

## CURRICULUM VITAE

**John Allen Baker**

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### **Academic Appointments:**

- 2001- Research Assistant Professor, Department of Biology, Clark University, Worcester, Massachusetts.
- 2002- Instructor, International Development, Community, and Environment Graduate Program, Clark University, Worcester, Massachusetts.
- 1998- Laboratory coordinator, two-semester introductory biology sequence (Biology 101-102), Biology Department, Clark University, Worcester, Massachusetts.
- 1996- Research Fellow, George Perkins Marsh Institute, Clark University, Worcester, Massachusetts.
- 1996-1998 Co-instructor for course ES-122 "Ecological Systems", Environmental School, Clark University, Worcester, Massachusetts.
- 1994-1995 Instructor, Department of Biological Sciences, University of Arkansas, Fayetteville, Arkansas.

### **Education:**

- Ph.D Department of Biological Sciences, University of Arkansas, Fayetteville, Arkansas, 1998. Biology major. Dissertation title: *The allometry of reproduction in female threespine stickleback (Gasterosteus aculeatus)*. Dr. Kimberly G. Smith, advisor.
- MSc Department of Biological Sciences, University of Southern Mississippi, Hattiesburg, Mississippi, 1978. Biology major, with emphasis on ichthyology and fisheries biology. Thesis title: *Resource partitioning by cyprinid fishes in Black Creek, Mississippi*. Dr. Stephen T. Ross, advisor.

B.S. Department of Biological Sciences, Northern Illinois University, DeKalb, Illinois, 1975.  
Biology major. Dr. David W. Greenfield, advisor.

### **Certificates and awards:**

Clark University Excellence in Service award, 2002

Certified Fisheries Scientist, American Fisheries Society, May, 1988.

National Science Foundation Research Grant (with S.A. Foster). \$55,000, 1-year award, 1991.

National Science Foundation Research Grant (with S.A. Foster). \$570,000, 4-year award, 2004.

### **Teaching experience:**

2002-2006 International Development, Community, and Environment Graduate Program, Clark University. Applied Ecology.

1998-2004 Supervision of teaching assistants, and development of laboratory modules for the Introductory Biology 2-semester course sequence for majors, Biology Department, Clark University.

1996-1998 Environmental School, Clark University, Worcester, Massachusetts. Ecological Systems.

1994-1995 Department of Biological Sciences, University of Arkansas, Fayetteville, Arkansas. Advisor to honors undergraduate and graduate students in the design, execution, and analysis of field studies.

1991 Co-instructor for one-week professional training course for river engineers, Environmental Engineering of Flood Control Projects, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

1989 Co-instructor for one-week professional training course for aquatic biologists, Technical Workshop on Sampling Aquatic Systems, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

1985 Co-instructor, one-week professional workshop on fish communities of managed rivers, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

**Professional non-academic experience:**

- 1999 Consultant to US Army Corps of Engineers on marine turtle protection activities.
- 1995 Consultant to Synergics, Inc., on the effects of hydropower diversion on trout abundance in northern California mountain streams.
- 1992-1994 Principal Investigator, field study quantifying the effects of hydropower diversion on native freshwater gobies in high elevation Hawaiian streams. Funded by Synergics, Inc.
- 1991 Consultant, State of Hawaii Department of Land and Natural Resources. Development of a census method for assessing population size and habitat distribution of native freshwater gobies, one proposed for listing as endangered.
- 1991 Consultant to the British Broadcasting Corporation Open University Production Centre during development and filming of “Central Questions in Ethology”
- 1990 Senior Aquatic Biologist, New York State Department of Environmental Conservation, Stony Brook, New York.
- 1981 - 1999 Research Biologist, Environmental Laboratory, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi. Full-time position 1981 - 1989; part-time 1989 – 1995; as required 1995 - 1999.
- 1980 Biological Technician, NOAA/National Marine Fisheries Service, Pascagoula Laboratory, Pascagoula, Mississippi.

**Professional Service:**

- 2003-present Reviewer, NSF proposals to the Population Biology Panel
- 2001, 2004 Critical reviewer, University of Manitoba, Canada, for Competitive Grants for Biodiversity Research to graduate students within the province.
- 1997- present Editorial Board & North American Field Editor, *Ecology of Freshwater Fish*, Munksgaard International Publishers Ltd., Copenhagen, Denmark.
- 1985 Secretary, Mississippi Chapter, American Fisheries Society.
- 1986 President, Mississippi Chapter, American Fisheries Society.

