

## JASON R. NEUSWANGER

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South Fork Research  
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### EDUCATION

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- 2014      Ph.D. in Biological Sciences  
University of Alaska Fairbanks (UAF)
- Dissertation: "New 3-D video methods reveal novel territorial drift-feeding behaviors that help explain environmental correlates of Chena River Chinook salmon productivity"
- Advisors: Profs. Mark Wipfli, Amanda Rosenberger, Nicholas Hughes
- 2006      B.A. in Mathematics (concentration: Mathematical Biology)  
Cornell University, Ithaca, NY

### PROFESSIONAL POSITIONS

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- 2017—      Senior Fisheries Ecologist  
South Fork Research
- 2014–2017      Postdoctoral Researcher  
University of Georgia, Warnell School of Forestry and Natural Resources

### GRANTS

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- 2019–2021      Co-PI, "How will a warming climate affect interior Alaskan Chinook Salmon? Evaluating foraging conditions that regulate population responses to temperature, streamflow, and restoration." Funded by the Alaska Sustainable Salmon Fund for \$297,142.
- 2014–2017      Co-wrote, "Development and testing of mechanistic fitness-based models to predict habitat choice, behavior, and recruitment of juvenile Chinook salmon in the Arctic-Yukon-Kuskokwim region." Funded by the North Pacific Research Board for \$495,282.
- 2012–2013      UAF Dissertation Fellowship (\$13,500)

2012 UAF Institute of Arctic Biology Summer Fellowship (\$10,000)

2011 UAF Institute of Arctic Biology Summer Fellowship (\$10,000)

## PUBLICATIONS

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1. **Neuswanger, J.R.**, Schoen, E.S., Wipfli, M.S., Volk, C.J., and Schoen, E.R. 2022. A suction pump sampler for invertebrate drift detects exceptionally high concentrations of small invertebrates that drift nets miss. *Hydrobiologia* 849:2077-2089. DOI: 10.1007/s10750-022-04849-1.
2. Rossi, G.J., Power, M.E., Pneh, S., **Neuswanger, J.R.**, and Caldwell, T. 2021. Foraging modes and movements of *Oncorhynchus mykiss* as flow and invertebrate drift recede in a California stream. *Canadian Journal of Fisheries and Aquatic Sciences* 78(8): 1045-1056. DOI: 10.1139/cjfas-2020-0398
3. Jowett, I.G., Hayes, J.W., and **Neuswanger, J.R.** 2021. Salmonid bioenergetic drift-feeding: swimming costs and capture success. *Journal of Ecohydraulics* 6(2): 186-197. DOI: 10.1080/24705357.2020.1839799.
4. Hayes, J.W., Naman, S.M., **Neuswanger, J.R.**, Rosenfeld, J.S., Goodwin, E.O., and Jowett, I.G. 2020. Bioenergetic habitat suitability model for drift-feeding salmonids and guidance on its use in hydraulic habitat modeling. Cawthron Institute Technical Report No. 3470.
5. Naman, S.M., Rosenfeld, J.S., **Neuswanger, J.R.**, Enders, E.C., Hayes, J.W., Goodwin, E.O., Jowett, I.G., and Eaton, B.C. 2020. Bioenergetic habitat suitability curves for instream flow modelling: introducing user-friendly software and its potential applications. *Fisheries* 45(11): 605-613. DOI: 10.1002/fsh.10489.
6. Naman, S.M., Rosenfeld, J.S., **Neuswanger, J.R.**, Enders, E.C., and Eaton, B.C. 2019. Comparing correlative and bioenergetics-based habitat suitability models for drift-feeding fishes. *Freshwater Biology* 64(9): 1613-1626. DOI: 10.1111/fwb.13358.
7. Donofrio, E., Simon, T., **Neuswanger, J.R.**, and Grossman, G.D. 2018. Velocity and dominance affect prey capture and microhabitat selection in juvenile Chinook (*Oncorhynchus tshawytscha*). *Environmental Biology of Fishes* 101: 609-622. DOI: 10.1007/s10641-018-0723-5
8. Grossman, G.D., Orth, D., and **Neuswanger, J.R.** 2016. Innovative approaches to fisheries education. *Fisheries* 42(8): 450-457. DOI: 10.1080/03632415.2016.1204836
9. **Neuswanger, J.R.**, Wipfli, M.S., Rosenberger, A.E., and Hughes, N.F. 2016. Measuring fish and their physical habitats: Versatile 2-D and 3-D video techniques with user-friendly software. *Canadian Journal of Fisheries and Aquatic Sciences* 73(12): 1861-1873. DOI: 10.1139/cjfas-2016-0010

