

# Figures

Table 1: Mean and interquartile range of selected study lake characteristics.

	Mean	IQR
Total Phosphorus (ug/L)	40.00	20 - 110
Chlorophyll (ug/L)	11.85	6.05 - 21.3
Secchi Depth (m)	1.50	0.9 - 2.4
P Retention (%)	0.46	0.24 - 0.59
Residence Time (yr)	0.63	0.2 - 1.8
Maximum Depth (m)	12.95	9.2 - 21.34
Agricultural Landuse (%)	53.27	17.68 - 74.05
Inter-lake Watershed Area (ha)	8839.44	2117.04 - 41005.75
Network Watershed Area (ha)	14326.22	5425.06 - 55026.39

Table 2: Ranking of connectivity metrics according to median effect size.

Metric	Scale	Connectivity Type	Delta k
Average Link Length	nws	Longitudinal	0.23
Closest lake distance	nws	Longitudinal	0.22
Stream density	nws	Lateral	0.20
Lake Connection	focal	Longitudinal	0.17
Upstream lake area	nws	Longitudinal	0.16
Max Depth	focal	-	0.15
Average Link Length	iws	Longitudinal	0.14
Baseflow	iws	Lateral	0.12
Stream order ratio	iws	Longitudinal	0.10
Baseflow	nws	Lateral	0.08
Closest lake distance	iws	Longitudinal	0.05
Stream order ratio	nws	Longitudinal	0.04
Stream density	iws	Lateral	0.03

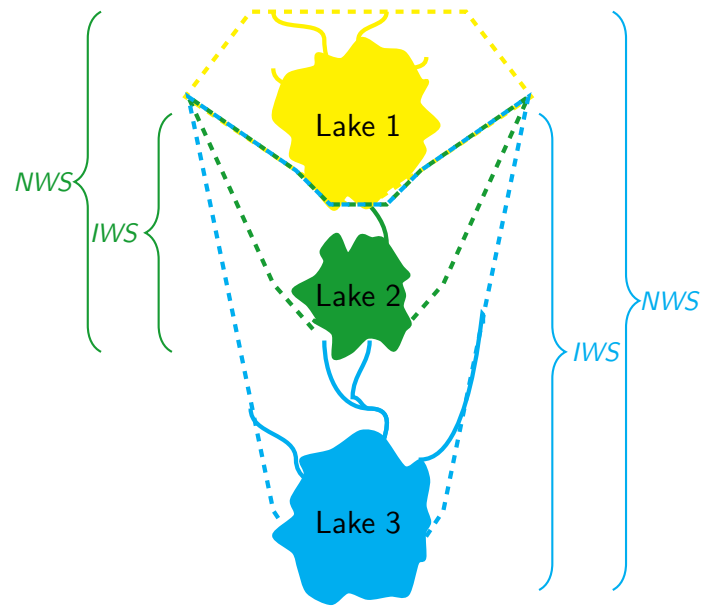


Figure 1: Diagram showing the inter-lake watershed (IWS) and network watershed (NWS) of three lakes. Here the IWS of lake 3 encompasses the IWS of lake 2 because of its small size but not the IWS of lake 1 because it is large. In contrast, the NWS of lake 3 extends to the headwaters of the lake chain.



Figure 2: Connectivity metric definitions and examples of high and low connectivity lakes.

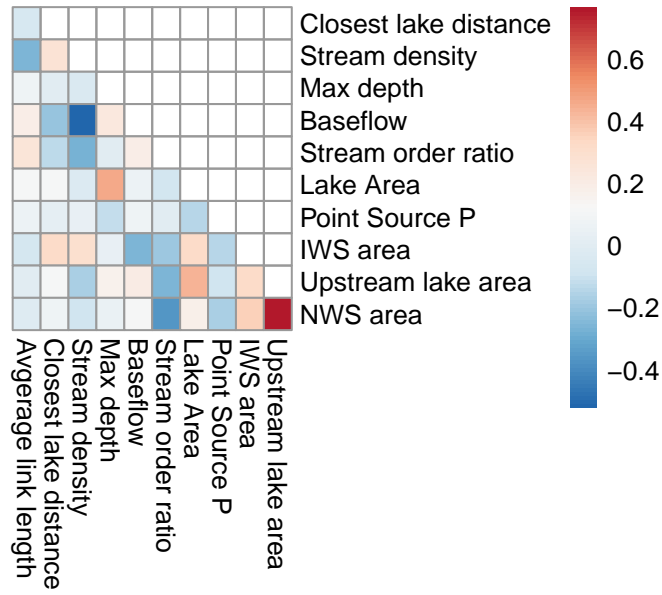


Figure 3: Correlation between connectivity metrics and selected lake characteristics.

