

## **Watershed Program - Recent Publications (2012 to 2017)**

### **2017/In press**

Beechie, T. J., B. Timpane-Padgham, O. Stefankiv, J. Hall, G. Pess, M. Liermann, M. Rowse, K. Fresh, and M. Ford. In press. Monitoring habitat status and trends in Puget Sound: development of sample designs, monitoring metrics, and sampling protocols for nearshore, delta, large river, and floodplain environments. NOAA Technical Memorandum.

Hines, D., M. Liermann, T. Seder, B. Cluer, G. Pess, and C. Shoenbeck. In press. Diel shifts in salmonid fry micro-habitat selection. *North American Journal of Fisheries Management*.

Kaylor, M. J., D. R. Warren, and P. M. Kiffney. 2017. Legacies of forest management influence light in Pacific Northwest streams. *Freshwater Science*.

Peters, R. J., M. Liermann, M. L. McHenry, P. Bakke, G. R. Pess. In press. Changes in streambed composition in salmonid spawning habitat of the Elwha River during dam removal. *Journal of American Water Resources Association*.

Timpane-Padgham, B., T. Beechie, T. Klinger. In press. A systematic review of ecological attributes that confer resilience to climate change in environmental restoration. *PLOS ONE*.

### **2016**

Bærum, K. M., L. A. Vøllestad, P. M. Kiffney, Alice Rémy, and T. O. Haugen. In press. Population-level variation in juvenile brown trout growth from different climatic regions of Norway to an experimental thermal gradient. *Ecology of Freshwater Fish*.

Bennett, S., G. R. Pess, N. Bouwes, P. Roni, R. E. Bilby, S. Gallagher, J. Ruzycski, T. W. Buehrens, W. Ehinger, J. H. Anderson, C. E. Jordan, B. Bowersox, and C. M. Greene. 2016. *Watersheds. Fisheries*, 41(2):93-103.

Booth, D. B., J. G. Scholz, T. J. Beechie, and S. C. Ralph. 2016. Integrating limiting-factors analysis with process-based restoration to improve recovery of endangered salmonids. *Water*, 8, 174; DOI:10.3390/w8050174

Bouwes, N., N. Weber, C. E. Jordan, M. M. Pollock, W. C. Saunders, I. A. Tattam, C. Volk, and J. M. Wheaton. 2016. Ecosystem experiment reveals benefits of beaver assisted restoration to a population of E.S.A. listed steelhead (*Oncorhynchus mykiss*). *Scientific Reports*.

Cram, J., C. E. Torgersen, R. Klett, G. R. Pess, D. May, T. N. Pearsons, A. H. Dittman. In press. Spatial variability of Chinook Salmon spawning site fidelity and habitat preferences. *Transactions of the American Fisheries Society*.

East, A. E., K. J. Jenkins, P. J. Happe, J. A. Bountry, T. J. Beechie, M. C. Mastin, J. B. Sankey, and T. J. Randle. Accepted manuscript online. Channel-planform evolution in four rivers of Olympic National Park, Washington, U.S.A.: The roles of physical drivers and trophic cascades. *Earth Surface Processes and Landforms* DOI: 10.1002/esp.4048

Gayeski, N., G. R. Pess, and T. J. Beechie. 2016. A Life-Table Model Estimation of the Parr Capacity of a Late-Nineteenth Century Puget Sound Steelhead Population. *FACETS*, 1:83-104. doi:10.1139/facets-2015-0010

Hall, J. E., P. Roni, T. R. Bennett, J. R. McMillan, K. Hanson, G. R. Pess, R. E. Moses, M. McHenry, and W. Ehinger. 2016. Life history diversity of steelhead (*Oncorhynchus mykiss*) in two coastal Washington watersheds. *Transactions of the American Fisheries Society*, 145:5, 990-1005, DOI: 10.1080/00028487.2016.1194893

Kasprak, A., N. Hough-Snee, T. J. Beechie, N. Bouwes, G. Brierley, R. Camp, K. Fryirs, H. Imaki, M. L. Jensen, G. O. O'Brien, and J. M. Wheaton. 2016. The blurred line between form and process: a comparison of stream channel classification frameworks. *PLoS ONE*, 11(3):1-31.