10. Vayndorf, E., Scerbak, C., Hunter, S., **Neuswanger, J.R.**, Toth, M., Parker, A., Neri, C., Driscoll, M.A., and Taylor, B.E. 2016. Morphological remodeling of *C. elegans* neurons during aging is modified by compromised protein homeostasis. *Nature Publishing Journals Aging and Mechanisms of Disease* 2: 16001. DOI: 10.1038/npjamd.2016.1
11. **Neuswanger, J.R.**, Wipfli, M.S., Evenson, M.J., Hughes, N.F., and Rosenberger, A.E. 2015. Association of high summer stream discharge with poor recruitment of stream-type Chinook salmon in two Yukon drainage rivers in Alaska. *Canadian Journal of Fisheries and Aquatic Sciences* 72(8): 1125-1137. DOI: 10.1139/cjfas-2014-0498
12. Rosenberger, A.E., Dunham, J.B., **Neuswanger, J.R.**, and Railsback, S.F. 2015. Legacy effects of wildfire on stream thermal regimes and rainbow trout ecology: an integrated analysis of observation and individual-based models. *Freshwater Science* 34(4): 1571-1584. DOI: 10.1086/683338
13. **Neuswanger, J.R.**, Wipfli, M. S., Rosenberger, A. E., and Hughes, N. F. 2014. Mechanisms of drift-feeding behavior in juvenile Chinook salmon and the role of inedible debris in a clear-water Alaskan stream. *Environmental Biology of Fishes* 97(5): 489-503.

## OPEN-SOURCE SOFTWARE

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**Neuswanger, J.R.** VidSync: An open-source Mac application for 3-D video analysis. [Vidsync.org](http://vidsync.org). Adopted by other researchers in Alaska, California, Missouri, Oregon, Utah, Washington, Argentina, Australia, Brazil, Denmark, Mexico, New Zealand, Switzerland, and Seychelles.

**Neuswanger, J.R.**, Naman, S.M, and Rosenfeld, J.S. BioenergeticHSC: User-friendly software for generating bioenergetics-based habitat suitability curves for drift-feeding fishes. <http://www.aferu.ca/rosenfeld-lab-bioenergetichsc>.

## HONORS

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2012	Best Student Paper, American Fisheries Society (AFS) 142 <sup>nd</sup> Annual Meeting
2012	Best Student Paper, Midnight Sun Science Symposium
2011	Best Student Paper, Alaska AFS Annual Meeting
2010	Best Student Paper, Alaska AFS Annual Meeting
2009	Best Student Paper, Alaska AFS Annual Meeting

## TEACHING EXPERIENCE

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### *Teaching Assistant*

2012	Biology and Society
2011	Natural History of Alaska

2009            Natural History of Alaska  
2008            Aquatic Entomology

### Guest Lecturer

Drift Foraging (twice), Prey Intake, Foraging Theory, Salmon (twice), Stoneflies

### **PUBLIC OUTREACH**

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[Troutnut.com](http://Troutnut.com), which I built in 2003, merges fly fishing techniques with aquatic entomology, including 4,300+ macro photographs to help scientists, teachers, and the public understand and educate others about aquatic life. These photographs appear in magazines, books, apps, websites, and a BioScience cover. About 1,275 people visit Troutnut.com daily.

Invited public lectures: Trout Unlimited (Ithaca, NY; Fairbanks, AK; Issaquah, WA), Midnight Sun Flycasters (Fairbanks, AK), Chena River Watershed Summit (Fairbanks, AK).

