

### Salmonid food resources in a changing climate



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### Salmonid food resources in a changing climate



- What are food resources?
- Why are they important with respect to climate change?
- Current research on salmonid food resources
- Applying food web concepts to restoration

### Stream salmonid food resources

Figure 2. Headwater streams comprise the vast majority of total stream network length in watersheds. Fish-rearing food webs **Fishless headwater** tributaries Terrestrial Marine 376 Fisheries . VOL 35 NO 8 . AUGUST 2010 . WWW.FISHERIES.ORG

## Stream salmonid food resources



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## Stream salmonid food resources



Figure 3. Seasonal and temporal flux of food supplies in fish-rearing salmonid food webs.

Wipfli and Baxter 2010

# Salmonid food resources in a warming world



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#### Food quantity modifies juvenile sockeye growth along a gradient of water temperature



Brett et al. 1969

### Salmonid food resources in a warming world



Source: American Rivers

### Food abundance buffers the effects of higher water temperatures on juvenile coho





Drift is the downstream transport of invertebrates in streams





- Benthic productivity (Kiffney et al. 2014)
- Dead wood (Coe et al. 2009)
- Channel geomorphology (Moravek et al. in press)
- Riparian vegetation
- Regional drivers











Sobek et al. 2009

- By 2015 SFEG revegetated 80 km (50 mi) of stream bank
  - Individual plant species
  - Species combinations
  - Canopy structure (e.g., canopy cover)



\* Insect density 4-8 times higher on submerged wood relative to nearby cobbles

Coe et al. 2009





















### Thanks!





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