

## CURRICULUM VITAE

Jerry Lin Farris

### PRESENT POSITION:

Professor of Environmental Biology  
Director, Environmental Sciences, Ph.D. Program  
Director, Ecotoxicology Research Facility  
Chairholder, Judd Hill Chair of Environmental Biology

### OFFICE ADDRESS:

Environmental Sciences Program  
PO Box 847  
Arkansas State University  
State University, Arkansas 72467-0599  
(870) 972-2007  
JLFARRIS@ASTATE.EDU  
www.ct.astate.edu/jlfarris

### EDUCATION:

Sylvan Hills High School, North Little Rock, Arkansas  
Arkansas State University, State Univ., Arkansas. B. Sc. Degree, Zoology, 1979  
University of Oklahoma Field Biological Station, Kingston, OK. Summer Session in Algal and Field Ecology, 1980  
Arkansas State University, State Univ., Arkansas. M. Sc. Degree, Biology, 1981. Thesis title: Aquatic macroinvertebrates of three acid bogs on Crowley's Ridge in Northeast Arkansas.  
Virginia Polytechnic Institute and State University, Blacksburg, Virginia. Ph.D. Degree, Zoology, 1986. Dissertation title: Cellulolytic responses to heavy metal accumulation in *Corbicula fluminea* and *Mudalia dilatata*.

### PROFESSIONAL SOCIETIES:

Society of Environmental Toxicology and Chemistry (SETAC)  
Mid South Regional SETAC  
North American Benthological Society  
Freshwater Mussel Conservation Society  
Sigma Xi  
Arkansas Environmental Federation  
Phi Kappa Phi  
American Association of University Professors

### PROFESSIONAL ACTIVITIES:

Served as consulting aquatic ecologist, benthic ecologist or ecotoxicologist for the following: Project titles and dates available upon request.

Hercules Inc  
Celanese Corporation  
Consumers Power Company  
Procter and Gamble Environmental Safety Department  
Borg-Warner Chemicals Corporation  
American Electric Power Service Corporation  
American Electric Power Service Corporation's Clinch River Plant  
Ecological Analysts  
Utilities Water Act Group (UWAG)  
Union Carbide Corporation  
IBM Corporation  
Wisconsin Paper Council  
Bowater Southern Paper Company

International Joint Commission  
International Paper Company  
Hoechst Celanese  
Virginia Fibers Corporation  
Central Virginia Laboratories and Consultants  
Maine Paper Council  
Duquesne Light Company  
Biological Monitoring, Inc  
Farr Company  
City of Jonesboro, Jonesboro, Arkansas  
Weyerhaeuser  
Boston-Dana  
EVS Environment Consultants  
R&R Environmental Engineering  
Kuwait University  
Tennessee Department of Transportation and East Tennessee State University  
HydroQual, Inc  
City Water and Light  
U.S. Army Corps of Engineers, Memphis District  
Jones, Day, Reavis and Pogue, Toledo, OH  
Wichita State University  
Parsons Engineering Science, Inc  
PBS&J Environmental Toxicology  
E<sup>2</sup>M Engineering-Environmental Management, Inc

**POSITIONS HELD:**

Thermogas Corporation - Accounting Department, Little Rock, Arkansas, 1974  
Maumelle Newtown, Inc. - Construction and Design Department, Maumelle, Arkansas, 1975-1976  
Malone and Hyde - Accounting and Wholesale Inventory, Memphis, Tennessee, 1976  
Franklin Electric Corporation - Electronics and Maintenance Division, Jacksonville, Arkansas, 1977-1978  
Garrison Motor Freight - Terminal Assistant, Little Rock, Arkansas, 1979-1980

Arkansas State University (Biology Department):

Graduate Teaching Assistant - Invertebrate Zoology, Histology, Comparative Anatomy, Botany, Embryology, 1979-1980. Duties included lecture and exam preparation, laboratory supervision and assignment of course grades.

Laboratory and Field Technician - 1979-1981. Responsibilities included: 1) field investigations of population dynamics and distribution of macroinvertebrates in rice fields of NE Arkansas, EPA Biological Control Monitoring Project; 2) environmental inventory of macroinvertebrates for the Harding Creek portion of Lower Spring River Watershed, Lawrence County, Arkansas, U. S. Soil Conservation Service; 3) environmental inventory of macroinvertebrates for the Caney Creek Project, Arkansas, U. S. Corps of Engineers.

Virginia Polytechnic Institute and State University (Biology Department):

Graduate Teaching Assistant - Aquatic Ecology, General Biology, Principles of Biology, Honors Laboratory, 1982-1984. Duties included lecture and exam preparation, laboratory supervision and assignment of grades.

Graduate Teaching Associate, 1983-1984. Duties include scheduling and supervision of 30 plus Graduate Teaching Assistants, conducting weekly lab training sessions for the GTAs, modifying lab exercises as appropriate and acting as liaison between the staff and laboratory technicians.

Graduate Research Assistant, 1984-1986. Responsible for ongoing research being conducted at the Glen Lyn Power Plant field site and laboratory bioassays conducted at

the University Center for Environmental Studies Ecosystem Simulation Laboratory.  
Post-doctoral Research Associate in Zoology, 1986. Responsible for on-site field research conducted at the Glen Lyn Power Plant laboratory and artificial streams; also for design, development and construction of the field laboratory and artificial stream system at the Clinch River Power Plant, Carbo, Virginia. Duties included supervision of water chemistry for three laboratories, further development of cellulolytic monitoring for in-stream testing, and culture and maintenance of *Ceriodaphnia* and algal stocks.  
Research Scientist in Zoology, 1987-1990. Responsible for ongoing research at the Clinch River Plant field laboratory and benthic monitoring programs in four rivers in Virginia and Tennessee. Duties included scheduling and supervision of graduate students and technicians, acting as liaison between industry personnel and researchers, as well as generation and analysis of acute and chronic toxicity and impairment tests at the environmental Simulation Laboratory and two laboratories within the Virginia Tech Biology Department.  
Visiting Assistant Professor in Biology and Affiliate Faculty Member of the Center for Environmental and Hazardous Materials Studies. Manager of the Center's Ecosystem Simulation Laboratory includes responsibilities for supervision of graduate students and technicians as well as implementation of all quality assurance/quality control protocol for research activities. As Visiting Professor duties included serving as committee member or co-chair on student committees in Biology, Fisheries and Wildlife and the UCE&HMS. Grants were conducted in both the Department of Biology and the UCE&HMS.

Arkansas State University :

Director, Environmental Sciences Program and  
Professor of Environmental Biology and Director of the Ecotoxicology Research Facility, (present position). Responsibilities include directing graduate students and technicians involved with ongoing research, securing research grants, teaching Ecology and Ecology field laboratory, Aquatic Ecotoxicology, Topical Seminar and design, management and equipping two certified toxicity laboratories and directing Arkansas State University's Environmental Sciences Ph.D. program.  
Chairholder, Judd Hill Chair of Environmental Biology, College of Arts and Sciences, Arkansas State University

#### **DIRECTED DISSERTATIONS AND THESES:**

Joseph R. Bidwell (Ph. D., 1993) Department of Biology, Virginia Tech, Physiological thresholds of the Asiatic clam and comparisons of impairment levels in aquatic organisms, Co-major advisor with Dr. D.S. Cherry.

