

Brian Patrick Kennedy

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Professional Preparation

Colgate University, Major: Biological Sciences, B.A. 1991
Dartmouth College, Major: Ecology and Evolutionary Biology, Ph.D. 2000
University of Michigan, Geological Sciences, School of Natural Resources and Ecology
and Evolutionary Biology, 2001 – 2005

Appointments

University of Idaho, College of Natural Resources, Assistant Professor – 2005 – present
University of Michigan, Department of Geological Sciences, Visiting Assistant Professor – 2005 – present
University of Montana, Flathead Lake Biological Station, Affiliate Scientist – 2006 – present
University of Michigan, *Postdoctoral Fellow and visiting assistant professor* – 2001 to 2005
Conservation International Foundation, *Aquatic Ecology Consultant* – 2000 to 2001
Dartmouth College, *Graduate Research Assistant* – 1994 to 2000
Michigan State University, *Research Assistant* – 1991-1994

Professional Interests

Aquatic ecology
Fish bioenergetics and population ecology
Community interactions and food webs in streams
Life history and biodiversity of freshwater fish
Stream habitat conservation and restoration
Ecosystem controls on aquatic processes
Isotope biogeochemistry
Otolith microchemistry

Current Research Projects and Interests (with collaborators)

- Climate and water resource allocation impacts on aquatic communities
- Salmon biodiversity and the geomorphic and geochemical drivers
- Otolith microchemistry and the life history variation of Chinook salmon in the Columbia River system (Zabel & Scheuerell, NOAA - NWFSC; Isaac & Thurow, USFS - RMRS)
- Flow mediated and hydrologic disturbance impacts on aquatic productivity, fish energetics and life history
- Long-term ecological restoration of Icicle Creek watershed following a restoration of anadromy (Wild Fish Conservancy, Seattle)
- Water resource management across jurisdictional and disciplinary boundaries (WoW UIIdaho and stakeholders in the Lapwai basin)
- Bioenergetic modeling of juvenile Chinook performance in Central Idaho (Zabel, Achord)
- Bioenergetics and movements of Atlantic salmon (*Salmo salar*) and its relationship to stream restoration in the Northeastern U.S. (Folt, Nislow, Blum)
- Biogeochemistry of the Colorado River and the population dynamics of one of its native endangered fish, the humpback chub (*Gila cypha*) (Nislow, Blum, Coggins)
- Role of anadromous Atlantic salmon (*Salmo salar*) populations on the nutrient budgets of streams in European rivers (Nislow, Armstrong)

