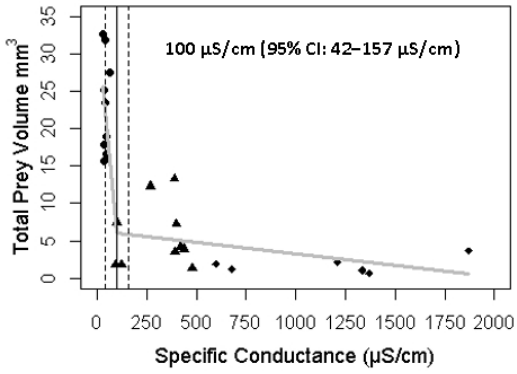
The effects of specific conductance on stream salamander occupancy and allochthony in southeastern Kentucky

Jake Hutton and Steve Price

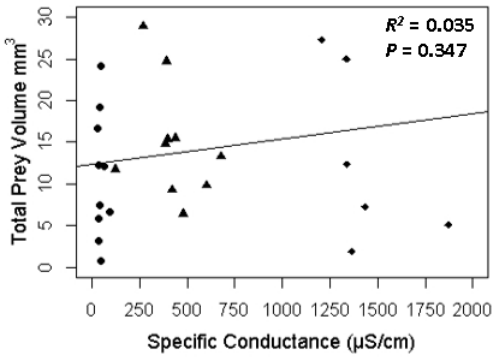
January 2018 Update

We recently finished all of our diet analyses and produced detailed diet figures and results. In larval salamander diets, we identified 1130 aquatic prey items to 150 morphospecies (15 prey groups from 40 families/orders) and 703 terrestrial prey items to 124 morphospecies (17 prey groups from 41 families/orders). In the adult diets, we identified 318 aquatic prey items to 114 morphospecies (16 prey groups from 17 families/orders) and 1356 terrestrial prey items to 378 morphospecies (24 prey groups from 59 families/orders). With our diet data we were able to calculate fourteen specific conductance (SC) threshold estimates for various diet parameters in both adult and larval salamanders.



As predicted, larval salamanders ate proportionately more terrestrial prey as SC increased. The ratio of aquatic to terrestrial (A/T) prey decreased from approximately 12:1 to 1:1 at threshold of 136 µS/cm. Additionally, the percentage of larvae eating aquatic prey decreased from approximately 90% to 50% at a threshold of 98 µS/cm. When examining prey volumes, the total prey volume decreased from 25 mm^3 to 6 mm^3 at a threshold of 100 µS/cm. Further, the total aquatic prey volume decreased from 13 mm^3 to 5 mm^3 at 99 µS/cm and the total terrestrial prey volume decreased from 12 mm^3 to 1 mm^3 at 36 µS/cm.

Also as predicted, adult salamanders ate more terrestrial prey as SC increased. The ratio of A/T prey decreased from 3:4 to 1:4 at a threshold of 382 µS/cm. Additionally, the percentage of adults eating aquatic prey decreased from approximately 70% to 45% at a threshold of 123 µS/cm. However, when looking at the prey volumes in adult salamanders, we found no difference in the average, total, aquatic, or terrestrial prey volume as SC increased. These results suggest that unlike larval salamanders, adults are still capable of obtaining a consistent amount of food as SC increases. Therefore, larval salamanders are more likely to disappear from high SC streams faster than adults, which can present a possible mechanism for our observed declines in salamander occupancy and abundance.



We are still working on our last analyses which will examine adult and larval abundance and occupancy as SC increases to see if they follow the similar patterns observed in the diet results.

Make sure to follow our updates on Facebook, Twitter, and Instagram @PriceHerpLab

We appreciate your support!