Donna K. Reed (Ph. D., 1993) Department of Biology, Virginia Tech, Measured effects in Clinch River snail communities from power plant discharges, Co-major advisor with Dr. D.S. Cherry.

Lewis C. Hunt (M. Sc., Biology in 1996) Department of Biological Sciences, Arkansas State University. Descriptive risk assessment and evaluation of teratogenic substances in non-point surface runoff using native amphibians. Major advisor.

Cristin D. Milam (M. Sc., Biology in 1996) Department of Biological Sciences, Arkansas State University. Relating threshold responses of *Corbicula fluminea* to assess damage in resident mussel populations of the Ohio River basin. Major advisor.

Matt Moore (M. Sc., Biology in 1996) Department of Biological Sciences , Arkansas State University. Dynamics of propanil conversion to noneffective metabolites and their relation to biological integrity in agricultural ecosystems of Northeast Arkansas .

Margaret L. Barfield (M. Sc., Biology in 1997) Department of Biological Sciences, Arkansas State University. Comparison of responses using two biomarkers on freshwater molluscs exposed to cadmium.

Andrew A. Beall (M. Sc., Biology in 1997) Department of Biological Sciences, Arkansas State University. Perception of water quality and aesthetic value of Arkansas deltaic waterscapes and their relationship to bioassessments.

Erik L. Winchester (M. Sc., Biology in 1997) Department of Biological Sciences, Arkansas State University. Application of ChE activity as a biomarker for monitoring pesticide exposure to freshwater mussels.

Sarah A. Clem (M. Sc. in 1998) Department of Biological Sciences, Arkansas State University. Complexities in testing early lifestage responses of freshwater mussels to metals and contaminated sediments. Major advisor.

Jon R. Pierce (M. Sc., Biology in 2000) Vitellogenin induction in the Red-eared Slider turtle, *Trachemys scripta*, as a biomarker for endocrine disruption.

Tammy V. Ash (M. Sc., Biology In 2001) Department of Biological Sciences, Arkansas State University. An assessment of the 303D-listed Strawberry River, Arkansas, with resulting management implications.

Richard H. Rauschenberger (M. Sc., Biology in 2001) Department of Biological Sciences, Arkansas State University. Development and viability of alligator snapping turtle, *Macroclmys temminckii*, eggs, embryos, and hatchlings incubated in soils with different pesticide risks.

Lora L. Harding (M. Sc., Biology in 2001) Department of Biological Sciences, Arkansas State University. Assessment of instream conditions for two deltaic streams receiving treated municipal effluent in northeast Arkansas.

David L. Feldman (M. Sc., Biology in 2002) Department of Biological Sciences, Arkansas State University. Characterization of macroinvertebrate communities and the conditions that define agricultural drainage ditches.

Rebecca Winterringer (M. Sc., Biology in 2003) Department of Biological Sciences, Arkansas State University. Population dynamics and reproductive patterns of the federally endangered freshwater mussel, *Lampsilis streckeri* (Frierson 1927).

Nova D. Goosby (M.A., Biology in 2004) Department of Biological Sciences, Arkansas State University. The effect of diallyl sulfide in pancreatic cancer chemoprevention- beneficial or adverse?

Sonya Baker (M.A., Biology in 2004) Department of Biological Sciences, Arkansas State University. Chemopreventive effects of resveratrol on pancreatic tumor cells.

Jonathan D. Maul (Ph.D., 2004) Environmental Sciences Program, Arkansas State University. Examination and monitoring of ecological and contaminant stressors using vertebrate and invertebrate models.

William W. Stephens (Ph.D., 2004) Environmental Sciences Program, Arkansas State University. Characterization and impact assessment of aquaculture effluents on wadeable drainages in the deltas of the Lower Mississippi River Valley.

*Current students directed*

Jennifer Bouldin, Ph.D. candidate in 2000  
Ashley McBride, M.Sc. candidate in 2001  
Betsy Ashcraft, M.Sc. candidate in 2002  
Josh Seagraves, M.Sc. candidate in 2002  
Brent Walker, M.Sc. candidate in 2002  
Mary Scott, M.Sc. candidate in 2002  
George Ogendi, Ph.D. candidate in 2003 (Co-Directed with Dr. R. Hannigan)  
Heidi McIntyre, Ph.D. candidate in 2003 (Co-Directed with Dr. A. Christian)  
Nikki Enger-Luster, M.Sc. candidate in 2004  
Traci Hudson, M.Sc. candidate in 2004

*Undergraduate honors advisees:*

Richard W. Cole (B.S. Honors thesis, 1995) Department of Biological Sciences, Arkansas State University. Differentiation of copper uptake from sediment or overlying water by the Asian clam, *Corbicula fluminea*, and the modification of sediment characters in a 30-day artificial stream test, Major advisor.

Jon L. Pierce (B.S Honors thesis, 1996) Department of Biological Sciences, Arkansas State University. Limnology and bioassessment of an intensive-use agricultural reservoir in NE Arkansas.

Melissa McDade (B.S. Honors thesis, 1998) Department of Biological Sciences, Arkansas State University. Determination of Unionid (*Amblema plicata*) condition in short-term refugia at the Mammoth Spring National Fish Hatchery.

**POSTDOCTORAL APPOINTMENTS DIRECTED:**

Maul, Jonathan D. 2004-2005.  
Stephens, William W. 2004-2005.  
Christian, Alan D. 2001-2002  
Gandhi, Jagruti P. 2001-2002  
Moore, Matt T. 1999-2000

**PUBLICATIONS:**

***Published Reviews and Book Chapters:***

Water Pollution Biology. 1989. By P. D. Abel. John Wiley and Sons, New York. 231 p. Transactions of the American Fisheries Society 119(4):3171.

Aquatic Ecotoxicology: Fundamental Concepts and Methodologies, Volume I. 1989. Alain Boudou and Francis Ribeyre (eds.). CRC Press, Inc., Boca Raton, Florida. 332 p. Journal of the North American Benthological Society 11:106-107.

M.T. Moore, C.M. Cooper, E.R. Bennett, S. Smith, Jr., F.D. Shields, Jr., and J.L. Farris. 2004. The role of vegetated drainage ditch research in the Mississippi Delta: Current results and future directions. In: Water Quality Assessments in the Mississippi Delta: Regional Solutions, National Scope. M.T. Nett, M.A. Locke, and D.A. Pennington (Eds.) American Chemical Society Symposium Series 877. American Chemical Society, Washington, D.C. pp. 194-203.

