1 Supplemental Tables

Table 1: Definitions of all variables considered for inclusion in complete model with information on which variables made it through the lasso regression and into the AIC analysis. Additionally, if a land manager could potentially take action to improve the measurement of that variable they are designated 'Actionable'; for example, site latitude may correlate with diversity, but cannot be altered by management practices at a site. Some non-actionable variables may be altered by management practices, but only on a site-specific basis. For example, temperature may be altered by a change in grazing regimes, but this is only possible if that site is grazed.

Variable	Definition	Actionable?	AIC?
Year	The year sampling occurred.	No	No
Latitude	Latitude coordinates in Albers Equal Area.	No	Yes
Longitude	Longitude coordinates in Albers Equal Area.	No	Yes
Elevation	Elevation in feet above sea level.	No	Yes
Management designation	Land management types derived by PIBO: Reference (aka minimally managed) or Managed.	No	Yes
Stream flow	Categorical call of reach stream flow at time of sample.	Yes	Yes
Condition index	Numeric score 0 (worst) - 100 (best) ranking habitat integrity. Index score is calculated by summing values of residual pool depth, percent pools, diameter of 50th per. particle, percent pool tail fines <6mm, large wood frequency, and average bank angle, and scaling 0 - 100.	Index	Yes
Total dissolved solids	Measure of the concentration of ionized materials in water, or the ability of water to conduct electrical current.	Yes	Yes
Average bankfull width from transects	The average of the bankfull widths at the 21-25 transects measured at each reach.	Yes	No
Reach length	Length of sampling reach measured along the thalweg.	No	No
Gradient	The difference between the elevation of the water surface at the bottom of the reach and the elevation of the water surface at the top of the reach divided by the reach length.	No	Yes

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Variable	Definition	Actionable?	AIC?
Sinuosity	Reach length divided by the straight valley length from the bottom of the reach to the top of the reach.	No	Yes
Residual pool depth	Average of the residual pool depth values for all pools in a reach, which are calculated by subtracting pool tail depth from max depth.	Yes	No
Pool frequency	Number of pools within the sampled reach standardized to pools per km.	Yes	Yes
Pool percentage	Sum of all qualifying pool lengths divided by the reach length, multiplied by 100.	Yes	No
Bankfull width-to-depth ratio at transects	Average of the bankfull width-to-depth ratio from 10 cross sections, calculated as bankfull width divided by the bankfull depth.	Yes	Yes
Wetted width-to-depth ratio at transects	Average of the wetted width-to-depth ratio from 10 cross sections, calculated as wetted width divided by the wetted depth.	Yes	No
Diameter of 50th percentile streambed particle	100 particles are measured per reach, with five particles collected along each transect.	Yes	Yes
Pool tail fines <2mm	The percentage of particles <2mm calculated three times using a 0.36m x 0.36m grid with 50 intersections and averaged for each pool, then averaged for all pools within the reach.	Yes	Yes
Pool tail fines <6mm	The percentage of particles <6mm calculated three times using a 0.36m x 0.36m grid with 50 intersections and averaged for each pool, then averaged for all pools within the reach.	Yes	Yes
Percent stable banks	The number of covered stable, uncovered stable, and false bank measurements divided by the total number of measurements and multiplied by 100.	Yes	No
Percent vegitatively stable banks	The number of covered stable and false bank measurements divided by the total number of measurements and multiplied by 100.	Yes	Yes
Under cut percentage	Number of transects with bank angles <90 degrees divided by the total number of transect bank measurements and multiplied by 100.	Yes	No

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Variable	Definition	Actionable?	AIC?
Bank angle	Average of all bank angle measurements with bank angles less than 45 degrees summarized as 45 degrees.	Yes	No
Large wood frequency	Number of wood pieces with length ≥1m and diameter ≥0.1m within the reach and standardized to per kilometer.	Yes	Yes
Large wood volume	Volume of wood pieces with length ≥1m and diameter ≥0.1m measured within the reach and then standardized to per kilometer.	Yes	No
Buffer road density	The sum length of all roads in a given buffer divided by the area in square kilometers of the same buffer.	Yes	Yes
Catchement road density	The sum length of all roads in a given catchement divided by the area in square kilometers of the same catchement.	Yes	No
Reach road density	The sum length of all roads in a given reach divided by the area in square kilometers of the same reach.	Yes	Yes
Segment road density	The sum length of all roads in a given segment divided by the area in square kilometers of the same segment.	Yes	No
Annual precipitation	Annual total precipitation (rain and melted snow).	No	Yes
Average yearly temperature	Average air, not in-stream, temperature in a given catchmentfor an entire given year.	No	Yes
Ecoregion III designation	Level III mapping describes small ecological areas nested within level II regions.	No	No
Ecoregion IV designation	Level IV mapping describes small ecological areas nested within level III regions, which are nested within the still larger level II.	No	No
Percent burned in segment	Percent of segment burned over a five-year period, derived from the geoprocessing of the LandFire, satellite data provided by a USGS, US Forest Service and BLM created, disturbance dataset.	Yes	No

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Variable	Definition	Actionable?	AIC?
Percent burned in catchement	Percent of catchement burned over a five-year period, derived from the geoprocessing of the LandFire, satellite data provided by a USGS, US Forest Service and BLM created, disturbance dataset.	Yes	No
Percent burned in reach	Percent of reach burned over a five-year period, derived from the geoprocessing of the LandFire, satellite data provided by a USGS, US Forest Service and BLM created, disturbance dataset.	Yes	No
Percent burned in buffer	Percent of buffer burned over a five-year period, derived from the geoprocessing of the LandFire, satellite data provided by a USGS, US Forest Service and BLM created, disturbance dataset.	Yes	No
Average yearly max. temp.	Maximum air temperature in a given catchment for an entire given year.	No	No
Average yearly min. temp.	Minimum air temperature in a given catchment for an entire given year.	No	No