lake Perimeter (meters)	GIS	33.6	4.5
MaxDepthCorrect	Est. Maximum Lake Depth (m)	GIS	8.4	0.3
MaxLength	Maximum Lake Length (m)	GIS	2972.1	137.2
MaxWidth	Maximum Lake Width (m)	GIS	1567.5	76.0
MeanDepthCorrect	Est. Mean Lake Depth (m)	GIS	2.9	0.1
MeanWidth	Mean Lake Width (m)	GIS	1370.1	122.6
MixedForPer_3000m	% Mixed Forest	GIS	3.8	0.3
PasturePer_3000m	% Pasture	GIS	7.7	0.3
PercentImperv_3000m	% Impervious	GIS	2.6	0.2
ShoreDevel	Shoreline Development Index	GIS	2.7	0.1
ShrubPer_3000m	% Shrub/Scrub	GIS	10.4	0.6
VolumeCorrect	Est. Lake Volume (cubic meters)	GIS	101211909.9	27438696.4
WaterPer_3000m	% Water	GIS	4.1	0.2
WoodyWetPer_3000m	% Woody Wetland	GIS	5.2	0.3
WSA_ECO9	Ecoregion	GIS	NA	NA
ANC	Acid Neutralizing Capacity (ueq/L)	NLA	2584.2	171.7
ANDEF2	Anion Deficit (ueq/L)	NLA	-506.4	143.2
ANSUM2	Sum of Anions using ANC (ueq/L)	NLA	8043.1	1197.9
BALANCE2	Ion Balance (%)	NLA	-0.7	0.1
CA	Calcium (ueq/L)	NLA	1388.3	54.0
CATSUM	Sum of Cations (ueq/L)	NLA	7536.7	1105.0

CL	Chloride (ueq/L)	NLA	1600.3	438.2
COLOR	Color (PCU)	NLA	16.1	0.5
CONCAL2	Calculated Conductivity (uS/cm)	NLA	949.0	148.1
COND	Conductivity (uS/cm)	NLA	656.0	72.6
CONDHO2	D-H-O Calculated Conductivity (uS/cm)	NLA	618.6	55.1
DATE_COL	Date Samples Collected	NLA	NA	NA
DEPTHMAX	Maximum Depth (meters)	NLA	9.6	0.3
DO2_2M	Dissolved Oxygen (mg/L)	NLA	7.9	0.1
DOC	Dissolved Organic Carbon (mg/L)	NLA	8.6	0.5
H	Hydrogen Ions (ueq/L)	NLA	0.2	0.1
K	Potassium (ueq/L)	NLA	245.6	40.6
MG	Magnesium (ueq/L)	NLA	2190.4	282.2
Na	Sodium (ueq/L)	NLA	3709.7	816.3
NH4	Ammonium (mg/L)	NLA	2.9	0.2
NH4ION	Calculated Ammonium (ueq/L)	NLA	2.5	0.2
NO3	Nitrate (ueq/L)	NLA	5.4	0.7
NO3_NO2	Nitrate/Nitrite (mg N/L)	NLA	0.1	0.0
NPratio	Nitrogen:Phophorus Ratio	NLA	34.5	1.8
NTL	Total Nitrogen (μ g/L)	NLA	1109.9	56.4
OH	Hydroxide (ueq/L)	NLA	3.1	0.2
ORGION	Est. Organic Anions (ueq/L)	NLA	85.9	4.8
PH_FIELD	pH	NLA	8.1	0.0
PTL	Total Phosphorus (μ g/L)	NLA	103.1	7.8
SIO2	Silica (mg/L)	NLA	8.6	0.3

SO4	Sulfate (ueq/L)	NLA	3853.4	935.7
SOBC	Sum of Base Cation (ueq/L)	NLA	7534.1	1105.0
TmeanW	Mean Profile Water Temp. (C)	NLA	24.1	0.1
TOC	Total Organic Carbon (mg/L)	NLA	9.6	0.6
TURB	Turbidity (NTU)	NLA	12.3	1.0