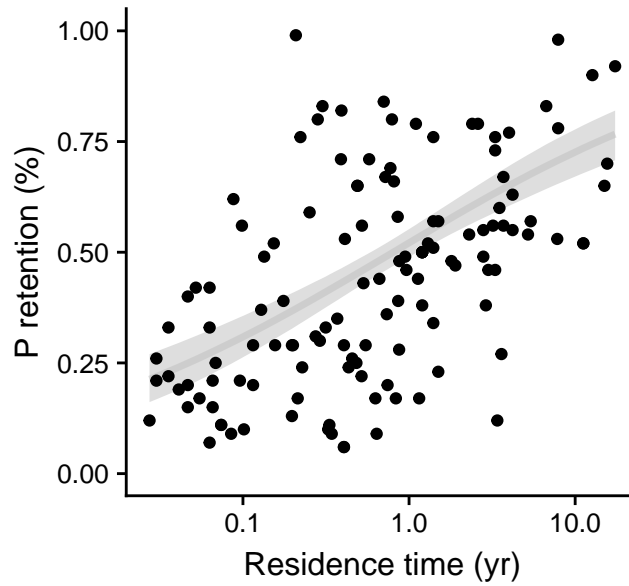


Figure 4: Median and central 95% interval estimates from global model posterior relative to NES data.

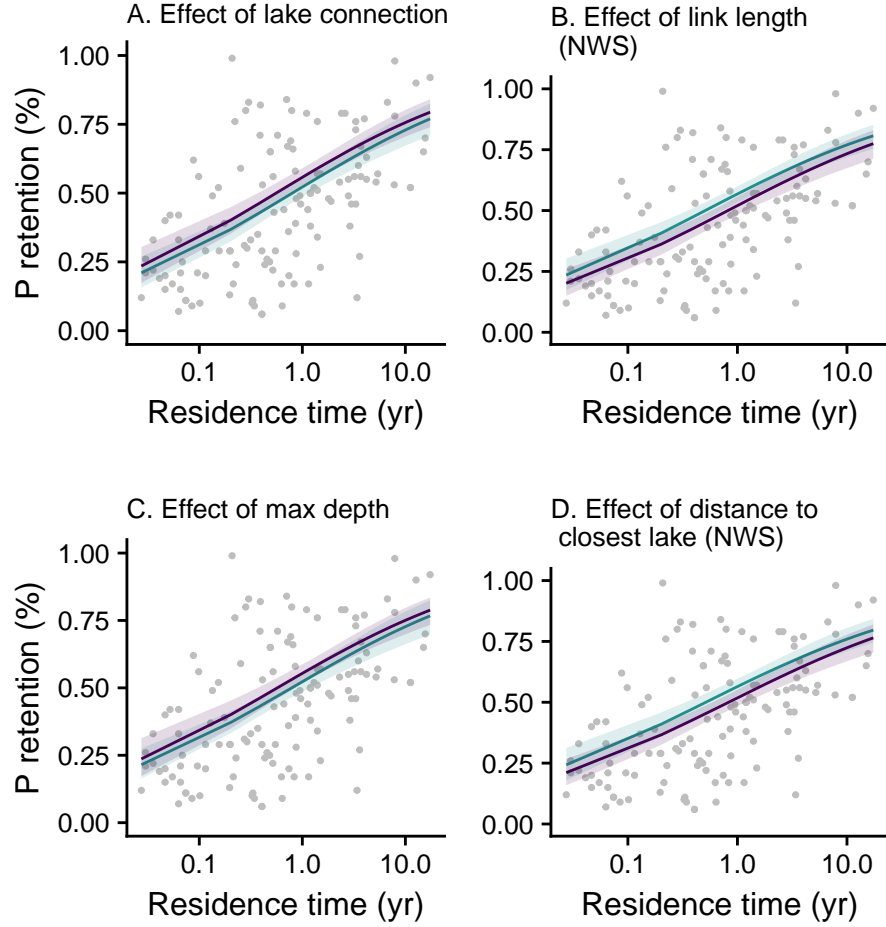


Figure 5: Median and central 95% interval estimates from hierarchical model posteriors relative to NES data. Lighter colored lines and lighter colored polygons represent the estimates from the lower of the two partition groups (see Table 2).

