

Curriculum Vita for Braven Brock Beaty

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U. S. Citizen

EDUCATION

Doctor of Philosophy. Virginia Polytechnic Institute & State University. Department of Fisheries and Wildlife Sciences. 1999. Attended Fall, 1992-Fall, 1998.

Master of Science. Duke University. School of the Environment (formerly the School of Forestry and Environmental Studies). December, 1992. Attended Fall, 1987-Summer, 1992.

Bachelor of Science in Engineering. Duke University. Department of Biomedical Engineering. May, 1984. Attended Fall, 1980-Spring, 1984.

PROFESSIONAL EXPERIENCE

Stewardship Ecologist: Clinch Valley Program, The Nature Conservancy, Abingdon, VA. Implement science and stewardship activities for the Clinch Valley Bioreserve. Duties include development of monitoring strategies for aquatic fauna in the Clinch, Powell, and Holston rivers, identify and address research needs for biotic conservation, serve as liaison and collaborator with academic institutions, provide scientific and stewardship guidance for terrestrial and subterranean ecosystem conservation, serve lead scientist role for issues related to coal mining including facilitating a 2 year planning effort to identify ecological stresses and biodiversity conservation strategies related to coal mining in the Clinch and Powell river systems, serve leadership role in Clinch Powell Clean Rivers Initiative. Nov. 1998-present. Supervisor: Brad Kreps, (276) 676-2209.

Consulting ecologist: Designed and conducted over 50 mussel surveys for the detection of rare species in Virginia, including both Atlantic slope and Tennessee River system drainages. These survey efforts have often included assessment of habitat conditions for occupancy by native mussels. Assisted with a limited number of fish community assessments and surveys for rare species. May 1997 – present.

Research Associate: Dept. of Fisheries and Wildlife Sciences, Virginia Polytechnic Institute and State University. Conduct research to develop culturing systems for freshwater mussels. Develop techniques to maximize survival and growth of juvenile mussels. Sept. 1997-Oct. 1998. Supervisor: Dr. Richard J. Neves, Virginia Cooperative Fish and Wildlife Research Unit, Virginia Tech, Blacksburg, VA 24061 (540)231-5927.

Research Assistant: Dept. of Fisheries and Wildlife Sciences, Virginia Polytechnic Institute and State University. Conduct primary research pertaining to the use of physiological measurements as biomarkers of environmental stress in freshwater mussels. Also conduct research on the feasibility of rearing juvenile mussels in artificial stream systems. Assisted on projects ranging from stream habitat mapping to mussel distribution studies to relocation/recovery efforts of freshwater mussels. 1992-1997. Supervisor: Dr. Richard J. Neves, (540)231-5927.

Teaching Assistant: Department of Fisheries and Wildlife Sciences, Virginia Polytechnic Institute and State University. Assisted with teaching a course in Fisheries Management through developing and administering laboratory exercises, composing test questions, and grading of homework and writing exercises. Spring, 1995. Supervisor: Dr. Don Orth, (540)231-5919.

Engineering Scientist: Department of Mechanical Engineering, Duke University, Durham, NC. Conducted research on the viscoelastic properties of cell membranes. Responsible for developing new instrumentation required for

research projects, maintaining laboratory instrumentation, and overseeing day-to-day laboratory operations. 1985-1992. Supervisor: Dr. Robert Hochmuth.

Research Assistant: Mountain Lake Biological Station, University of Virginia, Pembroke, VA. Carried out field studies for the investigation of parental investment in brood rearing for slate-colored juncos. Summer, 1984. Supervisor: Licia Wolff