### **Journal Articles:**

- Belanger, S. E., J. L. Farris, D. S. Cherry and J. Cairns, Jr. 1985. Sediment preference of the freshwater Asiatic clam, *Corbicula fluminea*. *The Nautilus* 99(2/3):66-73.
- Belanger, S. E., J. L. Farris, D. S. Cherry and J. Cairns, Jr. 1986. Growth of Asiatic clams, *Corbicula* sp., during and after zinc exposure in field-located and laboratory artificial streams. *Archives of Environmental Contamination and Toxicology* 15:427-434.
- Doherty, F. G., J. L. Farris, D. S. Cherry and J. Cairns, Jr. 1986. Control of the freshwater fouling bivalve *Corbicula fluminea* by halogenation. *Archives of Environmental Contamination and Toxicology* 15:535-542.
- Belanger, S. E., J. L. Farris and D. S. Cherry. 1988. Reduction in organic effluent static acute toxicity to fathead minnows by various aeration techniques. *Environmental Pollution* 50:189-210.
- Farris, J. L., J. H. Van Hassel, S. E. Belanger, D. S. Cherry and J. Cairns, Jr. 1988. Application of cellulolytic activity of *Corbicula* to in-stream monitoring of power plant effluents. *Environmental Toxicology and Chemistry* 7:701-713.
- Farris, J. L., S. E. Belanger, D. S. Cherry and J. Cairns, Jr. 1989. Cellulolytic activity as a novel approach to assess long-term zinc stress to *Corbicula*. *Water Research* 23:(10):1275-1283.
- Belanger, S. E., J. L. Farris and D. S. Cherry. 1989. Effects of diet, water hardness, and population source upon acute and chronic toxicity of copper to *Ceriodaphnia dubia*. *Archives of Environmental Contamination and Toxicology* 18:601-611.
- Clements, W. H., J. L. Farris, D. S. Cherry and J. Cairns, Jr. 1989. The influence of water quality on macroinvertebrate community responses to copper in outdoor experimental streams. *Aquatic Toxicology* 14:249-262.
- Belanger, S. E., J. L. Farris, D. S. Cherry and J. Cairns, Jr. 1990. Validation of *Corbicula* growth as a stress response to copper in artificial and natural streams. *Canadian Journal of Fisheries and Aquatic Sciences* 47(5):904-914.
- Belanger, S. E., D. S. Cherry, J. L. Farris, K. G. Sappington and J. Cairns, Jr. 1991. Sensitivity of the Asiatic clam to various biocidal control agents. *Journal of the American Water Works Association* 83(10):79-87.
- Haag, W. R., D. J. Berg, E. W. Garton and J. L. Farris. 1993. Reduced survival and fitness in native bivalves in response to fouling by the introduced zebra mussel (*Dreissena polymorpha*) in western Lake Erie. *Canadian Journal of Fisheries and Aquatic Sciences* 50(1):13-19.
- Jacobson, P. J., J. L. Farris, R. J. Neves and D. S. Cherry. 1993. Use of neutral red to assess survival of juvenile freshwater mussel (*Bivalvia:Unionidae*) in bioassays. *Trans. Am. Microsc. Soc.* 112(1): 78-80.
- Jacobson, P. J., J. L. Farris, R. J. Neves and D. S. Cherry. 1993. Juvenile freshwater mussel (*Bivalvia:Unionidae*) responses to acute toxicity testing with copper. *Environmental Toxicology and Chemistry* 12:879-883.
- Belanger, S. E., D. H. Davidson, J. L. Farris, D. L. Reed and D. S. Cherry. 1993. Effects of cationic surfactant exposure in stream mesocosms to a bivalve mollusc. *Environmental Toxicology and Chemistry, Special Journal Issue, Risk Assessment of Surfactants* 12:1789-1802.

- Farris, J. L., J. L. Grudzien, S. E. Belanger, D. S. Cherry and J. Cairns, Jr. 1994. Molluscan cellulolytic activity responses to zinc exposure in laboratory and field stream comparisons. *Hydrobiologia*. 287:161-178.
- Dobbs, M. G., J. L. Farris, R. J. Reash, D. S. Cherry and J. Cairns, Jr. 1994. Evaluation of the resident species procedure for developing site-specific water quality criteria for copper in Blaine Creek, Kentucky. *Environmental Toxicology and Chemistry* 13 (6):963-971.
- Bidwell, J.R., J.L. Farris and D.S. Cherry. 1995. Comparative response of the zebra mussel, *Dreissena polymorpha*, and the Asian clam, *Corbicula fluminea*, to DGH/QUAT, a nonoxidizing molluscicide. *Aquatic Toxicology* 33:183-200.
- Rifici, L.M., D.S. Cherry, J.L. Farris and J. Cairns, Jr. 1996. Acute and subchronic toxicity of methylene blue (3,7-bis[dimethylamino]phenazathionium chloride) to larval fathead minnows (*Pimephales promelas*): implications to aquatic toxicity testing. *Environmental Toxicology and Chemistry* 15:1304-1308.
- Moore, M.T. and J.L. Farris. 1997. Acute and chronic toxicity of the herbicide Stam M-4 in field and laboratory exposures. *Archives of Environmental Contamination and Toxicology* 33:199-202.
- Jacobson, P.J., R.J. Neves, D.S. Cherry and J.L. Farris. 1997. Sensitivity of glochidial stages of freshwater mussels (Bivalvia:Unionidae) to copper. *Environmental Toxicology and Chemistry* 16:2384-2392.
- Reed-Judkins, D.K., J.L. Farris, D.S. Cherry, A.G. Heath, John Cairns Jr. 1997. Functional responses in *Leptoxis praerosa* to increasing metal concentration and exposure duration. *Environmental Toxicology and Chemistry* 16:1666-1676.
- Milam, C.D. and J.L. Farris. 1998. Relating threshold responses of *Corbicula fluminea* to assess damage in resident mussel populations exposed to partially treated mine water. *Environ. Toxicol. Chem.* 17:1611-1619.
- Johnson, R.L., F.Q. Liang and J.L. Farris. 1998. Genetic diversity among four Amblemini species (Bivalvia: Unionidae) in the Cache and White Rivers, Arkansas. *The Southwestern Naturalist*. 43:321-332.
- Johnson, R.L., F.Q. Liang C.D. Milam and J.L. Farris. 1998. Genetic diversity and cellulolytic activity among several species of Unionid bivalves in Arkansas. *Journal of Shellfish Research* 17 (5): 1375-1382.
- Moore, M.T., J.R. Pierce, C.D. Milam, J.L. Farris and E.L. Winchester. 1998. Responses of non-target organisms to aqueous propanil exposure. *Bulletin of Environmental Contamination and Toxicology* 61:169-174.
- Bidwell, J.R., D.S. Cherry, J.L. Farris, L.A. Lyons and J. Petrille. 1999. Efficacy of intermittent halogenation for control of the zebra mussel, *Dreissena polymorpha*. *Hydrobiologia*, 394:53-62.
- Milam, C.D., J.L. Farris and J.D. Wilhide. 2000. Evaluating mosquito control pesticides for effect on target and non-target organisms. *Archives of Environmental Contamination and Toxicology* 39(3): 324-328.