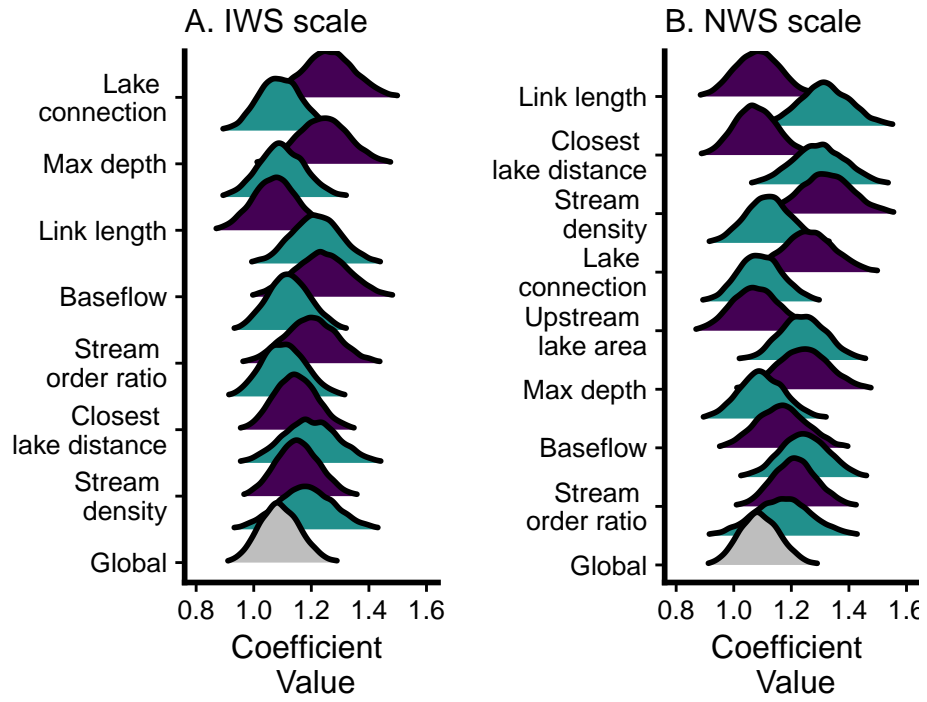
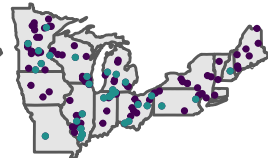
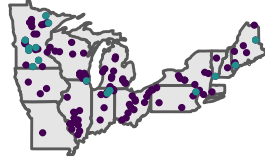


Figure 6: Distribution of Vollenweider's  $k$  in low and high connectivity partitions at the IWS and NWS scales. Lighter colors indicate the lower of the two partition groups (see Table 2).

IWS:

Closest  
lake distance

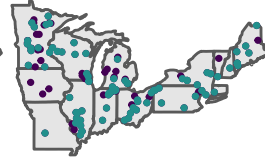
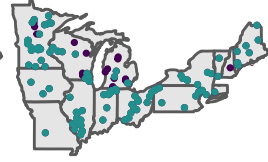
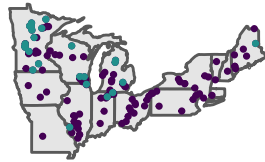
Average  
link length



Stream  
density

Baseflow

Stream  
order ratio

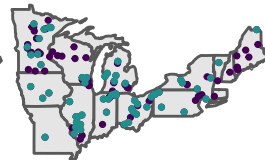
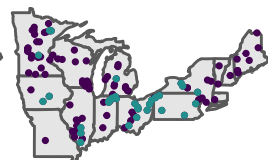
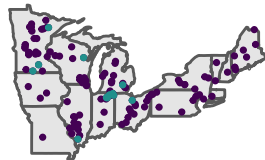


