Niall Clancy: Fish & Wildlife Ecology
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Unique emergence patterns of salmonflies (Pteronarnys californica) on the Fallatin and Madison Rivers of Montana

The salmonfly (*Pteronarcys californica)* is one of the most iconic invertebrates in western North America. *Pteronarcys* is a large aquatic stonefly (Order Plecoptera) that spends the larval portion of its lifecycle within gravels on the riverbed. *Pteronarcys* then emerges from the water in spectacular, synchronized hatches in early summer to live the adult portion of its lifecycle in the terrestrial, riparian habitat. Both the Gallatin and Madison Rivers of southwestern Montana have hatches that are closely followed by trout anglers. However, there is a perception among the fly fishing community that salmonfly numbers have significantly decreased over the past few decades. We collected salmonfly exuviae during the hatches on the Gallatin and upper Madison Rivers and recorded the date of emergence, proportion of males and females, and several environmental variables including water temperature, amount of suspended solids, and substrate size. Our results indicate that the peak emergence on the Madison River occurred in a predictable sequence from site to site along the downstream to upstream longitudinal profile. The Gallatin River showed no such pattern, instead exhibiting a relatively consistent hatch timing across all sites at similar times. It is currently unclear as to what is driving this difference in emergence pattern but anecdotal evidence suggests temperature, hydrology, and geomorphology may all play a role. Testing these hypotheses is the subject of ongoing work.

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