

Neala Warren Kendall

National Research Council Postdoctoral Research Associate
NOAA Northwest Fisheries Science Center
2725 Montlake Blvd. E. Seattle, WA 98112
206.860.3429 kendallnw@gmail.com

EDUCATION

Doctor of Philosophy, December 2011, School of Aquatic & Fishery Sciences (SAFS), University of Washington (UW), Seattle.

Dissertation title: Fishery selection and Pacific salmon life histories: patterns and processes

Master of Science, December 2007, SAFS, UW, Seattle.

Thesis title: Long term fishery selection on age and size at maturity of Bristol Bay, Alaska sockeye salmon

Bachelor of Arts with High Honors, May 2001, Biology, Kenyon College, Gambier, Ohio.

Honors thesis title: Using microsatellites to analyze the genetic variability in southern redbelly dace (*Phoxinus erythrogaster*) of Knox County, Ohio

Summa Cum Laude and Phi Beta Kappa

TEACHING INTERESTS

- Ecology; evolution; conservation biology; fish, aquatic, and marine biology; environmental studies
- Field-based classes in ecology, conservation biology, and marine, aquatic, and fish biology
- Science communication and science writing
- Quantitative and statistical analyses for biological sciences

RESEARCH INTERESTS

- Ecology and evolution of freshwater and marine fishes including salmon
- Fishery selection and fisheries-induced evolution
- Life cycle modeling
- Effects of hydropower systems on fish life histories
- Adaptation and optimal life histories of fishes
- Applying ecological and evolutionary considerations to conservation and management of natural populations

TEACHING EXPERIENCES, MENTORING, AND SUPERVISION

Guest Lecturer, Thinking as a Scientist, UW Biology (fall 2011)

Guest Lecturer, Fisheries Bycatch Seminar, UW SAFS (spring 2011)

Guest Lecturer, Applications of Molecular Genetics in Ecology and Evolution, UW SAFS (spring 2011)

Undergraduate Student Supervisor, UW SAFS (Jan.-Mar. 2007, May-Aug. 2010)

Teaching Assistant, Aquatic Ecological Research in Alaska with Drs. Thomas Quinn, Ray Hilborn, and Daniel Schindler, UW SAFS (summer 2008)

Teaching Assistant, Conservation and Management of Aquatic Resources with Dr. Ray Hilborn, UW SAFS (fall 2006 & 2007)

Guest Lecturer, Conservation and Management of Aquatic Resources, UW SAFS (fall 2006 & 2007)

Teaching Assistant, Fish Ecology with Dr. Thomas Quinn, UW SAFS (spring 2005 & 2006)
Mentor, Bristol Bay Native Association summer intern (summer 2006)
Guest Lecturer, Aquatic Ecological Research in Alaska, UW SAFS (summer 2005, 2006, and 2008)

RESEARCH EXPERIENCE

National Research Council Post-doctoral Research Associate, National Oceanic and Atmospheric Administration (NOAA)-Northwest Fisheries Science Center (Dec. 2011-present)
Research Assistant, UW SAFS (Sept. 2004-Dec. 2011)
Research Assistant, UW Alaska Salmon Program (June-Sept. 2005-2006, 2008-2010)
Young Scientist Summer Program Participant, International Institute of Applied Systems Analysis, Laxenburg, Austria (June-Aug. 2007)
Summer Science Scholar, Kenyon College (June-Aug. 2000)

RELATED PROFESSIONAL EXPERIENCE

Scientist, Tetra Tech, Inc., Lafayette, CA (Nov. 2002-June 2004)
Associate Scientist, Exponent, Inc., Oakland, CA (Sept. 2001-Nov. 2002)

