

Transactions of the American Fisheries Society

American Fisheries Society
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Dear Managing Editors:

Please find our revised manuscript entitled, "Landscape characteristics influence projected growth rates of stream-resident juvenile salmon in the face of climate change in the Kenai River watershed, southcentral Alaska," for consideration as a Transactions of the American Fisheries Society article. We used original data to link water temperature sensitivity models with bioenergetics models to simulate how juvenile Chinook and Coho salmon growth responds across diverse habitats under climate warming and feeding rate scenarios. We found that size at end of summer decreased under most scenarios, which could have implications for population age structure, smolt outmigration timing, and marine survival rates. Our results illustrate how geographic diversity is expected to differentially filter a climate signal through juvenile salmon rearing salmon habitats and contribute to overall portfolio diversity.

Given that the effects of climate change on salmon populations is forefront on the minds of many managers, researchers, and citizens, we believe that the findings of our paper will appeal to the fisheries and aquatics professionals who subscribe to Transactions of the American Fisheries Society. In previous work studying effects of climate change on salmon habitat at high latitudes, warmer temperatures have been associated with increased freshwater growth of juvenile salmon, but it is not clear how long this trend will continue before further warming leads to reduced growth. Our results indicate that ongoing shifts in water temperatures in our study watershed, the Kenai River, could promote reduced summer growth rates for juvenile salmon, but that both diet and landscape setting play substantial roles in moderating this effect.

This manuscript expands on prior research conducted and published by Mauger et al. in "Summer temperature regimes in southcentral Alaska streams: watershed drivers of variation and potential implications for Pacific salmon," published in the Canadian Journal of Fisheries and Ocean Sciences in 2017. Their work illustrated how landscape heterogeneity drives diversity in water temperature regime and air temperature sensitivity. Our work follows up to examine biological implications of this dynamic on juvenile Chinook and Coho salmon, some of Alaska's most culturally and economically important species.

Each of the authors confirms that this manuscript has not been previously published and is not currently under consideration by any other journal. Additionally, all the authors have approved the contents of this paper and have agreed to the Transactions of the American Fisheries Society's submission policies. We have presented a subset of our findings at various annual academic conferences from 2016 to present including the Alaska Chapter of the American Fisheries Society, Western Division of the American Fisheries Society, and the Society for Freshwater Sciences.

Each named author has substantially contributed to conducting the underlying research and drafting this manuscript. Additionally, to the best of our knowledge, the named authors have no conflict of interest, financial or otherwise.

Sincerely,

A handwritten signature in black ink, appearing to read "Benjamin Meyer".

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