- Naimo, T.J., W.G. Cope, E.M. Monroe, J.L. Farris, and C.D. Milam. 2000. Influence of diet on survival, growth, and physiological condition of fingernail clams *Musculium transversum*. *Journal of Shellfish Research* 19: 23-28.
- Moore, M.T., E.R. Bennett, C.M. Cooper, S. Smith, Jr., F.D. Shields, Jr., C.D. Milam, and J.L. Farris. 2001. Transport and fate of atrazine and lambda-cyhalothrin in an agricultural drainage ditch in the Mississippi Delta, USA. *Agriculture, Ecosystems & Environment* 87:309-314.
- Barfield, M.L., J.L. Farris, and Marsha C. Black. 2001. Biomarker and bioaccumulation responses of Asian Clams exposed to aqueous cadmium. *J. Toxicol. Environ. Health Part A*, 63:495-510.
- Cherry, D.S., J.H. VanHassel, J.L. Farris, D.J. Soucek and D. Neves. 2002. Site-specific derivation of the acute copper criteria for the Clinch River, Virginia. *Human and Ecological Risk Assessment* 8(3):591-601.
- Cooper, C.M., Moore, M.T., Bennett, E.R., Smith, S. Jr., and Farris, J.L. 2002. Alternative environmental benefits of agricultural drainage ditches. *Verh. Internat. Verein. Limnol.* 28:1678-1682.
- Maul, J.D. and J.L. Farris. 2003. Unusual occurrence of a Worm-eating Warbler (*Helmitheros vermivorus*) in an intensive agricultural landscape in northeastern Arkansas. *Southwestern Naturalist* 48: 297-299.
- Schultz, R., M.T. Moore, E.R. Bennett, C.D. Milam, J.L. Bouldin, J.L. Farris, S. Smith Jr. and C.M. Cooper. 2003. Acute toxicity of methyl-parathion in wetland mesocosms: Assessing the influence of aquatic plants. *Archives of Environmental Contamination and Toxicology* 45 (3), 331-336.
- Schulz R., M.T. Moore, E.R. Bennett, J.L. Farris, S. Smith Jr., and C.M. Cooper. 2003. Methyl-parathion toxicity in vegetated and nonvegetated wetland mesocosms. *Environmental Toxicology and Chemistry* 22(6): 1262-1268.
- Maul, J.D. and Farris, J.L. 2004. The effect of sex on avian plasma cholinesterase enzyme activity: a potential source of variation in an avian biomarker endpoint. *Arch. Environ. Contam. Toxicol.* 47(2):253-258.
- Bouldin, J.L., C.D. Milam, J.L. Farris, M.T. Moore, S. Smith, Jr. and C.M. Cooper. 2004. Evaluating toxicity of Asana XL (esfenvalerate) amendments in agricultural ditch mesocosms. *Chemosphere* 56 (7), 677-683.
- Bouldin, J.L., J.L. Farris, M.T. Moore and C.M. Cooper. 2004. Vegetative and structural characteristics of agricultural drainages in the Mississippi Delta landscape. *Environmental Pollution* 132(3):403-411.
- Maul J.D., J.L. Farris, C.D. Milam, S. Testa III, C.M. Cooper, and D.L. Feldman. 2004. The influence of physical habitat and water quality on macroinvertebrate communities in degraded streams of northwest Mississippi. *Hydrobiologia* 518:79-95.
- Rauschenberger R.H., S.E. Trauth, J.L. Farris. 2004. Incubation of alligator snapping turtle (*Macrochelys temminckii*) eggs in natural and agricultural soils. *Applied Herpetology* 1(3-4): 299-310.
- Cooper C.M., M.T. Moore, E.R. Bennett, S. Smith, Jr., J.L. Farris, C.D. Milam and F.D. Shields,

- Jr. 2004. Innovative uses of vegetated drainage ditches for reducing agricultural runoff. *Water Science and Technology* 49(3):117-123.
- Stephens, W.W. and J.L. Farris. 2004. Instream community assessment of aquaculture effluents. *Aquaculture* 231:149-162.
- Milam, C.D., J.L. Bouldin, R.L. Schulz, J.L. Farris, M.T. Moore, S. Smith, Jr. and C.M. Cooper. In press. Evaluating acute toxicity of methyl parathion application in constructed wetland mesocosms. *Environmental Toxicology* 19:471-479.
- Maul, J.D. and J.L. Farris. In press. Monitoring exposure of passerines to acephate, dicotophos, and malathion using cholinesterase reactivation. *Bull. Environ. Toxicol. Chem.* 74(3):
- Maul, JD, JP Gandhi, and JL Farris. In press. Community level physiological profiles of cloacal microbes in songbirds (Order: Passeriformes): variation due to host species, host diet, and habitat. *Microbial Ecology*.
- Stephens, W.W. and J.L. Farris. In press. A biomonitoring approach to aquaculture effluent characterization in channel catfish production. *Aquaculture*
- Published Conference Proceedings:**
- Moore, M.T., Cooper, C.M., Bennett, E.R., Smith, S. Jr., Shields, F.D. Jr., and Farris, J.L. Vegetated drainage ditch research in the Mississippi Delta Management Systems Evaluation Area (MDMSEA): Current results and future directions. In: Water Quality Assessments in the Mississippi Delta: Regional Solutions and National Scope. American Chemical Society Symposium Series No. 877. pp. 194-203. 2004.
- Moore, M.T., Pierce, J.R., and Farris, J.L. 2004. Limnological evaluation of an agricultural reservoir in northeast Arkansas. Proceedings of the Mississippi Water Resources Conference. (CDROM). 2004.
- Christian, A.D., J. Bouldin, N. Bickford, L. Kanieski, A. McBride, S.B. McCord, A. Sako and J.L. Farris. 2003. Winter and spring water quality of the Big Creek Watershed, Craighead County, Arkansas: Nutrients, habitat, and macro-invertebrates. *Journal of the Arkansas Academy of Science* 57, 27-36.
- Cooper C.M., M.T. Moore, E.R. Bennett, S. Smith, Jr., J.L. Farris, C.D. Milam, and F.D. Shields, Jr. 2002. Innovative uses of vegetated drainage ditches for reducing agricultural runoff. 6th International Conference on Diffuse Pollution, Amsterdam, The Netherlands (also published proceedings p. 119-126).
- Christian, A.D., W.R. Posey III, P.J. Rust, J.L. Farris, J.L. Harris and G.L. Harp. 2001. Growth curves of commercially valuable unionid bivalve (*Bivalvia: Unionidae*) in Arkansas. *Proceedings of the Arkansas Academy of Sciences* 54:41-50.
- Moore, M.T., C.M. Cooper, S. Smith, Jr., E.R. Bennett, and J.L. Farris. 2001. Drainage ditches: New conceptual BMPs for non-point source pollution and TMDL development. *Proceedings of the Seventh Federal Interagency Sedimentation Conference* pp. 65-71.
- Milam, C.D., J.L. Farris, J. Van Hassel, M.L. Barfield 2000. Reintroduction of native freshwater mussels into a recovering stream using both in vivo and in vitro propagation techniques. pp. 53-61. In: Freshwater Mollusk Symposium Proceedings - Part I: Proceedings of the Conservation, Captive