HONORS, AWARDS, SCHOLARSHIPS, AND FELLOWSHIPS

J. Frances Allen Scholarship for outstanding female PhD student - American Fisheries Society, \$2500 (Sept. 2011) and runner-up (2010)
Eugene Maughan Scholarship - Western Division American Fisheries Society, \$1500 (Sept. 2011)
Faculty Merit Award for outstanding academic achievement - UW SAFS, \$500 (June 2011)
Mentor of the Year - UW Women's Center "Making Connections" program (June 2011)
Best PhD Student Presentation - UW SAFS Graduate Student Symposium (Nov. 2010)
Best Student Paper Runner-up - Western Division American Fisheries Society meeting (May 2008)
Student Travel Awards - UW, \$250, \$1000, & \$150 (Sept. 2007, Nov. 2009, and May 2011)
Lauren R. Donaldson, Melvin G. Anderson, John G. Peterson, and H. Mason Keeler Endowment Scholarships - UW SAFS, each quarter \$8950 (8 quarters of funding, 2004-2010)
Distinguished Academic Scholar and Merit List - Kenyon College (1997-2001)
Academic All-American and All-American—swimming (1997-2001)
NCAA Post-Graduate Scholarship Recipient—swimming, \$5000 (2001)
Distinction on Senior Comprehensive Exercise - Kenyon College (2001)

GRANTS RECEIVED

Bristol Bay, Alaska Fishery Selection. Total: \$98,319. Alaska Sustainable Salmon Fund (2009-2011)

PEER-REVIEWED PUBLICATIONS

1. **Kendall, N. W.** and T. P. Quinn. Accepted pending revisions. Size-selective fishing affects sex ratios and the opportunity for sexual selection in Alaskan sockeye salmon. *Oikos*.
2. **Kendall, N. W.** and T. P. Quinn. In press. Comparative size-selectivity among Alaskan sockeye salmon fisheries: implications for harvest-induced evolution. *Ecological Applications*.

3. Quinn, T. P., **N. W. Kendall**, H. B. Rich, Jr, and B. Chasco. 2012. Diel vertical movements, and effects of infection by the cestode *Schistocephalus solidus* on daytime proximity of three-spine sticklebacks *Gasterosteus aculeatus* to the surface of a large Alaskan lake. *Oecologia*. 168:43-51.
4. **Kendall, N. W.** and T. P. Quinn. 2011. Length and age trends of Chinook salmon in the Nushagak River, Alaska related to commercial and recreational fishery selection and exploitation. *Transactions of the American Fisheries Society*. 140:611-622.
5. Baker, M. R., **N. W. Kendall**, T. A. Branch, D. E. Schindler, and T. P. Quinn. 2011. Selection due to disentanglement mortality in gillnet fisheries for sockeye salmon. *Evolutionary Applications*. 4:429-443.
6. **Kendall, N. W.**, A. H. Dittman, and T. P. Quinn. 2010. Comparative life history and maturation schedules of two Columbia River sockeye salmon populations. *Endangered Species Research*. 13(1):51-61.
7. **Kendall, N. W.**, H. B. Rich, Jr., L. R. Jensen*, and T. P. Quinn. 2010. Climate effects on inter-annual variation in growth of the freshwater mussel, *Anodonta beringiana*, in Iliamna Lake, Alaska. *Freshwater Biology*. 55:2339-2346.
8. **Kendall, N. W.**, J. J. Hard, and T. P. Quinn. 2009. Quantifying six decades of fishery selection for size and age at maturity in sockeye salmon. *Evolutionary Applications*. 2:523–536.
9. **Kendall, N. W.** and T. P. Quinn. 2009. Effects of population-specific variation in age and length on fishery selection and exploitation rates of sockeye salmon. *Canadian Journal of Fisheries and Aquatic Sciences*. 66:896-908.
10. Quinn, T.P., K. Doctor, **N. Kendall**, and H.B. Rich Jr. 2009. Anadromy and the life history of salmonid fishes: nature, nurture, and the hand of man. *In Challenges for Diadromous Fishes in a Dynamic Global Environment. Edited by A.J. Haro, K.L. Smith, R.A. Rulifson, C.M. Moffitt, R.J. Klauda, M.J. Dadswell, R.A. Cunjak, J.E. Cooper, K.L. Beal and T.S. Avery. American Fisheries Society Symposium 69, Bethesda, MD.*

* undergraduate at the University of Washington at time of research

MANUSCRIPTS IN PREPARATION

1. **Kendall, N. W.**, M. Heino, U. Dieckmann, A. E. Punt, and T. P. Quinn. Evolution of age and size at maturation of Alaskan sockeye salmon under size-selective harvest.