### **SERVICE AS A PEER REVIEWER**

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Environmental Biology of Fishes (4 papers)  
Canadian Journal of Fisheries and Aquatic Sciences (2 papers)  
Transactions of the American Fisheries Society (2 papers)  
Hydrobiologia (2 papers)  
Ecological Modelling (1 paper)  
Freshwater Biology (1 paper)  
Marine and Freshwater Behavior and Physiology (1 paper)  
Arctic-Yukon-Kuskokwim Sustainable Salmon Initiative (2 grants)  
North American Journal of Fisheries Management (1 paper)

### **MEMBERSHIPS**

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2007—            American Fisheries Society  
2003—            Trout Unlimited

### **ORAL PRESENTATIONS**

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#### Invited Talks and Seminars

1. **Neuswanger, J.R., Wipfli, M.S., and Rosenberger, A.E.** Feeding Ecology of Juvenile Chinook Salmon in the Chena River, Interior Alaska. American Fisheries Society Western Division Annual Meeting. Anchorage, AK, May 22, 2018.
2. **Neuswanger, J.R.** and Grossman, G.D. New mechanistic models of prey detection and interception by drift-feeding fish. Cawthron Institute. Nelson, NZ. March 1, 2018.

3. **Neuswanger, J.R.** and Grossman, G.D. New mechanistic models of prey detection and interception by drift-feeding fish. National Institute of Water and Atmospheric Research. Christchurch, NZ. March 5, 2018.
4. **Neuswanger, J.R.** 3-D studies of feeding behavior linking fitness and habitat in Alaskan stream salmonids. University of Alaska Fairbanks. Fairbanks, AK, March 2, 2016.
5. **Neuswanger, J.R.** 3-D video methods give unique insight to the behaviors of juvenile Chinook salmon and mechanism for population-level trends in central Alaska. University of Missouri. Columbia, MO, November 14, 2014.
6. **Neuswanger, J.R.**, Wipfli, M.S., Rosenberger, A.E., Evenson, M.J., and Hughes, N.F. This isn't Flatland: salmon and the third dimension of animal behavior. UAF Undergraduate Research & Scholar Activities Research Showcase Seminar. Fairbanks, AK, November 7, 2012.
7. **Neuswanger, J.R.**, Wipfli, M.S., Evenson, M.J., and Hughes, N.F. Flow-induced variability in the stock-recruitment relationships of two Interior Alaskan rivers, and related ecological mechanisms. Chinook Salmon Synthesis Workshop of the Arctic-Yukon-Kuskokwim Sustainable Salmon Initiative. Anchorage, AK, May 2, 2012.
8. **Neuswanger, J.R.**, Hughes, N.F., Wipfli, M.S., Kelly, L.H., and Rosenberger, A.E. Intra-school competition and drift-feeding behavior in wild juvenile Chinook salmon. Fisheries Research Institute of Slovenia. Ljubljana, Slovenia, May 31, 2010.
9. **Neuswanger, J.R.**, Hughes, N.F., Wipfli, M.S., Kelly, L.H., and Rosenberger, A.E. Intra-school competition and drift-feeding behavior in wild juvenile Chinook salmon. Ferskvandcentret (Freshwater Center). Silkeborg, Denmark, May 28, 2010.
10. **Neuswanger, J.R.**, Hughes, N.F., Wipfli, M.S., Kelly, L.H., and Rosenberger, A.E. Intra-school competition and drift-feeding behavior in wild juvenile Chinook salmon. Karlstad University. Karlstad, Sweden, May 26, 2010.