- Care, and Propagation of Freshwater Mussels Symposium, Columbus, OH, March 1998. R.A. Tankersley, D. Wormalts, G. T. Watters, and B. Armitage (eds). Ohio Biological Survey, Columbus, Ohio.
- Farris, J.L., S.D. Davis, C.D. Milam, J.L. Pierce, E.L. Winchester, and W.H. Baker. 2000. Evaluating aquatic macroinvertebrate communities receiving nonpoint runoff in the lower St. Francis River. *Proceedings of the Arkansas Water Resources Center Annual Conference: Water Resources Issues in the Arkansas Delta* MSCO:15-22.
- Baker, W.H., S.D. Carroll, M.A. Henslee and J.L. Farris. 2000. Demonstration of best management practices for the protection and improvement of the soil and water resources in the Arkansas delta. *Proceedings of the Arkansas Water Resources Center Annual Conference: Water Resources Issues in the Arkansas Delta* MSCO:1-5.
- Farris, J.L., J.T. Knight, C.D. Milam, F. Buzen and J.F. Nix. 1998. In stream monitoring of sediments and water in the lower Ouachita River for site impact to aquatic biota. *Proceedings of the Arkansas Academy of Sciences* 52:35-45.
- Milam, C.D., J.L. Farris, J.H. Van Hassel, and M.L. Barfield,. 1997. Reintroduction of native freshwater mussels into a recovering stream using both in vivo and in vitro propagation techniques. *Proceedings of the Conservation, Captive Care, and Propagation Symposium, Columbus, Ohio.*
- Barfield, M.L., S.A. Clem and J. L. Farris. 1997. Comparison of acute testing methods of *Utterbackia imbecillis* (Say) with variation on age, diet and in vitro transformation method. *Proceedings of The Upper Mississippi River Conservation Committee* 2:257-264.
- Moore, M.T. and J.L. Farris. 1996. Herbicide runoff and its relationship to a deltaic agricultural ecosystem. *Proceedings of the Delta Conference: Connecting Points of View for Sustainable Natural Resources.* 257-263.
- Moore, M.T., C.D. Milam and J.L. Farris. 1996. Reference sediment selection in the lower Mississippi Delta. *Proceedings Arkansas Academy of Science* 50:84-90.
- Farris, J. L., D. S. Cherry, W. R. Slagle and M. G. Dobbs. 1993. Suitability of Biological indices to evaluate light inhibition effects from treated pulp mill effluents. *Proceedings of the 1992 TAPPI Environmental Conference, Technical Association of Paper and Pulp Industries, Boston, Massachusetts* 1:253-259.
- Bidwell, J.R., D.S. Cherry, J.L. Farris and L.A. Lyons. 1993. Comparative response of the Zebra mussel, *Dreissena polymorpha*, and the Asiatic clam, *Corbicula fluminea*, to the molluscicide CT-1. *Proceedings of the third International Zebra mussel Conference, Electric Power Research Institute, Toronto, Canada.*
- Cherry, D. S., J. L. Farris, J. R. Bidwell, A. Mikailoff, R. L. Schema and J. W. McIntire. 1990. Application of a molluscicide and environmental fate and effects at the Beaver Valley Power Station, Duquesne Light Company. *Proceedings of the 1990 EPRI Macrofouling Symposium. Electric Power Research Institute, Palo Alto, California.*
- Farris, J. L. and G. L. Harp. 1982. Aquatic macroinvertebrates of three acid bogs on Crowley's Ridge in Northeast Arkansas. *Proceedings Arkansas Academy of Science* 36:23-27.

### **Technical Reports and Documents:**

- Evaluation of Potential Acute Toxicity of Effluent from International Business Machines Corporation, Poughkeepsie, New York. (D. S. Cherry, S. E. Belanger and J. L. Farris). Summary reports from 1986-1990.
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- Control of *Corbicula* by BETZ Laboratories Chemicals with Environmental Fate and Effects *Ceriodaphnia dubia* Survival and Reproductive Impairment Studies. (D. S. Cherry, J. L. Farris, J. R. Bidwell and L. A. Lyons). BETZ Laboratories, Inc., Trevose, Pennsylvania. (1991). 54 pp.
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- Laboratory and Field Ecotoxicological Studies at the Clinch River Plant, Virginia. (D. S. Cherry, J. L. Farris

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- Artificial Stream Studies and Sampling of the James River to Evaluate Color Effects from Virginia Fibre's Treated Effluent. (J. L. Farris, D. S. Cherry and M. G. Dobbs). Virginia Fiber Corporation and Virginia State Water Control Board. (1992). 169 pp.
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- Weldon Spring Site Remedial Action Project Ecological Characterization: Chronic Toxicological Testing from Site Water and Whole Sediment. (J. L. Farris and coworkers from the Ecotoxicology Research Facility). Ecological Specialists, Inc. (1995). 258 pp.
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- Mississippi Delta - Environmental Research Consortium: Concept Paper. (K.J. Maier, J.L. Farris, W. H. Benson and K. Baer). University of Memphis. (1997). 12 pp.
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- Management Alternatives to Control Mercury Accumulation in Fish. (T. Knight, C. Kuyper, J. Farris and C. Milam). Arkansas Mercury Task Force. (1997). 94 pp.
- Relating Sediment and Habitat Conditions to Historical Impacts on Resident Mussel Communities in Kentucky Lake. (J.L. Farris, C.D. Milam, C. Davidson and J. R. Pierce). Shell Exporters Association. (1997). 93 pp.
- Zebra Mussel Impacts on Freshwater Mussels in Arkansas: Use of Mammoth Spring National Fish Hatchery as a Refuim for Mussels. (J.L. Farris, C.D. Milam, J.L. Harris, and R.L. Shelton). Arkansas Game and Fish Commission. (2000). 112 pp.
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- Measured responses of the Asian clam (*Corbicula fluminea*) to runoff associated with urbanization: a multifaceted biomonitoring approach in a watershed assessment of northwest Arkansas. (Bouldin, J.L., J.L. Farris and C.M. Milam). City of Rogers Urban Watershed Management Plan.. (2002). 45 pp .
- Mussel and Water Conditions on Robinson Maneuver Training Center, Arkansas. (J.L. Farris, J.L. Bouldin and W.W. Stephens). Military Department of Arkansas, North Little Rock, AR. (2003). 223 pp.
- Fort Chaffee Maneuver Training Center. (Farris, J.L., J.L. Bouldin and W.W. Stephens) Scaleshell Mussel Survey. Military Department of Arkansas, Fort Smith, AR. (2003). 166 pp.
- Reproductive biology and habitat characterization of the federally endangered freshwater mussel, *Arkansia wheeleri* in the Little and Ouachita rivers, Arkansas. (Farris, J.L., J.H. Seagraves, J.L. Harris) Agreement No: 1448-40181-01-G-105. US Fish and Wildlife Service. (2003). 105 pp.

