How Connected Are Your Food Webs? How to include hydrogen stable isotopes in stream restoration monitoring

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A key goal of many stream restoration projects is to reconnect the severed ties between aquatic and riparian food webs. There are several ways to understand food web processes, each with their pros and cons. Stable isotopes analysis of carbon and nitrogen is traditionally used to define food web structure by tracing primary production resource use and estimating trophic positions, but these have limited applicability to understanding connectivity between adjacent food webs. Doucett et al. (2007) showed the potential for discriminating between aquatic and terrestrial primary production resource use using hydrogen stable isotopes. Here we compiled the most comprehensive hydrogen stable isotope dataset, to our knowledge, of aquatic and riparian producers and consumers. We were able to discriminate aquatic and terrestrially derived resource use among consumers along a clear gradient. There is clear potential for hydrogen stable isotope analysis to be a tool for monitoring stream restoration success.

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