#### Contributed Conference Talks

1. **Neuswanger, J.R.**, Schoen, E.R., Volk, C.J., Wipfli, M.S., and Savereide, J.W. Spatiotemporal and flow-related variability in invertebrate drift and Chinook Salmon growth in the Chena River, Alaska. Alaska AFS Annual Meeting (held virtually during the Covid-19 pandemic). March 25, 2021.
2. **Neuswanger, J.R.**, Schoen, E.R., Volk, C.J., Wipfli, M.S., and Savereide, J.W. Spatiotemporal and flow-related variability in invertebrate drift and Chinook Salmon growth in the Chena River, Alaska. Western Division AFS Annual Meeting (held virtually during the Covid-19 pandemic). May 11, 2021.
3. **Neuswanger, J.R.** and Grossman, G.D. A new mechanistic model of drift feeding based on cognitive limits on visual information processing. Alaska AFS Annual Meeting. Homer, AK, November 5, 2015.

4. **Neuswanger, J.R.** and Grossman, G.D. A new mechanistic model of drift feeding based on cognitive limits on visual information processing. American Fisheries Society 145<sup>th</sup> Annual Meeting. Portland, OR, August 20, 2015.
5. **Neuswanger, J.R.** and Grossman, G.D. A new mechanistic model of drift feeding based on cognitive limits on visual information processing. Advances in the Population Ecology of Stream Salmonids IV. Girona, Spain, May 29, 2015.
6. **Neuswanger, J.R.**, Hughes, N.F., Wipfli, M.S., and Rosenberger, A.E. 3-D territoriality and shadow competition within schools of juvenile Chinook salmon. Alaska AFS Annual Meeting. Fairbanks, AK, October 10, 2013.
7. **Neuswanger, J.R.**, Wipfli, M.S., Evenson, M.J., and Hughes, N.F. Flow-induced variability in the stock-recruitment relationships of two Interior Alaskan rivers, and related ecological mechanisms. Alaska AFS Annual Meeting. Kodiak, AK, October 24, 2012.
8. **Neuswanger, J.R.**, Hughes, N.F., Wipfli, M.S., and Rosenberger, A.E. 3-D territoriality and shadow competition within schools of juvenile Chinook salmon. American Fisheries Society 142<sup>nd</sup> Annual Meeting. St Paul, MN, August 21, 2012.
9. **Neuswanger, J.R.**, Hughes, N.F., Wipfli, M.S., and Rosenberger, A.E. The importance of drifting debris for drift-feeding juvenile Chinook salmon. Midnight Sun Science Symposium. Fairbanks, AK, March 30, 2012.
10. **Neuswanger, J.R.**, Hughes, N.F., Wipfli, M.S., and Rosenberger, A.E. The importance of drifting debris for drift-feeding juvenile Chinook salmon. Alaska AFS Annual Meeting. Girdwood, AK, November 17, 2011.
11. **Neuswanger, J.R.**, Hughes, N.F., Wipfli, M.S., and Rosenberger, A.E. The importance of drifting debris for drift-feeding juvenile Chinook salmon. American Fisheries Society 141<sup>st</sup> Annual Meeting. Seattle, WA, September 5, 2011.
12. **Neuswanger, J.R.**, Hughes, N.F., Wipfli, M.S., Kelly, L.H., and Rosenberger, A.E. Intra-school competition and drift-feeding behavior in wild juvenile Chinook salmon. Alaska AFS Annual Meeting. Juneau, AK, November 5, 2010.
13. **Neuswanger, J.R.**, Hughes, N.F., Wipfli, M.S., Kelly, L.H., and Rosenberger, A.E. Intra-school competition and drift-feeding behavior in wild juvenile Chinook salmon. Advances in the Population Ecology of Stream Salmonids III. Lueca, Spain, May 20, 2010.
14. **Neuswanger, J.R.**, Hughes, N.F., Wipfli, M.S., Kelly, L.H., and Rosenberger, A.E. Improved 3-D video analysis methods, with applications to wild juvenile Chinook salmon foraging behavior. Alaska AFS Annual Meeting. Fairbanks, AK, November 4, 2009.
15. **Neuswanger, J.R.**, Hughes, N.F., Wipfli, M.S., Kelly, L.H., and Rosenberger, A.E. Improved 3-D video analysis methods, with applications to wild juvenile Chinook salmon foraging behavior. American Fisheries Society 139<sup>th</sup> Annual Meeting. Nashville, TN, September 3, 2009.