ORAL PRESENTATIONS

1. Kendall, N. W. and T. P. Quinn. What we can learn from studies of fishery selection on age and size at maturation in Alaskan salmon. American Fisheries Society annual meeting, Seattle, WA (Sept. 2011)
2. Kendall, N. W. and T. P. Quinn. Fishery selection on Alaskan sockeye salmon: the importance of incorporating evolutionary considerations into sustainable fishery management. International Marine Conservation Congress, Victoria, BC, Canada (May 2011)
3. Kendall, N. W. and T. P. Quinn. Changes in age and size at maturity related to fishery selection: lessons learned from Alaskan populations applied to Columbia River Chinook salmon. Conference and Workshop on Age and Size at Maturity of Chinook Salmon and other Pacific Salmonids, Portland, OR (May 2011) [invited]
4. Kendall, N. W., J. J. Hard, and T. P. Quinn. Comparative fishery selection across Alaskan salmon fisheries: implications for fisheries-induced evolution. NOAA-Northwest Fisheries Science Center lunchtime ecology seminar, Seattle, WA (Feb. 2011) [invited]

5. Kendall, N. W. and T. P. Quinn. Nushagak River Alaska Chinook salmon are getting smaller and younger: is this related to commercial and recreational fishery selection? UW Alaska Salmon Program Symposium, Seattle, WA (Dec. 2010)
6. Kendall, N. W. and T. P. Quinn. Nushagak River Alaska Chinook salmon are getting smaller and younger: is this related to commercial and recreational fishery selection? UW SAFS graduate student symposium, Seattle, WA (Nov. 2010)
7. Kendall, N. W. and T. P. Quinn. Fishery selection on Alaskan sockeye salmon and potential changes in size at maturity. Holar University, Iceland (Sept. 2010)
8. Kendall, N. W. and T. P. Quinn. Fishery selection on Alaskan sockeye salmon and potential changes in size at maturity. Ecological and Evolutionary Ethology of Fishes meeting, Burnaby, BC, Canada (May 2010)
9. Kendall, N. W., Hard, J. J., and T. P. Quinn. Fishery selection on salmon: Are we catching the big ones and is there potential for evolutionary change? UW Water Center Annual Review of Research, Seattle, WA (Apr. 2010) [invited]
10. Kendall, N. W., M. Heino, A. E. Punt, and U. Dieckmann. Evaluating age and size at maturation trends of Alaskan sockeye salmon using probabilistic maturation reaction norms. UW SAFS Fish Think Tank Mini-Workshop, Seattle, WA (Apr. 2010)
11. Kendall, N. W. and M. R. Baker. Selectivity in gillnet fisheries through disentanglement mortality. UW Alaska Salmon Program Symposium, Seattle, WA (Dec. 2009)
12. Kendall, N. W., J. J. Hard, and T. P. Quinn. Comparative selectivity on length at maturity among Alaskan sockeye salmon fisheries. Evolutionary Ecology of Fishes: Diversification, Adaptation and Speciation, Berlin, Germany (Nov. 2009)
13. Kendall, N. W., Dittman, A. H., and T. P. Quinn. Comparative life history and maturation schedule of two Columbia River sockeye salmon populations. American Fisheries Society Washington-British Columbia Chapter annual meeting, Shelton, WA (Mar. 2009)
14. Kendall, N. W. and A. E. Punt. Japanese high seas fishery selectivity on Bristol Bay sockeye salmon, 1972-1991. UW Alaska Salmon Program Symposium, Seattle, WA (Dec. 2008)
15. Kendall, N. W., J. J. Hard, and T. P. Quinn. Long term fishery selection on length and age at maturity of Bristol Bay, Alaska sockeye salmon. American Fisheries Society Western Division annual meeting, Portland, OR (May 2008)
16. Kendall, N. W., J. J. Hard, and T. P. Quinn. Long term fishery selection on length and age at maturity of Bristol Bay, Alaska sockeye salmon. Fisheries and Marine Ecosystems graduate student conference, Port Angeles, WA (Apr. 2008)
17. Kendall, N. W., J. J. Hard, and T. P. Quinn. Long term fishery selection on length and age at maturity of Bristol Bay, Alaska sockeye salmon. American Fisheries Society Washington-British Columbia Chapter annual meeting, Bellingham, WA (Mar. 2008)
18. Kendall, N. W., J. J. Hard, and T. P. Quinn. Long term fishery selection on length and age at maturity of Bristol Bay, Alaska sockeye salmon. NOAA-National Marine Mammal Lab Seminar, Seattle, WA (Jan. 2008) [invited]
19. Kendall, N. W., M. Heino, and U. Dieckmann. Probabilistic maturation reaction norms of Bristol Bay sockeye salmon. UW Alaska Salmon Program Symposium, Seattle, WA (Dec. 2007)
20. Kendall, N. W., M. Heino, and U. Dieckmann. Understanding age and size at maturation trends of Wood River system, Bristol Bay, Alaska sockeye salmon using probabilistic maturation reaction norms. UW SAFS Quantitative Seminar, Seattle, WA (Sept. 2007)
21. Kendall, N. W. and T. P. Quinn. Sixty years of fishery selection: length vulnerability patterns of sockeye salmon in the Nushagak District. UW Alaska Salmon Program Symposium, Seattle, WA (Dec. 2006)