## RECENT GRANTS RECEIVED (1990-present):

- Farris, J. L., D. S. Cherry, J. Cairns, Jr. and E. P. Smith. American Electric Power Company (\$49,600). 1991. Selenium Sensitivity of Biota from Little Scary Creek, West Virginia.
- Farris, J. L., D. S. Cherry, R. J. Neves and J. Cairns, Jr. American Electric Power Company (\$209,700). 1991-1992. Validation of Copper Concentrations at the Clinch River Plant, Virginia.
- Farris, J. L., and D. S. Cherry. American Electric Power Company (\$55,800). 1991. Toxicity Testing of Copper and Whole effluent from Big Sandy Plant, Kentucky.
- Cherry, D. S., J. L. Farris and J. Cairns, Jr. Duquesne Light Company (\$93,000). 1990-1991. *Corbicula* anti-fouling and molluscicide fate and effect studies regarding nuclear power generation.
- Farris, J. L., R. J. Neves and D. S. Cherry. Ecological Specialists, Inc. (\$6,142). 1991. Validation of silt tolerance in juvenile mussels.
- Farris, J. L., D. S. Cherry, and J. Neves. American Electric Power Corporation. (\$265,000). 1991-1994. Sources of pollutants influencing point and non-point toxicity to the mussel fauna in the Clinch River drainage system.
- Neves, R. J., J. L. Farris and D. S. Cherry. American Electric Power Corporation. (\$68,000). 1991-1992. Propagation of juvenile freshwater mussels at the Clinch River Steam Plant, Carbo, Virginia.
- Farris, J. L., R. J. Neves and D. S. Cherry. U. S. Fish and Wildlife Service. (\$10,900). 1992-1993. Cellulolytic Enzyme Assay Analysis on Mollusks in the Clinch River, Virginia.
- Cherry, D.S., J.R. Lauth, and J.L. Farris. Proctor and Gamble Company. (\$65,000). Chronic toxicity testing of Foley Mill effluent. 1992-1993.
- Farris, J. L., U.S. Fish and Wildlife Service. 1993-1994. (\$25,520) Monitoring and database management in the Upper Tennessee River Basin.
- Farris, J. L., J. H. VanHassel, R. J. Neves. The Nature Conservancy. 1993-1994. (\$10,000) Biomonitoring for maintenance of Unionids: EPA Watershed Protection Approach Demonstration Project in the Upper Tennessee River Basin - Virginia.
- Farris, J. L., R. L. Johnson. Arkansas State University, Faculty Research Award. 1993-1994. (\$10,660) Allozyme analysis of freshwater mussels: modeling of genotypic diversity in aquatic ecosystems.
- Farris, J. L., K. R. Seeley, and S. Zylstra. U.S. Fish and Wildlife Service. 1994-1995. (\$68,000) Development of ranking systems for water quality and biologic integrity in the Upper Tennessee River Basin.
- Farris, J. L. Miami University. 1993-1994. (\$4,060) Evaluation of cellulolytic activity in freshwater mussels for use in resource damage claims.
- Farris, J. L. Miami University. 1993-1994. (\$2,320) Use of cellulolytic activity in freshwater mussels to assess the health of Ohio river basin unionids prior to encrustation by zebra mussels.
- Farris, J. L. American Electric Power Service Corporation. 1994. (\$17,400) Untreated mine water effects on Ohio River mussels.
- Farris, J. L. American Electric Power Service Corporation. 1994-1995. (\$17,400) Evaluation of non-point

source pollutants using in-stream indicators of mollusc health.

- Farris, J. L. Ouachita River Institute. 1993-1994. (\$4,700) Evaluation of substrate toxicity and cellulase inhibition from mercury contamination.
- Farris, J. L. SILO Advisory Council Grant. 1993-1994. (\$2,492) Use of cellulolytic activity in a proposed framework for developing indicators of ecosystem health.
- Farris, J.L. City of Jonesboro. 1993-1994. (\$4,490) Effect of pesticides for mosquito control on target and non-target organisms.
- Farris, J.L. U.S. Fish and Wildlife Service, Bloomington Field Office, Indiana. 1995. (\$17,000) Use of sediment tests with juvenile mussels in preassessment phase investigations for damaged resources.
- Farris, J.L. American Electric Power Service Corporation, Columbus, Ohio. 1995-1997. (\$66,528) Restoration of Unionid mussels to Leading Creek using fish host encystment and media transformation.
- Farris, J. L. Weston, Inc. Edison, New Jersey. 1995. (\$10,800). Evaluation of sediment toxicity from sites in Bayou Bonfouca using juvenile mussels.
- Farris, J.L. and J.L. Harris. Arkansas Game and Fish Commission. 1995-1998. (\$66,500). Zebra mussel impacts on freshwater mussels in Arkansas.
- Farris, J.L. and B.D. Bennett. Arkansas Soil Testing and Research Laboratory and US EPA. 1995-1998. (\$168,400). Demonstration of cotton production BMP impact on the soil and water resources of the Arkansas Delta.
- Farris, J.L. Chisenhall, Nestrud and Julian. 1995-1996. (\$15,000). Evaluation and characterization of a nickel dominated discharge and its effect on a treatment plant effluent.
- Farris, J.L. and R.S. Grippo. Ecological Specialists, Inc. 1995-1996. (\$23,690). Toxicity assessment of sediment and water related to the ecological characterization of Weldon Spring.
- Farris, J.L. Ecological Specialists, Inc. 1996. (\$31,973). Toxicity assessment of sediment and water related to the Weldon Spring Remedial Action Project: Option Period Characterization.
- Farris, J.L. and Jon Pierce. SILO Advisory Council Grant. 1996. (\$3,600). Limnological analysis of an intensive-use reservoir.
- Farris, J.L. and C.D. Milam. Shell Exporters Association. 1996-1997. (\$23,220). Relating sediment and habitat conditions to historical impact on resident mussel communities in Kentucky Lake.
- Farris, J.L., T.J. Naimo and C.D. Milam. U.S. Fish and Wildlife Service. 1997. (\$6,091). Assessment of condition indices as indicators of mussel damage in response to a coal-fine spill.
- McGhee, R., A. Hadar, J. Farris and R. Grippo. Mideast Travel Award. 1996-1997. (\$32,000). Collaborative environmental research for comparative Delta studies.
- Farris, J.L. Arkansas State University, Faculty Research Award. 1997-1998. (\$5,778). Cellulolytic activity as bioeffect endpoint in mussels to reduce uncertainty in the assessment of ecological risks.

- Farris, J.L. and C.D. Milam. American Electric Power Service Corporation. 1998. (\$26,508). Propagation and establishment of juvenile mussels in Leading Creek using fish host encystment and media transformation.
- Grippio, R., J. Farris, B. Bennett and R. Cox. U.S. Corps of Engineers. 1997-1998. (\$46,820). Environmental assessment for feasibility study of harbor expansions for Pemiscot County and New Madrid, MO on the Mississippi River.
- Farris, J.L., J.L. Harris, and C.D. Milam. Arkansas Game and Fish Commission. 1998-1999 (\$20,500). Zebra mussel impacts on freshwater mussels in Arkansas.
- Farris, J.L. USDA, Agricultural Research Service Mid-South Area. 1998-1999. (\$124,000). Measurement of impairment and the effects of contaminant loading and reduction in conservation and management of Deltaic watersheds.
- Farris, J.L. and C.D. Milam. U.S. Fish and Wildlife Service. 1999-2000. (\$8,910) Impacts on unionid populations in the Middlefork Holston River, VA: biomarker responses measured in *Lexingtonia dolabelloides* following a mussel die-off.
- Farris, J.L., J.L. Harris and C.D. Milam. U.S. Department of the Interior, Fish and Wildlife Service. 2000-2002. (\$40,000). Life history and population biology of the endangered speckled pocketbook.
- Harris, J.L. and J.L. Farris. USDA Forest Service, Ouachita National Forest. 2000-2002. \$30,000. Mussel survey of the Fourche and Petit Jean rivers in Arkansas.
- Stephens, W. W. and J. L. Farris. Catfish Promotion Board. 2001-2002. \$8,000. Instream community assessment of aquaculture effluents,
- Farris, J.L. and C.D. Milam. City, Water and Light, Inc. 2001-2002. (\$33,438). Evaluation of streams receiving treated municipal effluent.
- Farris, J.L. and C.D. Milam. U.S. Dept. of Agriculture Forest Service. (\$15,500) 2001-2002. GIS mussel database for Ozark and St. Francis National Forests.
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- Farris, J.L. US Fish and Wildlife Service. 2001-2003. (\$15,000). Life history of the Ouachita Rock Pocketbook (*Arkansia wheeleri*).
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- Farris, J.L. Potesta and Associates. 2001-2003. (\$145,699). Assessment of fish community responses to a coal slurry spill in the Tugfork River in Kerma, West Virginia.
- Milam, C.D., J.L. Farris, and J.L. Harris. US Army Corps of Engineers, Memphis District. 2002. (\$7,800). Development of an electronic key for Arkansas freshwater mussel populations.
- Farris, J.L. Combined Various Regional Industries and Municipalities. 1996-2004. (\$371,644). Evaluation of point and non-point impacts on receiving stream communities predicted by toxicity and impairment testing.