Publications

- Kennedy, B.P.**, Nislow, K.H., C.L. Folt. *In press*. Linking consumption rates to habitat, growth and survival of juvenile Atlantic salmon (*Salmo salar*) using natural isotopes of cesium. *Ecology*.
- Rosenberger, E.E., Hampton, S.E., Fradkin, S.C., and **Kennedy, B.P.** *In press*. Effects of shoreline development on the nearshore environment in large deep oligotrophic lakes. *Freshwater Biology*.
- Lorion, C.M., and **Kennedy, B.P.** *In review*. Riparian forest buffers mitigate the effects of deforestation on fish assemblages in tropical headwater streams. *Ecological Applications*.
- Lorion, C.M., and **Kennedy, B.P.** *In review*. Relationships between deforestation, riparian forest buffers, and benthic macroinvertebrates in lowland neotropical streams. *Freshwater Ecology*.
- Kennedy, B.P.**, Chamberlain, C.P., Blum, J.D., Nislow, K.H. and Folt, C.L. (2005) Comparing naturally occurring stable isotopes of nitrogen, carbon, and strontium as markers for Atlantic salmon juvenile rearing locations. *Canadian Journal of Fisheries and Aquatic Sciences*. **62**: 48-57.
- Kennedy, B.P.**, Klaue, B., Blum, J.D., and Folt, C.L. (2004) Integrative measures of consumption rates in fish: expansion and application of a trace element approach. *Journal of Applied Ecology*, **41**: 1009-1020.
- Fuller, R.L., **Kennedy, B.P.**, and Nielsen, C. (2004) Macroinvertebrate responses to algal and bacterial manipulations in streams. *Hydrobiologia*, **523**: 113-126.
- Kennedy, B.P.**, Klaue, A, Blum, J.D., Folt, C.L. and Nislow, K. (2002). Reconstructing the lives of salmon using Sr isotopes in otoliths. *Canadian Journal of Fisheries and Aquatic Sciences*, **59**: 925-929.
- Nislow, K.H., Magilligan, F.J., Folt, C.L, and **Kennedy, B.P.** (2002) Within-basin variation in the short term effects of a major flood on stream fishes and invertebrates. *Journal of Freshwater Ecology*. **17**: 305-318.
- Kennedy, B.P.**, Blum, J.D., Folt, C.L. and Nislow, K. (2000) Using natural strontium isotopic signatures as fish markers: methodology and application. *Canadian Journal of Fisheries and Aquatic Sciences*, **57**: 2280-2292.
- Kennedy, B.P.** (2000). Understanding Atlantic salmon (*Salmo salar*) performance, survival and dispersal through the use of environmental tracers. Dartmouth College, Hanover, N.H. Ph.D. Dissertation.
- Mack, A.L., Ickes, K., Jessen, J.H., **Kennedy, B.P.**, and Sinclair, J.R. (1999) Ecology of *Aglai mackiana* (Meliaceae) seedlings in a New Guinea rain forest. *Biotropica*. **31**: 111-120.
- Harrington, R., **Kennedy, B.P.**, Chamberlain, C.P., Blum, J.D., and Folt, C.L. (1998) N¹⁵ enrichment in agricultural catchments: field patterns and applications to tracking Atlantic salmon (*Salmo salar*). *Chemical Geology*, **147**: 281-294.

Kennedy, B.P., Folt, C.L., Blum, J.D., and Chamberlain, C.P. (1997) Natural isotope markers in salmon. *Nature*. **387**: 766-767.

Hedin, L.O., von Fischer, J.C., Ostrom, N.E., **Kennedy, B.P.**, Brown, M.G., and Robertson, G.P. (1997) Thermodynamic constraints on nitrogen transformations and other biogeochemical processes at soil-stream interfaces. *Ecology*. **79**: 684-703.

Invited Seminars

May 2008. Western Division of the American Fisheries Society, Portland, OR. USA.
An overview of otolith techniques for addressing stream restoration objectives. B.P. Kennedy, Dept. of Fish and Wildlife Resources, University of Idaho.

February 2008. Center for Water Research, Perth, Australia.
Combining models of flow and environmental tracers to improve our understanding of fish bioenergetics. B.P. Kennedy, Dept. of Fish and Wildlife Resources, University of Idaho.

September 2007. Annual National AFS Meeting, , San Francisco, CA, USA.
Linking variation in otolith and freshwater geochemistry: A meta-analysis of application potential. B.P. Kennedy, Dept. of Fish and Wildlife Resources, University of Idaho.

April 2007. Washington State University Geology Seminar series, Pullman, WA.
Integrating biologic and geologic processes in understanding the population ecology of fish. B.P. Kennedy, Dept. of Fish and Wildlife Resources, University of Idaho.

November 2005. University of Idaho Biology Seminar series, Moscow, ID.
Linking life cycle stages of fish: It's elementary. B.P. Kennedy, Dept. of Fish and Wildlife Resources, University of Idaho.

May 2004. Department of Fish and Wildlife Resources, University of Idaho.
Linking ecologically significant stages in the life cycle of fishes using geochemical tracers. Brian Kennedy, Dept. of Geological Sciences, University of Michigan.

April 2004. School of Marine and Atmospheric Sciences. SUNY – Stony Brook University.
Linking ecologically significant stages in the life cycle of fishes using geochemical tracers. Brian Kennedy, Dept. of Geological Sciences, University of Michigan.