PUBLICATIONS, REPORTS AND PRESENTATIONS

- Jones, J., S. Ahlstedt, B. Ostby, B. Beaty, M. Pinder, N. Eckert, R. Butler, D. Hubbs, C. Walker, S. Hanlon, J. Schmerfeld, and R. Neves. 2014. Clinch River freshwater mussels upstream of Norris Reservoir, Tennessee and Virginia: a quantitative assessment from 2004 to 2009. *J. Amer. Water Res. Assoc.* 50(4): 820-836.
- Zipper, C. E., B. Beaty, G. C. Johnson, J. W. Jones, J. L. Krstolic, B. J. K. Ostby, W. J. Wolfe, and P. Donovan. 2014. Freshwater mussel population status and habitat quality in the Clinch River, Virginia and Tennessee, USA: a featured collection. *J. Amer. Water Res. Assoc.* 50(4): 807-819.
- Establishment of the Clinch Powell Clean Rivers Initiative. Presented at the Freshwater Mollusk Conservation Society Symposium, Apr. 2009, Baltimore, MD.
- International Exchange Work in Colombia. Presented at The Nature Conservancy Eastern Region All Staff Meeting, May 2008, Norfolk, VA.
- What Good is a Mussel? The Ecological Roles of Mussels in Stream Systems. Presented at Conservation Management of the Clinch and Cumberland River Systems: A Collaborative Discussion on Coal Mining and the Aquatic Environment, Sept. 2007, Abingdon, VA.
- Prioritization of Sites for Crash Related Spill Protective Measures. Presented at the Freshwater Mollusk Conservation Society Symposium, Mar. 2007, Little Rock, AR. (with A. Watland).
- Grobler, P. J., J. W. Jones, N. A. Johnson, B. B. Beaty, J. Struthers, R. J. Neves, and E. M. Hallerman. 2005. *Patterns of genetic differentiation and conservation of the slabside pearl mussel, Lexingtonia dolabelloides (Lea, 1840) in the Tennessee River drainage.* *Journal of Molluscan Studies.*
- Beaty, B., and R. J. Neves. 2004. *Use of a Natural River Water Flow-Through Culture System for Rearing Juvenile Freshwater Mussels (Bivalvia: Unionidae) and Evaluation of the Effects of Substrate Size, Temperature, and Stocking Density.* *American Malacological Bulletin*, 19(1/2).
- The Nature Conservancy's Conservation Prioritization Process and Implication for Conservation of Mollusks and Other Rare Aquatic Animals. Presented by Ryan Smith at the Freshwater Mollusk Conservation Society 3rd Symposium, Mar. 2003, Raleigh, NC. (with B. Beaty, P. Freeman, and R. Sutter).
- The Nature Conservancy and Mussel Restoration. Presented at the Propagation and Restoration of Freshwater Mussels Workshop of the Freshwater Mollusk Conservation Society, Mar. 2002, Shephardstown, WV.
- The Correlation Between Mollusk Distributions and Characteristic Stream Categories in the Cumberlands and Southern Ridge and Valley Ecoregion. Presented at the Freshwater Mollusk Conservation Society 2nd Symposium, Mar., 2001, Pittsburgh, PA. (with Ryan K. Smith).
- Development of Juvenile Culture Techniques and Testing of Potential Biomarkers of Environmental Stress in Freshwater Mussels (Bivalvia: Unionidae). Dec. 1999. Ph.D. Dissertation, Virginia Tech, Blacksburg, VA.
- Seasonal Patterns in Metabolic Enzymes and Substrates of Rainbow Mussels (*Villosa iris*) and Asian Clams (*Corbicula fluminea*). Poster presented at the Freshwater Mollusk Conservation Society 1st Symposium, Mar. 1999, Chattanooga, TN. (with R. J. Neves).
- Comparison of Physiological Responses of a Representative Freshwater Mussel (*Villosa iris*) and the Asian Clam (*Corbicula fluminea*). Presented at the AFS-Southern Division Mid-Year Meeting, Feb. 1998. (with R. J. Neves).
- Biological Assessment of the Replacement of the Route 72 Bridge in Russell County, VA on the Mussel Fauna in the Clinch River Around Pendleton Island. May, 1997. (with R. J. Neves).
- Environmental Factors Influencing Freshwater Mussels. Presented at the annual meeting of the Virginia Academy of Sciences, May, 1997. Abstract published in the *Virginia Journal of Science.* (abstract with R. J. Neves).
- Factors Influencing the Growth and Survival of Juvenile *Villosa iris* (Bivalvia:Unionidae) in an Artificial Stream System. 1996. Presented at the annual meeting of the National Shellfisheries Association, April, 1996. Abstract published in the *Journal of Shellfish Research.* (abstract with R. J. Neves).
- Feasibility of Rearing Juvenile Mussels in an Artificial Stream System. 1995. Presented at the annual meeting of the Virginia Academy of Sciences, May, 1995. Abstract published in the *Virginia Journal of Science.*