NWS:

Closest  
lake distance

Average  
link length

Upstream  
lake area



Stream  
density

Baseflow

Stream  
order ratio

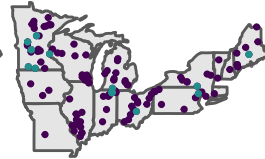
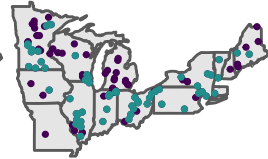
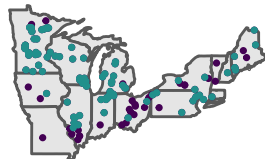


Figure 7: Map of lake connectivity partitions where lighter colored lakes have metric values on the lower side of their respective partitions (see Table 2).

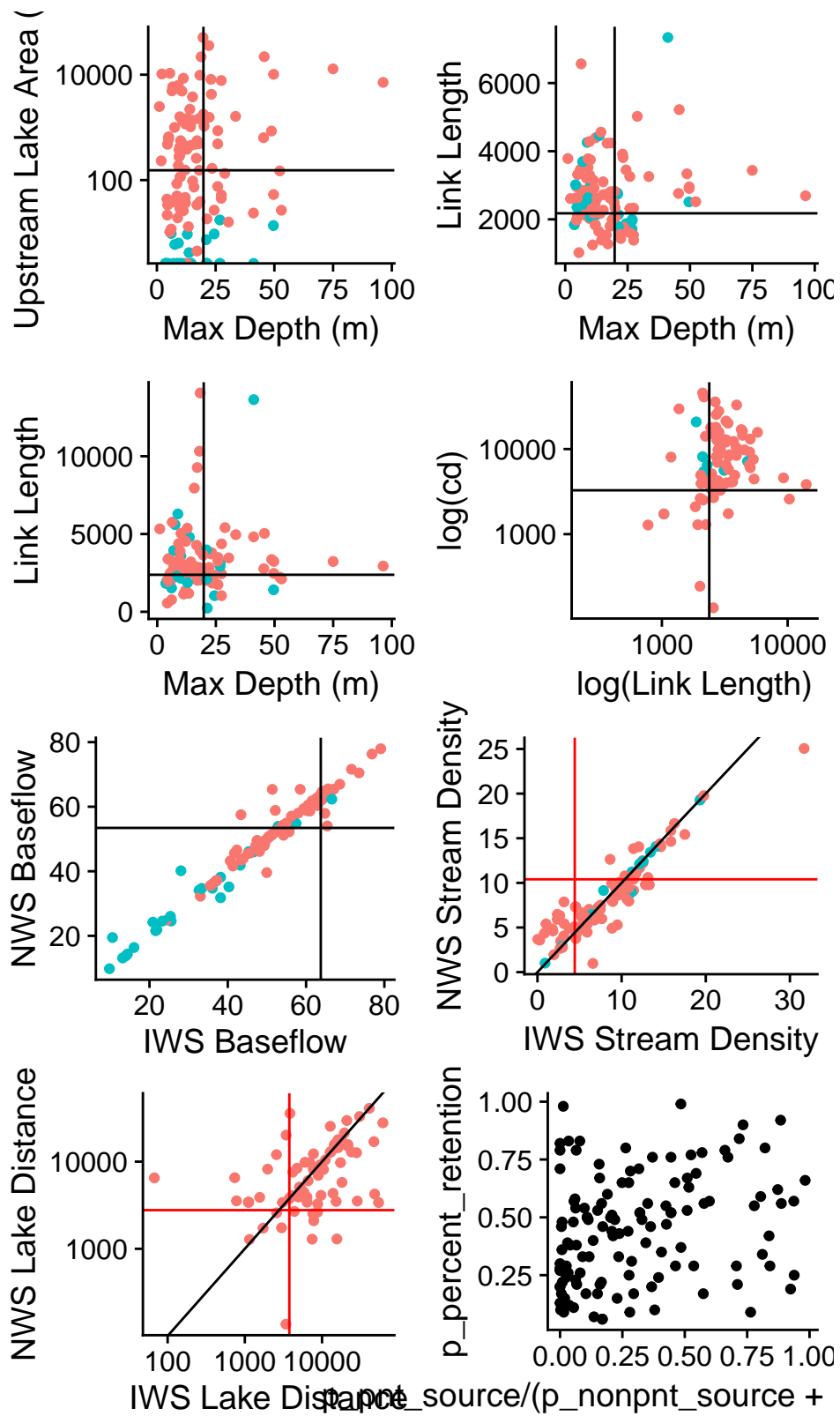


Figure 8: Exploratory plots



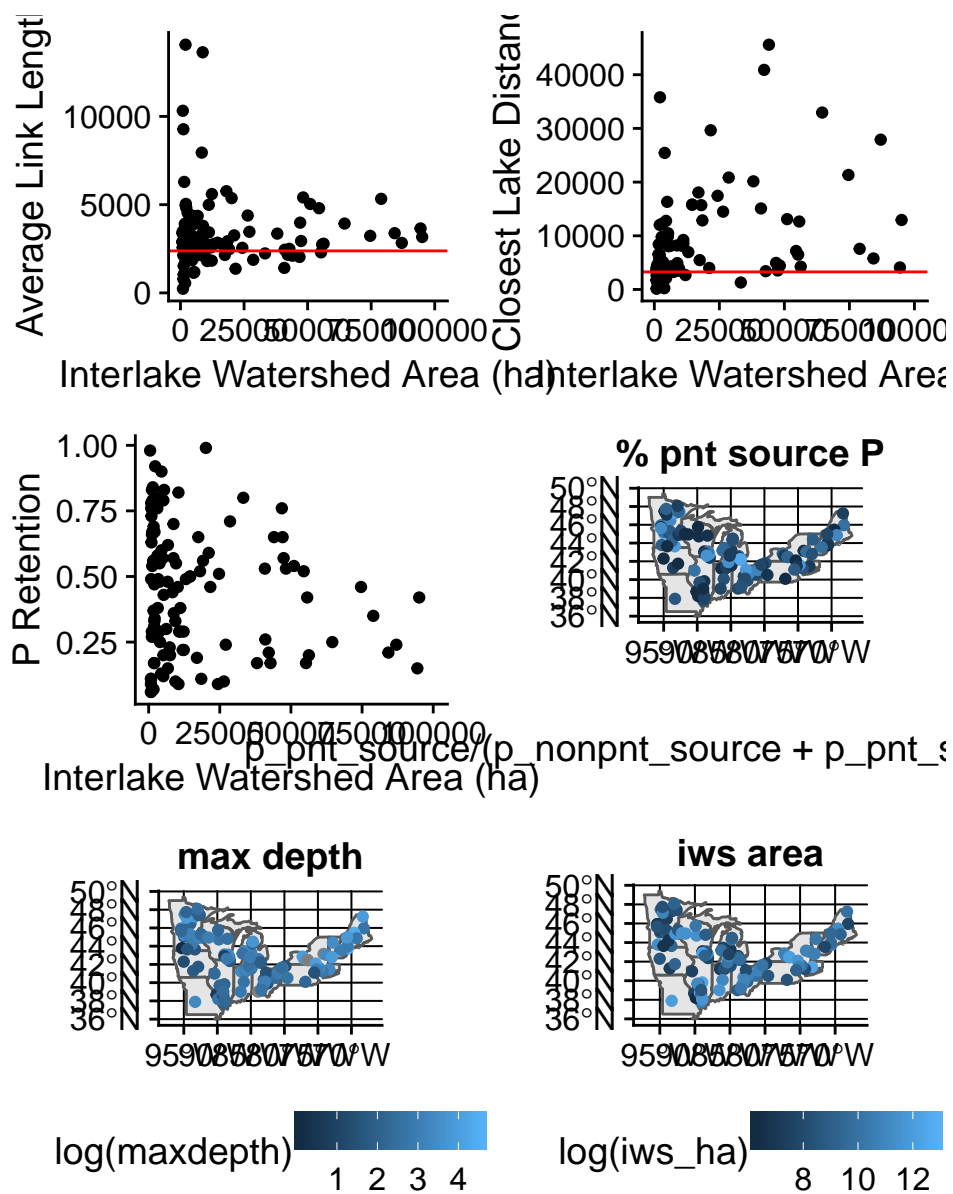


Figure 9: Exploratory plots cont

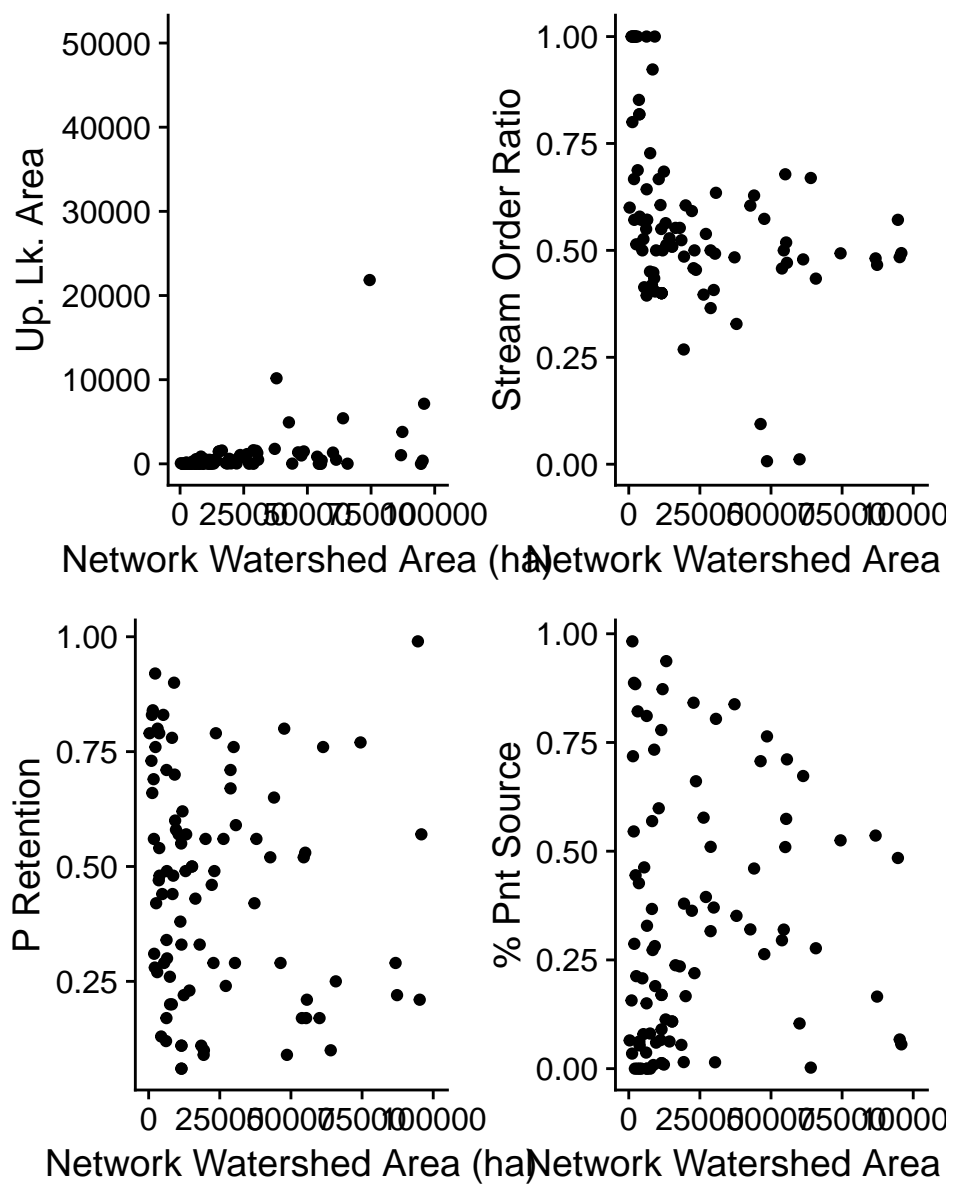


Figure 10: Exploratory plots cont x 2