March 2004. The Department of Natural Resources and Environmental Sciences, University of Nevada at Reno.
Linking critical life cycle stages of fish using geochemical tracers. B.P. Kennedy, Dept. of Geological Sciences, University of Michigan.

March 2003. Norwegian Institute for Nature Research (NINA), Trondheim, Norway.
Geochemical Records in otoliths and their application to Atlantic salmon restoration and conservation. B.P. Kennedy, Dept. of Geological Sciences, University of Michigan.

January 2002. Department of Geological Sciences, University of Michigan, Ann Arbor, MI.
Reconstructing the lives of salmon through the use of Sr stable Isotopes. B.P. Kennedy, Dept. of Geological Sciences, University of Michigan.

October 2001. DIALOG – ASLO, Bermuda

Linking salmon habitat, foraging, and survival through the use of environmental tracers. B.P. Kennedy, Dept. of Geological Sciences, University of Michigan.

June 2001. North American Benthological Society Annual Meeting. Lacrosse, WI.
Using natural strontium signatures to track the movements and migrations of salmon. B.P. Kennedy, A. Klaue, J.D. Blum & C.L. Folt.

April 2001. Great Lakes Environmental Research Laboratory, NOAA. Ann Arbor, MI.
Linking Atlantic salmon habitat, foraging, and survival through the use of environmental tracers. B.P. Kennedy, Dept. of Geological Sciences, University of Michigan.

January 2001. Department of Biology, University of Michigan, Ann Arbor, MI.
Linking Atlantic salmon habitat, foraging, and survival through the use of environmental tracers. B.P. Kennedy, Dept. of Geological Sciences, University of Michigan.

February 1999. Connecticut River Atlantic Salmon Commission - Tech Meeting. Hadley, MA.
Effects of extreme floods on habitat and biotic communities in Atlantic salmon rearing streams. K.H. Nislow, F.J. Magilligan, B.P. Kennedy & C.L. Folt.

July 1998. American Fisheries Society Early Life History Section. Ann Arbor, MI.
Tracing the tributary origins and movements of anadromous Atlantic salmon (*Salmo salar*) through the use of stable isotopes. B.P. Kennedy, R. Harrington, C.L. Folt, J.D. Blum & C.P. Chamberlain.

Scholarly Presentations (* denotes student presenter, ** denotes undergraduate research)

February 2008. Idaho Chapter of the American Fisheries Society Annual Meeting, Post Falls, ID. USA.
An overview of otolith microchemistry: its application, utility and potential for addressing statewide issues in fish ecology and management. **B.P. Kennedy.**

February 2008. Idaho Chapter of the American Fisheries Society Annual Meeting, Post Falls, ID. USA.
The relative roles of biotic and abiotic factors in determining growth differences of juvenile Chinook in a Idaho wilderness stream. *K.J. Cromwell, D.E. Holecek, and **B.P. Kennedy.**

February 2008. Idaho Chapter of the American Fisheries Society Annual Meeting, Post Falls, ID. USA.
Juvenile Chinook Salmon Microhabitat Use, Availability, and Selection in a Central Idaho Wilderness Stream. **D.E. Holecek, K.J. Cromwell, and **B.P. Kennedy.**

February 2008. Idaho Chapter of the American Fisheries Society Annual Meeting, Post Falls, ID. USA.
Factors Influencing the Use of Side Channel Habitat by Westslope Cutthroat Trout. **B. Stevens, J. Dupont and **B.P. Kennedy.**

November 2007. NWFCFS seminar, NOAA-NMFS, Seattle, WA. USA.
Using otolith microchemistry to distinguish natal origin and habitat use of spring/summer Chinook salmon in the Salmon River basin. R. Zabel, M. Scheuerell, and **B.P. Kennedy.**

November 2007. Fish and Wildlife Seminar Series, University of Idaho, Moscow, ID. USA.
Juvenile Chinook Salmon Habitat Use, Availability, and Selection in a Central Idaho Wilderness Stream., ** D.E. Holecek, K.J. Cromwell, and **B.P. Kennedy.**

October 2007. Wild Trout Symposium, West Yellowstone, MT. USA. (Poster session)

Relating density of juvenile Chinook salmon to microhabitat availability in a Wilderness Stream. *K.J. Cromwell, D.E. Holecek, and **B.P. Kennedy**.