(abstract with R. J. Neves).

Viscosity of Passive Human Neutrophils Undergoing Small Deformations. 1993. *Biophysical Journal*, 64. (with R. M. Hochmuth, H. P. Ting-Beall, D. Needham and R. Tran-Son-Tay).
Biochemical Responses of Channel Catfish (*Ictalurus punctatus*) to Sediment-Borne Polycyclic Aromatic Hydrocarbons. 1992. Master's Thesis, Duke University.
Effects of Cell Lysis on the Rheological Behavior of Red Blood Cell Suspensions. 1990. *Journal of Biomechanical Engineering*, 112:257-262. (with R. Tran-Son-Tay and B. E. Coffey).
Magnetically Driven, Acoustically Tracked, Translating-Ball Rheometer for Small Opaque Samples. 1988. *Review of Scientific Instruments*, 59:1399-1404. (with R. Tran-Son-Tay, D. N. Acker and R. M. Hochmuth).
Numerous mussel survey reports for locations in Virginia. 1997-2011.

PERTINENT COURSEWORK

Ecotoxicology	Herpetology
Advanced Ecotoxicology	Genetics
Environmental Physiology of Fishes	Conservation Genetics
Environmental Chemistry	Statistics (5 semesters)
Fate of Organics in the Environment	Vertebrates
Stream Habitat Management	Policy, Administration and Management
Population Dynamics and Modelling	College Teaching
Population Ecology	

Engineering coursework included instrumentation and design courses, electronics, computer programming, fluid dynamics, calculus, differential equations.

TECHNICAL SKILLS

Experience with conservation planning protocols including The Nature Conservancy's ecoregional planning and 5S framework.
Ability to use ArcMap GIS software for mapping and analysis purposes including Spatial Analyst, Network Analyst, and ArcHydro.
Knowledge of propagation techniques for augmenting freshwater mussel populations.
Experience with aquatic sampling equipment including backpack and boat electroshockers, nets, snorkelling, Kemmerer samplers, Ekman dredge, and basic water chemistry test apparatus.
Familiar with various computer software packages including MS Office, Minitab, and Statistica as well as Windows, Macintosh and OS/2 operating systems.
Experience with a variety of lab equipment including spectrometers, fluorometer, HPLC, autosampler, automated data recording system, freeze-dryer.
Ability to design and construct prototype electronic and mechanical instrumentation.

PROFESSIONAL ORGANIZATIONS

Freshwater Mollusk Conservation Society, serving on Environmental Quality and Affairs Committee
North American Benthological Society
Society of Conservation Biology

HONORS AND SCHOLARSHIPS

Nominated for Xi Sigma Pi honor society (1995)
Phi Kappa Phi honor society (1994)
Thomas R. Mullen, Jr. Scholarship (1983-84)
Fred Soule Aldridge Scholarship (1982-83)

SERVICE

Member of Mollusk Taxa Committee for Virginia Dept. of Game & Inland Fisheries Comprehensive Wildlife Management Plan (2004-Present)

Highlands Soccer Club Board of Directors (2001-2004).

Assistant soccer coach (1998-2003).

Member of the 4-H Committee of the Virginia Tech Chapter of AFS (1994-96).

FIWGSA representative to the College Dean's Student Advisory Board (1994-95).

Editor of the Newsletter of the Southern Division of the American Fisheries Society (1993-95).