22. Kendall, N. W., J. J. Hard, R. Hilborn, and T. P. Quinn. Long term fishery selection on length and age at maturity of sockeye salmon in Bristol Bay, Alaska. Mote Marine Lab Symposium, Sarasota, FL (Nov. 2006)
23. Kendall, N. W. J. J. Hard, and T. P. Quinn. Fishery selection on length and age at maturity of sockeye salmon in Bristol Bay, Alaska. UW SAFS graduate student symposium, Seattle, WA (Nov. 2006)
24. Kendall, N. W., J. J. Hard, and T. P. Quinn. Long term fishery selection on length at maturity of sockeye salmon in Bristol Bay, Alaska. Fisheries and Marine Ecosystems graduate student conference, White Rock, BC, Canada (Apr. 2006)
25. Kendall, N. W., J. J. Hard, R. Hilborn, and T. P. Quinn. Fishery selection on length and age at maturity of sockeye salmon in Bristol Bay, Alaska. Pacific Ecology and Evolution Conference, Bamfield, BC, Canada, oral presentation (Mar. 2006)
26. Kendall, N. W. Fishery selection on length and age at maturity of sockeye salmon in the Wood River system: a research proposal. Fisheries and Marine Ecosystems graduate student conference, Bainbridge Island, WA (Apr. 2005)
27. Kendall, N. W. and T. P. Quinn. Discrimination of Bristol Bay sockeye salmon using otolith microchemistry. UW Alaska Salmon Program Symposium, Seattle, WA (Dec. 2004)
28. Kendall, N. W., E. R. Heithaus, and L. Park. Using microsatellites to analyze the genetic variability in southern redbelly dace (*Phoxinus erythrogaster*) of Knox County, Ohio. UW SAFS graduate student symposium, Seattle, WA (Nov. 2004)
29. Kendall, N., E. R. Heithaus, and L. Park. Population genetics of southern redbelly dace (*Phoxinus erythrogaster*) of Knox County, Ohio. Society of Environmental Toxicologists and Chemistry annual meeting, Salt Lake City, UT (Nov. 2002)

POSTER PRESENTATIONS

1. Kendall, N. W., M Heino, and U. Dieckmann. Age and size at maturation trends of exploited Bristol Bay, Alaska sockeye salmon: maturation reaction norms analysis. Northwest Atlantic Fisheries Organization (NAFO) Annual Meeting, Lisbon, Portugal (Sept. 2007)
2. Kendall, N. W., J. J. Hard, R. Hilborn, and T. P. Quinn. Long term fishery selection on length and age at maturity of sockeye salmon in Bristol Bay, Alaska. UW SAFS graduate student symposium, Seattle, WA (Feb. 2007)
3. Kendall, N. W., J. J. Hard, R. Hilborn, and T. P. Quinn. Long term fishery selection on length and age at maturity of sockeye salmon in Bristol Bay, Alaska. Salmon and Evolutionary Changes Symposium, Seattle, WA (Dec. 2006)