June 2007. Annual Meeting of the North American Benthological Society. Columbia, SC. USA. Influences of Deforestation and Riparian Forest Buffers on Macroinvertebrate Community Composition and Diversity in Lowland Neotropical Streams. *C.M. Lorion, B.P. **Kennedy**, and J.H. Braatne.

May 2007. Landscapes to Riverscapes Symposium. University of Idaho, Moscow, ID. USA. Scaling Up from Individuals to Ecosystem Processes. **B.P. Kennedy**.

May 2007. Landscapes to Riverscapes Symposium. University of Idaho, Moscow, ID. USA. Distribution and Ecology of Stream Fishes in a Tropical Riverscape: Conservation Challenges and Opportunities. *C.M. Lorion, **B.P. Kennedy**, and J.H. Braatne.

December 2006, Eos Trans. AGU San Francisco, CA. USA, 87(52), Abstract ED31A-1361. University of Idaho Water of the West Initiative: Development of a sustainable, interdisciplinary water resources program. J. Boll, B. Cosens, F. Fiedler, T. Link, P. Wilson, C. Harris, M. Tuller, G. Johnson, and **B.P. Kennedy**.

April 2006. Big Creek Symposium. University of Idaho, Moscow, ID. USA. A bioenergetics approach to understanding juvenile Chinook survival. **B.P. Kennedy**, and K.J. Cromwell.

October 2005. Colorado River Ecosystem Science Symposium, Tempe, AZ. USA. A test of the utility of otolith chemistry for studying humpback chub movements. **B.P. Kennedy**, J.D. Blum, K.H. Nislow, and L.Coggins.

February 2005. ASLO All Scientist meeting, Salt Lake City, Utah, USA. Linking events in the life cycle of an endangered species using geochemical tracers in the Colorado River. **B.P. Kennedy**, **J.D.** Blum, K.H. Nislow, and L.Coggins.

July 2002. Annual Hubbard Brook Cooperators Meeting. New Hampshire, USA. Aerial Transport of elements and insects across watershed boundaries: Completing the wollastonite cycle. **B.P. Kennedy**, K. Macneale, J.D. Blum, and G. Likens.

July 2001. Annual Hubbard Brook Cooperators Meeting. New Hampshire, USA. Manipulation of the Sr isotopic signature in Watershed 1: Why should a population biologist care? Brian Kennedy, Kate Macneale, Joel Blum, and Gene Likens.

September 2000. Goldschmidt International Conference for Geochemistry. Oxford, UK. Sr isotope markers in otolith growth increments of Atlantic Salmon. A. Klaue, B. P. Kennedy, J. D. Blum, C. L. Folt, and K. C. Lohmann.

August 2000. Ecological Society of America. Snowbird, UT. The relationship between consumption rates and habitat in Vermont salmon streams: application of a trace metal mass balance approach. B. P. Kennedy, K. H. Nislow, C. L. Folt, and J. D. Blum

July 2000. International Conference on the Biology of Fish. Aberdeen, Scotland. Testing the predictions from a spatially-explicit bioenergetic model for age-0 Atlantic salmon using fluxes of trace elements. B. P. Kennedy, C. L. Folt, and K. H. Nislow.

May 1999. North American Benthological Society Annual Meeting. Duluth, MN.
Within-basin variation in the effects of a major flood. K. H. Nislow, F. J. Magilligan, B. P. Kennedy,
and C. L. Folt.

April 1997. Northeast Fisheries and Wildlife Conference. Amherst, MA.
Distinguishing salmon populations based upon their stable isotope chemistry. B. P. Kennedy, C. L. Folt,
J. D. Blum, C. P. Chamberlain, and R. Harrington.