1978- present Reviewed manuscripts for Copeia, Environmental Biology of Fishes, Ecology of Freshwater fishes, American Midland Naturalist, Ecology, Transactions of the American Fisheries Society, North American Journal of Fisheries Management, Canadian Journal of Fisheries and Aquatic Sciences, Canadian Field-Naturalist, Journal of Fish Biology, and for several chapters in edited volumes.

### **Professional Societies:**

American Fisheries Society  
American Society of Ichthyologists & Herpetologists  
North American Conservation Association  
Society for the Study of Evolution

### **Scientific Journal Articles:**

Baker, J.A. and T. Modde. 1977. Susceptibility to predation of blacktail shiners stained with Bismarck Brown Y. Transactions of the American Fisheries Society 106:334-338.

Baker, J.A. and S.T. Ross. 1981. Spatial and temporal resource utilization by southeastern cyprinids. Copeia 1981:178-189.

Pennington, C.H., J.A. Baker, and M.E. Potter. 1982. Contaminant levels in fishes from Brown's Lake, Mississippi. Journal of the Mississippi Academy of Sciences 27:139-147.

Ross, S.T. and J.A. Baker. 1983. The response of fishes to periodic spring floods in a southeastern stream. American Midland Naturalist 109:1-14.

Pennington, C.H., J.A. Baker, and M.E. Potter. 1983. Fish populations along natural and revetted banks on the lower Mississippi River. North American Journal of Fisheries Management 3:204-211.

Ruple, D.L., R.H. McMichael, Jr., and J.A. Baker. 1984. Life history of the gulf darter, Etheostoma swaini (Pisces: Percidae). Environmental Biology of Fishes 11:121-130.

Baker, J.A. 1985. Report on fish collections within the Ouachita River basin, Arkansas. Arkansas Academy of Science Proceedings 39:19-24.

- Heins, D.C. and J.A. Baker. 1987. An analysis of factors associated with intraspecific variation in propagule size of the blacktail shiner, Notropis venustus. Pages 223-231 in W.J. Matthews and D.C. Heins (eds.), Evolutionary and community ecology of North American stream fishes. University of Oklahoma Press, Norman.
- Ross, S.T., J.A. Baker, and K.E. Clark. 1987. Persistence of fish community structure and microhabitat use in a southeastern U.S. stream. Pages 42-51 in W.J. Matthews and D.C. Heins (eds.), Evolutionary and community ecology of North American stream fishes. University of Oklahoma Press, Norman.
- Heins, D.C. and J.A. Baker. 1988. Egg sizes in fishes: do mature oocytes accurately demonstrate size statistics of ripe ova? *Copeia* 1988(1):238- 240.
- Heins, D.C. and J.A. Baker. 1989. Life history of Percina vigil in the Homochitto River, Mississippi. *Copeia* 1989(3):727-736.
- Baker, J.A., K.J. Killgore and R.L. Kasul. 1991. Aquatic habitats and fish communities in the lower Mississippi River. *Reviews in Aquatic Sciences* 3(4):313-356.
- Parrish, J.D., D.C. Heins and J.A. Baker. 1991. Reproductive season, clutch parameters and oocyte size of the johnny darter, Etheostoma nigrum from southwestern Mississippi. *American Midland Naturalist* 125(2):180-186.
- Heins, D.C., J.A. Baker and W.P. Dunlap. 1992. Yolk loading in darters and its consequences for study of their life histories. *Copeia* 1992(2):404-412.
- Foster, S.A., J.A. Baker and M.A. Bell. 1992. Phenotypic integration of life history and morphology: an example from three-spined stickleback, Gasterosteus aculeatus L. *Journal of Fish Biology* 41(Suppl. B):21-35.
- Heins, D.C. and J.A. Baker. 1992. Historical and recent influences on reproduction in North American stream fishes. Pages 573-599 In: Mayden, R.L. (ed.), Systematics, historical ecology, and North American freshwater fishes. University of California Press, Berkeley.
- Heins, D.C. and J.A. Baker. 1993. Reproductive biology of the brighteye darter, Etheostoma lynceum, from the Homochitto River, Mississippi. *Ichthyological Exploration of Freshwaters* 4(1):11-20.
- Heins, D.C. and J.A. Baker. 1993. Clutch production in the darter Etheostoma lynceum Hay and its implications for life-history study. *Journal of Fish Biology* 42:819-829.