- Farris, J.L. 2002. (\$26,448). Parsons Engineering Science, Inc. Bioassessment of water and sediment quality on Robinson Military Training Area.
- Farris, J.L., A.D. Christian and J.L. Harris. US Fish and Wildlife Service. 2002-2004. (\$30,000). Life history and population biology research on the threatened Arkansas fatmucket (*Lampsilis powelli*) and the special concern Ouachita creekshell (*Villosa arkansasensis*).
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- R.E. Hannigan and J.L. Farris. 2003-2006. (\$262,350). NSF. REU Site: R.I.S.E. – Research internships in science of the environment at Arkansas State University.
- R.E. Hannigan and J.L. Farris. 2003-2005. (\$163,159). NSF. Linkages between the chemical weathering of black shales and metal contamination in aquatic systems.
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- Bouldin, J.L., J.L. Farris, M.T. Moore, S. Smith Jr. and C.M. Cooper. 2004. Evaluating toxicity of diazinon in agricultural associated runoff through constructed wetlands. North American Benthological Society annual meeting, Vancouver, BC.

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- Farris, J.L., J.H. Seagraves, J.L. Harris. Freshwater mussel propagation at Arkansas State University and Mammoth Spring National Fish Hatchery. Coolwater Fish Culture Workshop January 2004, Hot Springs, AR
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- Moore M.T., C.M. Cooper, S. Smith, Jr., R.W. Steinriede, Jr., J.L. Farris, and W.W. Stephens. 2003. Drainage ditch monitoring of the Delta Conservation Demonstration Center (DCDC), Mississippi, USA. Abstracts of the 24<sup>th</sup> Annual Meeting of the Society of Environmental Toxicology and Chemistry, Austin, TX. p. 200-201.
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- Ogendi, G.M., Hannigan, R.E., Farris, J.L., Smith, D. 2004. The Impact of Black shale Weathering on Sediment Quality: Preliminary Findings. 88th Annual Meeting of the Arkansas Academy of Science. Jonesboro, AR.
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- Bouldin, J.L., J.L. Farris, M.T. Moore, C.M. Cooper. 2003. Vegetative and structural characteristics of agricultural drainages in the Mississippi Delta landscape. 5<sup>th</sup> Annual Arkansas Soil and Water Education Conference. Jonesboro, AR.
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- Bouldin J.L., J.L. Farris, M.T. Moore, and C.M. Cooper. 2003. Vegetative and structural characteristics of agricultural drainages in the Mississippi Delta landscape. Society of Environmental Toxicology and Chemistry. Austin, TX.
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- Bouldin J.L., J.L. Farris, M.T. Moore, and C.M. Cooper. 2003. Physical and vegetative characteristics of agricultural drainages in the Mississippi Delta landscape. Platform session. MidSouth Regional Society of Environmental Toxicology and Chemistry Society annual meeting. Nashville, TN.
- McBride, A.S., J.L. Farris, R.A. Kuhnle, D.G. Wren. 2003. Freshwater mussel response to various flow conditions. 3<sup>rd</sup> Biennial Symposium Freshwater Mollusk conservation Society. Durham, NC.
- Seagraves, J.H., J.L. Farris, J.L. Harris. 2003. Life history and habitat characterization of the federally endangered freshwater mussel *Arkansia wheeleri*. 3<sup>rd</sup> Biennial Symposium Freshwater Mollusk conservation Society. Durham, NC.
- Winterringer, R., J.L. Farris, J.L. Harris. 2003. Population dynamics and reproductive behaviors of *Lampsilis streckeri* (Frierson 1927), in a geographically isolated stream in Arkansas. 3<sup>rd</sup> Biennial Symposium Freshwater Mollusk conservation Society. Durham, NC.
- McCann, M.T., J.L. Farris, R.J. Neves. 2003. Impacts on early lifestages of freshwater mussels from sediments and contributed metals associated with surface mining in Southwest Virginia. 3<sup>rd</sup> Biennial Symposium Freshwater Mollusk conservation Society. Durham, NC.
- Stephens, W.W. and J.L. Farris. 2003. Assessment of instream communities associated with nutrient contributions from aquaculture discharges in the Delta Ecoregion. 24<sup>th</sup> Annual Meeting of Society of Environmental Toxicology and Chemistry, Austin, Texas.
- Stephens, W.W. and J.L. Farris. 2003. Community assessments of streams receiving aquaculture effluents in the Arkansas Delta. SETAC Mid-South Region Annual Meeting. "Delineation of Environmental Issues: Local Aspects". Center in Molecular Toxicology, Vanderbilt University, Nashville, Tennessee.