August 1996. Ecological Society of America. Providence, RI.
Tracing tributary origins of migratory salmon using stable isotopes. B. P. Kennedy, R. Harrington, C. L.
Folt, J. D. Blum, and C. P. Chamberlain.

June 1994. North American Benthological Society. Orlando, FL.
Controls on nitrogen transformations at hyporheic soil-stream interfaces: an experimental evaluation.
B. P. Kennedy, L. O. Hedin, J. C. von Fischer, and M. G. Brown.

Funded Research Projects

Water of the West: Towards a Sustainable, Interdisciplinary Water Resources Program. Office of
the Vice President for Research, University of Idaho. 2006 – 2012. PIs Boll (Lead), Cosens,
Fiedler, Harris, Kennedy, Johnson, Link, Tuller, and Wilson.

The development and test of a spatially explicit bioenergetics model to identify determinants of
survival for juvenile chinook salmon in the Big Creek watershed. NOAA-NMFS. PI –
Kennedy.

Effect of Arsenic on Bull Trout: An Investigation of Mine Cleanup Practices in the Pacific
Northwest. USFS, Upper Columbia Fish and Wildlife Office, Spokane, WA. PI – Kennedy.

Onchorhynchus mykiss life history variability in the Middle Fork system: migratory decisions in a
disturbed wilderness environment. DeVlieg Foundation. PI – Kennedy.

Using otolith microchemistry to distinguish natal origin and habitat usage of spring/summer
Chinook salmon in the Snake River basin. NOAA-NMFS PIs – Kennedy, Zabel and
Schuerell, NOAA-NMFS.

Using otolith microchemistry and microstructure to assess the causes and consequences of
alternate life history strategies for Snake River Fall Chinook. NOAA-NMFS PIs – Kennedy,
Zabel and Schuerell, NOAA-NMFS.

Boise River Project: Reservoir Operations Flexibility Investigation, Phase I: Deadwood Project.
USBR. PIs – McGrath, Kennedy and Goodwin

Lewiston Orchard Project, Sweetwater Basin Fish Flow Study. USBR. PIs – Kennedy and Peery.

Developing Tools To Minimize Jurisdictional Barriers To Achievement Of Fishery and Water
Resources Goals In Lapwai Creek, Idaho. USGS – 104B Fund. PIs – Kennedy and Cosens.

Dispersal of perch larvae: understanding source-sink dynamics in an altered ecosystem. PIs:
Kennedy, Jude, Blum; University of Michigan, Office of the Vice President for Research
(OVPR).

Watershed – Great Lakes Interactions: Defining the Ecological Footprint of the Muskegon River Watershed on Fisheries in Nearshore Lake Michigan. PIs: Rutherford, Wiley, Kennedy, Blum, Eadie; University of Michigan, Office of the Vice President for Research (OVPR).

Using stable isotopes to identify the natal origins of native fishes in the Grand Canyon section of the Colorado River Basin. USGS. PIs – Kennedy, Nislow, Blum;

Links between mesohabitat classes, food consumption, growth and production of juvenile Atlantic salmon. PIs – Forseth, Ugedal, Borsanyi, Kennedy, Letcher; Norges Forskningsråd (The Research Council of Norway).

Identification of salmon by geochemical signatures; Classification of important stocks, and further development of methods. Kennedy – Sub-contract for consultation and analyses on Norges Forskningsråd (The Research Council of Norway).

Using geochemical tracers in otoliths to identify the natal origins of Chinook salmon in the Middle Fork of the Salmon River, Idaho. PI – Kennedy; USFS.

Atlantic salmon restoration in New England: assessing habitat availability by combining stable isotope technology, genetic markers, and field evaluation. PIs: Folt, Blum, Chamberlain, Nislow, Kennedy; US DOC – NOAA/NMFS.

Research Highlights from Media

Science: Editor's Choice, August 9, 2002.