- Baker, J.A. 1994. Life history variation in female threespine stickleback. Pages 144-187 In: Bell, M.A. and S.A. Foster (eds.), Evolutionary biology of the threespine stickleback. Oxford University Press.
- Baker, J.A., K.J. Killgore and S.A. Foster. 1994. Population variation in spawning current speed selection in the blacktail shiner, Cyprinella venusta (Pisces: Cyprinidae). *Environmental Biology of Fishes* 39:357-364.
- Baker, J.A. and D.C. Heins. 1994. Effect of drying temperature on weight estimates for oocytes and eggs in the darter Etheostoma lynceum. *Copeia* 1994:821-823.
- Baker, J.A. and S.A. Foster. 1994. Observations on a foraging association between two freshwater stream fishes. *Ecology of Freshwater Fish* 3:137-139.
- Baker, J.A. and D.C. Heins. 1994. Reproductive life history of the North American madtom catfish, Noturus hildebrandi (Bailey & Taylor 1950), with a review of data for the genus. *Ecology of Freshwater Fish* 3:167-175.
- Foster, S.A. and J.A. Baker. 1995. Evolutionary interplay between ecology, morphology and reproductive behavior in threespine stickleback (Gasterosteus aculeatus L.). *Environmental Biology of Fishes* 44:213-223.
- Baker, J.A., S.A. Foster and M.A. Bell. 1995. Armor morphology and reproductive output in threespine stickleback, Gasterosteus aculeatus. *Environmental Biology of Fishes* 44:225-233.
- Heins, D.C., J.A. Baker, R.W. King and K. Lahti. 1995. Evaluation of ovum fixation and storage in three-spined stickleback. *Journal of Fish Biology* 47:923-925.
- Killgore, K.J. and J.A. Baker. 1996. Patterns of larval fish abundance in a bottomland hardwood wetland. *Wetlands* 16:288-295.
- Cresko, W. and J.A. Baker. 1996. Two morphotypes of lacustrine threespine stickleback, Gasterosteus aculeatus, in Benka Lake, Alaska. *Environmental Biology of Fishes* 45:343-350.
- Heins, D.C., J.A. Baker and D.J. Tylicki. 1996. Reproductive season, clutch size, and egg size of the rainbow darter, Etheostoma caeruleum, from the Homochitto River, Mississippi, with an evaluation of data from the literature. *Copeia* 1996(4):1005-1010.

- Brookes, A., J.A. Baker and C.R. Redmond. 1996. Floodplain restoration and riparian zone management. Pages 201-229 in: Brookes, A. and F.D. Shields (eds.), River channel restoration: guiding principles for sustainable projects. John Wiley & Sons, Chichester, UK.
- Baker, J.A., S.A. Foster, D.C. Heins, M.A. Bell and R.W. King. 1998. Variation in female life-history traits among Alaskan populations of the threespine stickleback, Gasterosteus aculeatus, L. (Pisces: Gasterosteidae). *Biological Journal of the Linnean Society* 63:141-159.
- Heins, D.C., J.A. Baker and S.S. Singer. 1999. Virulence of the cestode Schistocephalus solidus and reproduction in infected threespine stickleback, Gasterosteus aculeatus. *Canadian Journal of Zoology* 77:1967-1974.
- Heins, D.C. and J.A. Baker. 1999. Evaluation of ovum storage techniques for reproductive studies of fishes. *Ecology of Freshwater Fish* 8:65-69.
- Heins, D.C., J.A. Baker and H.C. Martin. 2002. The “crowding effect” in the cestode Schistocephalus solidus: density-dependent effects on plerocercoid size and infectivity. *Journal of Parasitology* 88:302-307.
- Baker, J.A. and S.A. Foster. 2002. Phenotypic plasticity for life-history traits in a stream population of the threespine stickleback, Gasterosteus aculeatus L. *Ecology of Freshwater Fish* 11:20-29.
- Heins, D.C. and J.A. Baker. 2003. Reduction in egg size in natural populations of threespine stickleback infected with a cestode macroparasite. *Journal of Parasitology* 89:1-6.
- Jones, J.R., M.A. Bell, J.A. Baker and J.P. Koenings. 2003. General limnology of lakes near Cook Inlet, southcentral Alaska. *Lake and Reservoir Management* 19:141-149.
- Foster, S.A., J.A. Baker and M.A. Bell. 2003. The case for conserving threespine stickleback populations: protecting an adaptive radiation. *Fisheries* 28:10-18.
- Heins, D.C., J.M. Johnson and J.A. Baker. 2003. Reproductive ecology of the nine-spined stickleback from south-central Alaska. *Journal of Fish Biology* 63:1-13.
- Bagamian, K.H., D.C. Heins and J.A. Baker. 2004. Body condition and reproductive capacity of threespine stickleback (Gasterosteus aculeatus) infected with the cestode macroparasite Schistocephalus solidus. *Journal of Fish Biology* 64:1568-1576.