Morley, S. A., H. J. Coe, L. S. Dunphy, J. J. Duda, M. L. McHenry, B. R. Beckman, M. Elofson, S. Sampson, L. Ward. 2016. Seasonal variation exceeds effects of salmon carcass additions on benthic foodwebs in the Elwha River. *Ecosphere* 7(8): doi:10.1002/ecs2.1422

Naman, S., C. M. Greene, C. A. Rice, J. Chamberlin, L. Conway-Cranos, J. R. Cordell, J. E. Hall, and L. D. Rhodes. In press. Stable isotope-based trophic structure of pelagic fish and jellyfish across natural and anthropogenic landscape gradients in a fjord estuary. *Ecology and Evolution*.

Warren, D. R., W. S. Keeton, P. M. Kiffney, M. J. Kaylor, H. A. Bechtold, and J. Magee. 2016. Changing forests—changing streams: riparian forest stand development and ecosystem function in temperate headwaters. *Ecosphere* 7(8): e01435.10.1002/ecs2.1435.

## 2015

Bartz, K. K., M. J. Ford, T. J. Beechie, K. L. Fresh, G. R. Pess, M. Rowse, M. B. Sheer, and R. Kennedy. 2015. Trends in developed cover adjacent to habitat for threatened salmon in Puget Sound, Washington, U.S.A. *PLoS ONE* 10(4): e0124415. DOI: 10.1371/journal.pone.0124415.

Beechie, T. J., G. R. Pess, H. Imaki, A. Martin, J. Alvarez, and D. Goodman. 2015. Comparison of potential increases in juvenile salmonid rearing habitat capacity among alternative restoration scenarios, Trinity River, California. *Restoration Ecology*, 23(1):75-84.

Bennett, S. G. R. Pess, N. Bouwes, P. Roni, R. E. Bilby, S. Gallagher, J. Ruzycki, T. W. Buehrens, W. Ehinger, and C. E. Jordan. In press. Progress and Challenges of Testing the Effectiveness of Stream Restoration in the Pacific Northwest Using Intensively Monitored Watersheds. *Fisheries*

Bennett, T. R., Roni, P., Denton, K., McHenry, M. and Moses, R. (2015), Nomads no more: early juvenile coho salmon migrants contribute to the adult return. *Ecol Freshw Fish*, 24: 264–275. doi:10.1111/eff.12144

Clements, W. H., D. R. Kashian, P. M. Kiffney, and R. E. Zuellig. 2015. Perspectives on the context–dependency of stream community responses to contaminants. *Freshwater Biology*, Early view.

Conway-Cranos, L., P. M. Kiffney, N. S. Banas, M. Plummer, S. M. Naman, P. MacCready, J. Bucci, and M. H. Ruckelshaus. 2015. Stable isotopes and oceanographic modeling reveal spatial and trophic connectivity between terrestrial, estuarine and marine environments in Puget Sound, WA. *Marine Ecology Progress Series*, 11318.

East, A., G. R. Pess, J. Bountry, C. Magirl, A. Ritchie, J. Logan, T. Randle, M. Mastin, J. J. Duda, M. Liermann, M. McHenry, and T. J. Beechie. 2015. Large-scale dam removal on the Elwha River, Washington, USA: river channel and floodplain geomorphic change. *Geomorphology*, 228:765-786.

Fullerton, A. H., C. E. Torgersen, J. J. Lawler, R. N. Faux, E. A. Steel, T. J. Beechie, J. L. Ebersole, and S. G. Leibowitz. 2015. Rethinking the longitudinal stream temperature paradigm: region-wide comparison of thermal infrared imagery reveals unexpected complexity of river temperatures. *Hydrological Processes* 29: 4719–4737. doi:10.1002/hyp.10506.

