**Supplemental Information**

**Table SI-1**. Benthic and pelagic end member *δ*13C, mean fish *δ*13C, and estimated mean benthic reliance for each lake. Unless otherwise noted, pooled zooplankton samples were used as the pelagic end member. For lakes with no standard deviation (SD), only one fish was caught.

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| --- | --- | --- | --- | --- | --- |
| **Lake** | **Benthic end member** | **Benthic end member *δ*13C** (‰) | **Pelagic end member *δ*13C** (‰) | **Mean fish *δ*13C (± SD)** | **Mean % benthic reliance (± SD)** |
| L. Anderson | Ephemeroptera Baetidae | -24.0 | -31.0 | -25.9 (± 4.5) | 73.2 (± 38.7) |
| L. Deadwood | Periphyton | -24.1 | -25.5 | -23.6 (± 3.1) | 50.0 (± 70.7) |
| Gladys | Periphyton | -17.4 | -33.6 | -19.4 (± 0.7) | 88.1 (± 4.5) |
| Grand | Periphyton | -18.0 | -24.4 | -19.9 (± 4.5) | 60.4 (± 56.0) |
| U. Lena | Periphyton | -23.2 | -35.0 | -29.4 (± 2.8) | 47.5 (± 23.3) |
| Louise | Odonata Corduliidae | -23.1 | -28.8 | -28.8 (± 2.0) | 33.6 (±17.7) |
| LP-19 | Periphyton | -25.9 | -35.8 | -30.1 (± 3.5) | 58.0 (± 35.5) |
| Lunch | Diptera Chironomidae | -17.8 | -29.0 | -19.4 (± 3.2) | 83.0 (± 25.8) |
| Monogram | Ephemeroptera Baetidae | -20.0 | -36.7 | -26.7 (± 3.4) | 59.9 (± 20.0) |
| Moose | Periphyton | -21.8 | -36.0 | -25.0 | 76.9 |
| Palisades | Periphyton | -21.3 | -30.1\* | -25.1 (± 3.2) | 59.1(± 32.7) |
| PJ | Macrophyte | -20.0 | -27.3 | -25.4 (± 1.2) | 25.8 (± 16.2) |
| Sauk | Periphyton (on macrophyte) | -17.5 | -28.6 | -20.5 (± 0.3) | 73.1 (± 2.9) |
| Snow | Diptera Chironomidae | -24.9 | -32.0\* | -24.6 (± 0.8) | 97.3 (± 3.4) |
| W. Watson | Periphyton | -23.7 | -34.7 | -28.8 (± 1.4) | 52.8 (± 13.1) |

\* *Bivalvia Sphaeriidae used as pelagic end member due to missing values for zooplankton*

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**Figure S1.** The effects of ethanol preservation on methylmercury concentrations (µg g-1 dry mass) in dragonfly larvae across 180 days. Letters denote significant differences between preservation time lengths.



**Figure S2.** Relationship between nearshore (25% scaled buffer) percent tree cover and 5-year mean annual precipitation (Precipitation = 3529 - 16.5 x Tree cover; residual SE = 623.7).

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**Figure S3.** Lakes with evidence of deep chlorophyll maxima. Orange lines indicate temperature (deg C), while blue lines indicate dissolved oxygen (mg L-1). (a) Upper Lena Lake (Olympic National Park) was sampled on 8 September 2015, (b) LP-19 (Rainier National Park) was sampled on 27 August 2015, and (c) Louise Lake (Rainier National Park) was sampled on 24 August 2015.

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**Figure S4.** Mean mercury concentrations (ln-transformed, wet mass) in Cutthroat (*n*=17), Eastern Brook (*n*=38), and Rainbow Trout (*n*=46), from lakes (points) in each park compared to consumption thresholds (which are listed in wet mass). The solid red line indicates the EPA fish tissue methylmercury criterion value (300 ng g-1 wm) while the dotted red line indicates the EPA recommendation for subsistence intake (50 ng g-1 wm). Letters denote significant differences (Tukey’s HSD *p*<0.05) in fish mercury concentrations between species within each park.

**Supplemental Data 1:** Chiapella\_HgDataLakes\_forRcode\_LO.csv

**Supplemental Data 2:** Chiapella\_HgDataFishInverts\_forRcode\_LO.csv

**Supplemental Data 3:** Chiapella\_Hg\_ModelList\_LO.pdf

**Supplemental Data 4:** Chiapella\_Hg\_LO\_Rcode.R