RESEARCH INTERVIEWS

- Interviewed by KDLG, public radio station in southwest Alaska (June 2011, <http://www.kdlg.org/news/archive.php?id=1243>)
- Research featured in the New Scientist magazine (June 2011, <http://www.newscientist.com/article/dn20547-fishing-has-driven-evolution-of-smaller-alaskan-salmon.html>)

MEMBERSHIPS IN PROFESSIONAL ORGANIZATIONS

American Fisheries Society; Society for Conservation Biology; Sigma Xi, The Scientific Research Society; Fisheries and Marine Ecosystems network of graduate students

PROFESSIONAL SERVICE

Reviewer for Canadian Journal of Fisheries and Aquatic Sciences, Frontiers in Ecology and the Environment, Evolutionary Applications, Marine Ecology Progress Series, Oikos, Evolutionary Ecology,

Fisheries Research, Fisheries Bulletin, and Chilean government funding agency FONDECYT

VOLUNTEER WORK

- Mentor for three local high school students, UW Women's Center "Making Connections" program (Sept. 2008-present)
- Student Activities Chairperson, American Fisheries Society 2011 annual meeting (2010-2011)
- Student Representative, American Fisheries Society Western Division (2010-2011)
- Graduate Student Representative, UW SAFS faculty search committee (Feb.-Apr. 2011)
- Facilitator, UW COFS teaching assistant training (Sept. 2006, 2008, 2010)
- Science Fair Judge, Mount Rainier High School (Apr. 2010)
- Science Classroom Volunteer, Seattle Secondary Bilingual Orientation Center School (Mar.-June 2008)
- Volunteer Presenter, Pacific Science Center Polar Science Weekend, Seattle, WA (Mar. 2008)
- Graduate Student Member, UW SAFS quantitative curriculum committee (Nov. 2006-Mar. 2007)
- Guest Lecturer, The Northwest School, Seattle, WA; spoke to 9th graders about salmon ecology and taught literature searching and review skills (Sept. and Oct. 2006)
- Guest Lecturer, Dutch Hill Elementary School, Snohomish, WA; spoke to 4th, 5th, and 6th grade Future Problem Solvers about depletion of oceanic species (Apr. 2005)
- Guest Lecturer, The Valley School, Seattle, WA; spoke on salmon ecology and toxins to 3rd, 4th, and 5th graders (Jan. 2005)
- President, UW SAFS graduate student association (2005-2006)
- Volunteer, Brown Family Environmental Center at Kenyon College (1998-2001)

ACTIVITIES

- Member, Husky Masters swim club, Seattle, WA (2004-present)
- Member, Dolphin Swimming and Boating Club, San Francisco, CA (2001-present); successfully completed 28-mile swimming race around Manhattan Island (June 2003) and 12-mile crossing of the Straits of Gibraltar (June 2004)
- Varsity swim team member, Kenyon College (1997-2001) and NCAA Div. III national champion (2000)

TRAINING AND CONTINUING EDUCATION

- "Using acoustic tags for tracking fish" and "using hydroacoustics for fisheries assessment" short courses, Hydroacoustic Technology, Inc., Seattle, WA (Feb. 2011)
- Microsoft Access course, SAFS UW (Nov. 2005 and Feb. 2007)
- CPR and First Aid certified (2004, 2006, 2007, 2009)
- 40-hour HAZWOPER certified (2002)
- UW and UW SAFS teaching assistant training (2004)
- "Rapid Stream Bioassessment" workshop, California Fish and Game (2003)
- Restoring and Monitoring Watercourses course, Merritt College, Oakland, CA, (2003)
- California Water Management and Ecosystem Restoration course, UC Berkeley Extension (2002)