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# Fish Movement and Dietary History Derived from Otolith ( $\delta$ )<sup>13</sup>C

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## **Fish Movement and Dietary History Derived from Otolith $\delta^{13}\text{C}$**

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Habitat use and food web linkages are critical data for fish conservation and habitat restoration efforts, particularly for threatened salmonids species. Otolith microchemistry has been shown to be a powerful tool for reconstructing fish movement, but over small distances (kilometers), geology-derived differences in otolith chemistry are rare. Here, we demonstrate that otolith  $^{13}\text{C}/^{12}\text{C}$  ratio (i.e.  $\delta^{13}\text{C}$ ) of anadromous steelhead trout can be used to distinguish residence in small streams from residence in larger streams and rivers. While previous research has shown that water dissolved inorganic carbon  $\delta^{13}\text{C}$  is the primary source of carbon in otoliths, the downstream change in food  $\delta^{13}\text{C}$  in this watershed appears to be the primary control on otolith  $\delta^{13}\text{C}$ . As a result, this method can also be applied to the problem of reconstructing feeding history at a location.

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