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Hall, J. E., M. M. Pollock, S. Hoh, C. Volk, J. Goldsmith, and C. E. Jordan. 2015. Evaluation of dryland riparian restoration with cottonwood and willow using deep-planting and herbivore protection. *Ecosphere* 6(12):263. [http://dx. doi.org/10.1890/ES15-00296.1](http://dx.doi.org/10.1890/ES15-00296.1)

Hard, J. J., J. M. Myers, E. J. Connor, R. A. Hayman, R. G. Kope, G. Lucchetti, A. R. Marshall, G. R. Pess, and B. E. Thompson. 2015. Viability criteria for steelhead within the Puget Sound Distinct Population Segment. U.S. Dept. Commer. NOAA Tech. Memo. NMFS-NWFSC-129, 332 p.

Jones, K. L., S. J. O'Daniel, T. J. Beechie, J. Zakrasjek, and J. G. Webster. 2015. Physical Habitat Monitoring Strategy for Reach-Scale Restoration Effectiveness Monitoring. USGS Open-File Report 2015-1069, U.S. Geological Survey, 58 p.

Kendall, N., J. R. McMillan, M. R. Sloat, T. W. Buehrens, T. P. Quinn, G. R. Pess, K. V. Kuzischchin, M. M. McClure, and R. W. Zabel. 2015. Anadromy and residency in steelhead and rainbow trout *Oncorhynchus mykiss*: a review of the processes and patterns. Canadian Journal of Fisheries and Aquatic Sciences, 72(3):319-342. doi:10.1139/cjfas-2014-0192.

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McMillan, J. R., G. R. Pess, S. A. Morley, L. A. Campbell, M. McHenry, and T. P. Quinn. 2015. Using redd attributes, fry density and otolith microchemistry to distinguish the presence of steelhead and Rainbow Trout (*Oncorhynchus mykiss*) in the Elwha River dam removal project. North American Journal of Fisheries Management 35:1019-1033.

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Oyafuso, Z., A. E. Baxter, J. E. Hall, S. M. Naman, C. E. Greene, and L. D. Rhodes. 2015. Widespread detection of human- and ruminant origin Bacteroidales markers in subtidal waters of the Salish Sea in Washington State. Journal of Water and Health, 13(3):827-837. doi:10.2166/wh.2015.253.

Paranjpye, R. N., W. B. Nilsson, M. Liermann, E. D. Hilborn, B. J. George, Q. Li, B. D. Bill, V. L. Trainer, M. S. Strom, P. A. Sandifer. 2015. Environmental influences on the seasonal distribution of *Vibrio parahaemolyticus* in Puget Sound. FEMS Microbiology Ecology.

Perry, L., L. Reynolds, T. J. Beechie, M. Collins, and P. B. Shafroth. 2015. Incorporating climate change projections into riparian restoration planning and design. Ecohydrology 8: 863-879. doi:10.1002/eco.1645.

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effects of physical habitat and parentage on Chinook salmon egg-to-fry survival. *Canadian Journal of Fisheries and Aquatic Sciences*.

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Tonra, C. M., K. A. Sager-Fradkin, S. A. Morley, J. J. Duda, P. P. Mara. 2015. The rapid return of marine-derived nutrients to a freshwater food web following a century of damming. *Biological Conservation* 192:130-134.

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## 2014

Anderson, J. H., G. R. Pess, R. W. Carmichael, M. J. Ford, T. D. Cooney, C. M. Baldwin, and M. M. McClure. 2014. Planning Pacific salmon and steelhead reintroductions aimed at long-term viability and recovery. *North American Journal of Fisheries Management* 34:72–93.

Banas, N. S., L. Conway-Cranos, D. A. Sutherland, P. MacCready, P. Kiffney, and M. Plummer. 2014. Patterns of river influence and connectivity among sub-basins of Puget Sound, WA with application to bacterial and nutrient loading. *Estuaries and Coasts* (<http://10.1007/s12237-014-9853-y>)

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Buehrens, T. W., P. Kiffney, G. R. Pess, T. R. Bennett, S. M., Naman, G. Brooks, G., and T. P. Quinn. 2014. Increasing Juvenile Coho Salmon Densities during Early Recolonization Have Not Affected Resident Coastal Cutthroat Trout Growth, Movement, or Survival. *North American Journal of Fisheries Management* 34(5):892-907.

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