- Heins, D.C., J.A. Baker and J.M. Guill. 2004. Seasonal and interannual components of intrapopulation variation in clutch size and egg size of a darter. *Ecology of Freshwater Fish* 13:1-8.
- Foster, S.A. and J.A. Baker. 2004. Evolution in parallel: new insights from a classic system. *Trends in Ecology and Evolution* 19:456-459.
- Heins, D.C., B. Ulinski, J. Johnson and J.A. Baker. 2004 Effect of the cestode macroparasite Schistocephalus pungitii on the reproductive success of ninespine stickleback Pungitius pungitius. *Canadian Journal of Zoology* 82:1731-1737.
- Baker, J.A., W.C. Cresko, D.C. Heins and S.A. Foster. 2005. Life-history differentiation of benthic and limnetic ecotypes in a polytypic population of threespine stickleback (Gasterosteus aculeatus). *Evolutionary Ecology Research* 7:121-131.
- Heins, D.C., J.A. Baker, G. DeSilva and E.L. Birden. 2005. Clutch characteristics of two populations of nine-spined stickleback from south-central Alaska. *Journal of Fish Biology* 67:873-878.
- Baker, J.A., D.C. Heins and S.A. Foster. In Review, *Evolution*. Minimum offspring size, optimal offspring size, and reproductive effort: a test of a theoretical relationship.
- Baker, J.A., D.C. Heins, R.W. King and S.A. Foster. In Review, *Evolution*. Rapid evolution of multiple life-history traits in stickleback.
- Baker, J.A., S.A. Foster and R. Savoie. In review. Hydrodynamic drag and the evolution of reproductive effort in lacustrine threespine stickleback. *Functional Ecology*.

### **Technical and Contract Reports:**

- Baker, J.A. 1975. Fish production in tollway ponds. Pages 117-144 in L.L. Lipsey, Jr. (ed.), *Effects of agricultural and highway pollutants on productivity of artificial highway ponds*. NSF-SOS Grant No. EPP75--08897, Final Technical Report, Northern Illinois University, Dekalb, Illinois.
- Ross, S.T., F.G. Howell, J.A. Baker, and M. Grodowitz. 1977. Ecological study of Black Creek, Mississippi. Contract Report to Southeast Mississippi Electric Power Association, Hattiesburg, Mississippi.
- Baker, J.A., C.H. Pennington, and D.A. Nelson. 1981. Winter biology studies for the upper Mississippi River, Pools 11-22. Contract Report to the U.S. Army Engineer District, Rock Island, Illinois.

- Pennington, C.H., J.A. Baker, F.G. Howell, and C.E. Bond. 1981. A study of cutoff bendways on the Tombigbee River. U.S. Army Engineer Waterways Experiment Station Technical Report E-81-4, Vicksburg, Mississippi.
- Pennington, C.H. and J.A. Baker. 1982. Environmental effects of Tennessee-Tombigbee Project cutoff bendways. U.S. Army Engineer Waterways Experiment Station Miscellaneous Paper E-82-4, Vicksburg, Mississippi.
- Baker, J.A. and C.L. Bond. 1982. Notes on fishes of cutoff bendways on the Tombigbee River. Environmental & Water Quality Operational Studies Information Exchange Bulletin E-82-8, Vicksburg, Mississippi.
- Pennington, C.H., J.A. Baker, and C.L. Bond. 1983. Fishes of selected aquatic habitats on the lower Mississippi River. U.S. Army Engineer Waterways Experiment Station Technical Report E-83-2, Vicksburg, Mississippi.
- Sanders, L.G. and J.A. Baker. 1984. Influence of dikes and revetments on the biota of the Arkansas River. Environmental & Water Quality Operational Studies Information Exchange Bulletin E-84-2, Vicksburg, Mississippi.
- Baker, J.A. 1984. Arkansas lakes interim study: effects of coolwater releases on river fish populations. Contract Report to the U.S. Army Engineer District, Vicksburg, Mississippi.
- Baker, J.A. 1984. Southwest Mississippi tributaries study area environmental inventory of aquatic resources. Contract Report to the U.S. Army Engineer District, Vicksburg, Mississippi.
- Cobb, S.P., C.H. Pennington, and J.A. Baker. 1984. Fishery and ecological investigations of main stem levee borrow pits along the lower Mississippi River. Lower Mississippi River Environmental Program, Report 1, Mississippi River Commission, Vicksburg, Mississippi.
- Sanders, L.G., J.A. Baker, C.H. Pennington, and C.L. Bond. 1985. Biota of selected aquatic habitats of the McClellan-Kerr Arkansas River Navigation System. U.S. Army Engineer Waterways Experiment Station Technical Report E-85-6, Vicksburg, Mississippi.

