**Explanation of “Functional Dispersion Analysis Data” File**

This is data for the 2,152 stream survey sites used in our functional dispersion models (i.e., it is the subset of sites from the “Trait Environment Analysis Data” with richness ≥ 3).

ID: Unique number given to each unique survey.

Stream: Name of stream or river the site was located on.

Drainage: Drainage and watershed aggregations of survey locations.

Repeat: ID given to each unique sampling location. I.e., survey was at the same location of another survey. Repeat sample sites need to be within 1 river kilometer (rkm) of each other to be classified as the same “repeat site.”

State: State the data was collected in.

Source: Source of where the data came from.

Year: Year of survey.

Sub-basin: Categorization of smaller watersheds within larger drainages.

Latitude and Longitude: Spatial coordinates of sampling location.

Elevation: meters.

Length: meters of stream sampled for estimating sample effort.

Width: width of stream sampled (m).

Glacial: Historic pre-glacial drainage.

Richness: Observed species richness at a given site based on the 51 species considered in this study.

\*\*\*Remaining columns are for presence/absence (1, 0) of the 51 species considered for analysis in this study. Please note that two species (Shovelnose sturgeon and Topeka Shiner) had their spatial coordinate information rounded to the nearest decimal degrees to safeguard the locations of these federally listed species.

**Explanation of “Trait Environment Analysis Data” File**

This is data for the 2,539 stream survey sites used in our trait-environment models. The database is the same structure as the “Functional Dispersion Analysis Data” file described above.

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**Explanation of “Master trait analyses” File**

This is the trait data for the 51 species used in our functional trait analyses. Trait categories are listed for each trait in parentheses and further descriptions can be found in Table S2 of the supplementary materials of the published paper.

Code: abbreviation of the 51 species.

Species: Common name of the 51 species

Number: number assigned to each species which can be referenced in Table S1 and Figure 2 of the published manuscript.

Family: taxonomic family of each species.

Genus.species: Genus species names

Repro.subst: Reproductive substrate (Life history)

Repro.behav: Parental care behavior (Life history)

Wtr.clmn: Water column preference (Habitat)

Thermal: Thermal preference (Habitat)

Trophic: Trophic position (Trophic)

Trophic.SD: Trophic generality (Trophic)

Trophic.category: Categorization of trophic groups (Trophic)

Max.TL: Maximum total length (Life history)

Age.mat: Age at maturity (Life history)

Longevity: Lifespan (Life history)

Max.fecund: Maximum fecundity (Life history)

Length.spawn: Length of spawning season (Life history)

Spawn.period: Spawning time (Life history)

Flow: Flow preference (Habitat)

Substrate: Substrate preference (Habitat)

Stream.size: Stream size preference (Habitat)

Shape.factor: Ratio of length to depth (Locomotion)

Swim.factor: Ratio of minimum caudal peduncle depth to maximum caudal fin depth (Locomotion)

Gape: Maximum mouth opening (Trophic)

Dors.H: proportion of dorsal height to total length (Locomotion)

Dors.L: proportion of dorsal length to total length (Locomotion)

Anal.H: proportion of anal height to total length (Locomotion)

Anal.L: proportion of anal length to total length (Locomotion)

Head.L: proportion of head length to total length (Trophic)

Head.D: proportion of head depth to total length (Trophic)