University of Michigan:

<http://www.umich.edu/~newsinfo/Releases/2001/Aug01/r080301e.html>

Discovery Channel: "Tracking the migrations of salmon;" aired August, 1997.

Science Daily: <http://www.sciencedaily.com/releases/1997/06/970629234900.htm>

Scientific American: <http://www.sciam.com/article.cfm?articleID=00065888-507E-1C60-B882809EC588ED9F>

Boston Globe: "Salmon's return address decoded unique mix of isotopes in bones reveals its origin" Ralph Jimenez, July 6, 1997.

Teaching Experience

Assistant Professor, University of Idaho

Spring 2008: Fish 504, A Field Approach to Advanced Fish Ecology

Assistant Professor, University of Idaho

Fall 2005, 2006, 2007: Fish 314 & 315, Fish Ecology and Fish Ecology Laboratory

Assistant Professor, University of Idaho

Fall 2005, 2006, 2007: Natural Resources 101, Introduction to the Natural Resource Profession

Assistant Professor, University of Idaho

Fall 2005, 2006, 2007: Fish 102, Introduction to the Fish and Wildlife Professions

Visiting Assistant Professor, University of Michigan, Camp Davis in Jackson Hole, WY
Summers 2003, 2004, 2005, 2006, 2007: Geol 341, Geology, Environmental Science in the Rockies

Assistant Professor, University of Idaho
Spring 2007: Fish 504, Advanced Ecology and Behavior of Fish

Assistant Professor, University of Idaho
Spring 2006: Fish 504, Hypothesis Development and Grant Proposal Writing

Visiting Assistant Professor, University of Michigan
Fall 2002 and Winter 2003: Geol 201, Earth System Science

Guest lecturer, University of Michigan, Museum of Paleontology
Fall 2003: Vertebrate Paleontology

Guest lecturer, Dartmouth College, Department of Biology
Winter 2000: Ecosystem Ecology

Participant, Dartmouth College
Fall 1999: College Teaching in the Life Sciences
Participant in a course designed to prepare college educators for teaching.

Guest lecturer, Dartmouth College, Department of Geology
Winter 1999: Geology of New England

Undergraduate co-advisor, Dartmouth College, 1996-1997.
Guided the work of undergraduate three Senior Honors Theses

Teaching assistant and program facilitator, Dartmouth College Foreign Studies Program
Winter 1997: Ecology of Tropical Ecosystems – Costa Rica and Jamaica

Graduate teaching assistant, Dartmouth College
Fall 1994: Ecology and Evolution

Students mentored (since 2005)

Graduate Students – Completed Research

Chris Lorion, Ph.D.
Elizabeth Rosenberger (Seminet-Reneau), M.S.

Graduate Students – Current

Kara Cromwell, M.S.
Timothy Kiser, M.S.
Richard Hartson, M.S.
Ellen Hamann, M.S.
Chau Tran, M.S.

Undergraduate Theses and Research

Jesse Davis, Fisheries
Dean Holecek, Fisheries
Greg Malone, ECB
Tobyn Rhodes, ECB
Bryan Stephens, Fisheries
Rachel Kaminski, REU
Rufus Nicoll, REU

Graduate Students – Committee Member

Dana Weigel, Ph.D.
Karen Laitala, M.S.
Chris Anderson, M.S.

Awards & Fellowships

Inspirational Mentor –Awards for Excellence	University of Idaho	2007
Inspirational Mentor –Awards for Excellence	University of Idaho	2006
DIALOG IV Participant	ASLO sponsorship	2001
Olin Fellowship	Atlantic Salmon Federation	1999 – 2000
Dartmouth College Graduate Fellowship	Dartmouth College	1994 – 2000
Charles W. Tillou Memorial Scholarship	Colgate University	1988 – 1991
Class of 1929 Memorial Scholarship	Colgate University	1987 – 1991

Professional Societies

Ecological Society of America
North American Benthological Society
American Fisheries Society
Sigma Xi