- Baker, J.A., C.H. Pennington, R.L. Kasul, L.W. Winfield, C.R. Bingham, L.G. Sanders, and R.E. Coleman. 1987. Physical and biological characteristics of five lower Mississippi River secondary channels. Lower Mississippi River Environmental Program, Report 5, Mississippi River Commission, Vicksburg, Mississippi.
- Baker, J.A., R.L. Kasul, L.E. Winfield, C.R. Bingham, C.H. Pennington, and R.E. Coleman. 1987. An ecological investigation of revetted and natural bank habitats in the lower Mississippi River. Lower Mississippi River Environmental Program, Report 9, Mississippi River Commission, Vicksburg, Mississippi.
- Baker, J.A., R.L. Kasul, L.E. Winfield, and R.E. Coleman. 1987. An ecological evaluation of the Baleshed Landing - Ben Lomond and Ajax Bar Dike Systems in the lower Mississippi River, River Miles 481 to 494 AHP. Lower Mississippi River Environmental Program, Report 12, Mississippi River Commission, Vicksburg, Mississippi.
- Killgore, K.J., J.A. Baker, and A. Miller. 1988. A method to determine suitability index criteria for spawning fishes. U.S. Army Engineer Waterways Experiment Station Instruction Report EL-85-3 (continuing updates), Section 7f, Model construction, modification, and testing, 8 pages.
- Baker, J.A., K.J. Killgore, R.L. Kasul and L.G. Sanders. 1989. Fisheries investigations on the lower White River, Arkansas. U.S. Army Engineer Waterways Experiment Station Technical Report EL-89-9, Vicksburg, Mississippi.
- Baker, J.A. 1990. Reconnaissance survey of the Wailuku River, Hawaii Island, Hawaii for native gobies ('o'opu) and prawns (opae kala'ole). Wailuku River Hydroelectric Power Co., Inc., Honolulu, Hawaii.
- Kasul, R.L., K.J. Killgore and J.A. Baker. 1990. Fish resources and water quality of an in-stream gravel excavation pit in the Naugatuck River, Connecticut. Technical Report EL-90-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.
- Baker, J.A. 1992. Population size, distribution, length frequency and sex ratio of gobies, and abundance of opae kala'ole, within the upper Wailuku River system, Hawaii Island, Hawaii: pre-operation phase sampling results. Report to Wailuku River Hydroelectric Power Co., Inc., Honolulu, Hawaii.
- Baker, J.A. and S.A. Foster. 1992. Estimating density and abundance of endemic fishes in Hawaiian streams. Report to Hawaii Department of Land and Natural Resources, Honolulu, Hawaii.

- Baker, J.A. and K.J. Killgore. 1994. Use of a flooded bottomland hardwood wetland by fishes in the Cache River system, Arkansas. Technical Report TR-WRP-CP-3, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.
- Kasul, R.L. and J.A. Baker. 1995. Fish distribution and size associated with bendway weirs in the Mississippi River between St. Louis, Missouri and Cairo, Illinois as determined by mobile hydroacoustic surveys. Report to the U.S. Army Engineer District, St. Louis.
- Kasul, R.L. and J.A. Baker. 1996. Fish distribution and size associated with bendway weirs in the Mississippi River between St. Louis, Missouri and Cairo, Illinois as determined by mobile hydroacoustic surveys: a comparison of bendways with and without weirs. Report to the U.S. Army Engineer District, St. Louis.