- Scott, M.C., J.L. Farris, A.D. Christian. 2003. Propagation of the Arkansas fatmucket, *Lampsilis powellii* (Lea, 1852). Arkansas State Wildlife Society Meeting, Jonesboro, AR.
- Seagraves, J.H., J.L. Farris, J.L. Harris. 2003. Life history and habitat characterization of the federally endangered freshwater mussel *Arkansia wheeleri*. Arkansas State Wildlife Society Meeting, Jonesboro, AR.
- Stephens, W.W. and J.L. Farris. 2003. Biomonitoring: a tool to analyze & characterize effluents from channel catfish fingerling production. World Aquaculture Society at the Aquaculture America Conference, Louisville, Kentucky.
- Stephens, W.W. and J.L. Farris. 2003. Relating instream community assessments to aquaculture effluents. World Aquaculture Society at the Aquaculture America Conference, Louisville, Kentucky.
- Stephens, W.W. and J.L. Farris. 2003. Instream community assessment of aquaculture effluents. Catfish Farmers of Arkansas Annual Meeting, Hot Springs, Arkansas.
- Bouldin J.L., J.L.Farris, M.T.Moore, and C.M.Cooper. 2003. Physical and vegetative characteristics of agricultural drainages in the Mississippi Delta landscape. North American Benthological Society annual meeting. Athens, GA.
- Hobbs, M.S., R.S. Grippo, J.L. Farris, L. Harding. 2003. Responses of Non-Target Organisms to Aqueous Potassium Permanganate Exposure. 24th North American SETAC Annual Meeting, Austin TX.
- Hobbs, M.S., R.S. Grippo, J.L. Farris, L. Harding. 2003. Responses of Non-Target Organisms to Aqueous Potassium Permanganate Exposure. Arkansas Wastewater and Water Environment Associations, Hot Springs, AR.
- Farris, J.L., C.D. Milam, J.L. Harris, and R. Shelton. 2002. Mussel propagation projects: facilities and techniques used at the Mammoth Spring National Fish Hatchery. Freshwater Mussel Conservation Society Propagation Workshop. Invited talk. National Conservation Training Center, Shepards town, WV.
- Moore, M.T., C.M. Cooper, S. Smith, Jr., E.R. Bennett, R. Schulz, J.L. Farris, and F.D. Shields, Jr. 2002. Influence of vegetation in mitigation of methyl parathion runoff. 6th International Conference on Diffuse Pollution, Amsterdam, The Netherlands. (also published proceedings p. 111-118)
- Cooper, C.M., M.T. Moore, E.R. Bennett, S. Smith, Jr., J.L. Farris, C.D. Milam, and F.D. Shields, Jr. 2002. Innovative uses of vegetated drainage ditches for reducing agricultural runoff. 6th International Conference on Diffuse Pollution, Amsterdam, The Netherlands (also published proceedings p. 119-126).
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- Hobbs, M.S., R.S. Grippo, J.L. Farris, B.R. Griffin, and L.L. Harding. 2002. Environmental fate and effects of the aquaculture therapeutic potassium permanganate. 23rd Annual Meeting of the Society of Environmental Toxicology and Chemistry, Salt Lake City, Utah.
- Harding, L.L., J.L. Farris, and W.D. Snyder. 2002. Assessment of instream conditions for two deltaic streams receiving treated municipal effluent. 23rd Annual Meeting of the Society of

Environmental Toxicology and Chemistry, Salt Lake City, Utah.

- Maul, J.D. and J.L. Farris. 2002. Relationship among asymmetry, condition index, reproductive success, and cholinesterase activity of Northern Cardinals. Society of Environmental Toxicology and Chemistry 23<sup>rd</sup> Annual Meeting, Salt Lake City, UT.
- Maul, J.D., J.P. Gandhi, and J.L. Farris. 2002. Cloacal microbial flora in breeding and wintering birds: Overall prevalence and relationship to condition index, fluctuating asymmetry, and habitat. 3<sup>rd</sup> North American Ornithological Conference, New Orleans, LA.
- Bennett, E.R., M.T. Moore, C.M. Cooper, S. Smith, Jr., J.L. Farris, C.D. Milam, R. Schulz, and R.L. Letcher. 2002. Mitigation of pesticide-associated runoff in vegetated agricultural drainage ditch systems. 12th Annual Meeting of the Society of Environmental Toxicology and Chemistry - Europe, Vienna, Austria.
- Maul, J.D., J.L. Farris, and P.A. Stewart. 2002. An opinion survey on hormesis and perceived risk of low contaminant exposure concentrations. Mid South Regional Chapter of the Society of Environmental Toxicology and Chemistry. Annual Meeting, Vicksburg, MS.
- Maul, J.D. and J.L. Farris. 2002. Patterns in Northern Cardinal (*Cardinalis cardinalis*) plasma cholinesterase enzyme activity and relationship to condition index and fluctuating asymmetry. 3<sup>rd</sup> North American Ornithological Conference, New Orleans, LA.
- Posey, W.R., II, J.L. Farris, C.D. Milam, and J.L. Harris. 2002. Development of a geographic information system (GIS) database for native Arkansas mussels. American Fisheries Society, Southern Division Symposium, Little Rock, AR.
- Winterringer, R., J.L. Farris, and J.L. Harris. 2002. Reproductive behavior and population dynamics of the endangered freshwater mussel, *Lampsilis streckeri* (Frierson 1927), in the Middle Fork Little Red River, Arkansas. American Fisheries Society, Southern Division Symposium, Little Rock, AR.
- Gandhi, J.P., A.D. Christian, and J.L. Farris. 2002. The effects of freshwater mussel filter feeding on seston and microbial biomass and diversity from a successful mussel refuge. American Fisheries Society, Southern Division Symposium, Little Rock, AR.
- Milam, C.D., J.L. Harris, J.L. Farris, and L.G. Morris. 2002. Electronic key for identifying Arkansas freshwater mussel species. American Fisheries Society, Southern Division Symposium, Little Rock, AR.
- Maul, J.D. and J.L. Farris. 2002. Does avian body condition, fat score, fluctuating asymmetry, and cloacal bacteria loads predict oxime reactivations of cholinesterase and cholinesterase activities below diagnostic thresholds? Mid South Regional Chapter of the Society of Environmental Toxicology and Chemistry. Annual Meeting, Vicksburg, MS.
- Scott, M., J.D. Maul, and J.L. Farris. 2002. Characterization of Northern Cardinal (*Cardinalis cardinalis*) nest structure and nest site vegetation. Arkansas State University Undergraduate Scholars Day Poster Presentation, State University, AR.
- Maul, J.D. and J.L. Farris. 2002. Plasma Cholinesterase inhibition in the Northern Cardinal, *Cardinalis cardinalis*. Arkansas Soil and Water Education Conference, Jonesboro, AR.
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Jonesboro, Arkansas.

- Stephens, W.W. and J.L. Farris. 2002. A Biomonitoring Approach to Aquaculture Effluent Characterization in Channel Catfish Fingerling Production. SETAC Mid South Region Annual Meeting. "Environmental Quality Issues in the South". Waterways Experiment Station, U.S. Army Corps of Engineers, Vicksburg, Mississippi.
- Bouldin, J.L., C.D. Milam, J.L. Farris. 2002. Application of instream biomonitoring to a watershed assessment in Northwest Arkansas. Society of Environmental Toxicology and Chemistry 23<sup>rd</sup> Annual Meeting, Salt Lake City, UT.
- Bouldin J.L., J.L.Farris, M.T.Moore, S. Smith,Jr, P. Hendley, C.D.Milam, C.M.Cooper, 2002. Evaluating fate and effects of atrazine and l-cyhalothrin in vegetated and unvegetated ditch mesocosms. Society of Environmental Toxicology and Chemistry 23<sup>rd</sup> Annual Meeting, Salt Lake City, UT.
- Stephens, W.W. and J.L. Farris. 2002. Instream Community Assessment and Biomonitoring of Associated Aquaculture Effluents. 23<sup>rd</sup>. Annual Meeting of Society of Environmental Toxicology and Chemistry. Salt Lake City, Utah.
- Bouldin, J.L., C.D. Milam, J.L. Farris, M.T.Moore, E.R. Bennett, S. Smith, Jr., and C.M. Cooper. 2002. Effects of esfenvalerate on aquatic and sediment dwelling organisms, in agricultural ditch mesocosms. 4th Annual Arkansas Soil and Water Education Conference, Jonesboro, Arkansas
- Milam, C.D., J.L. Bouldin, J.L. Farris, R. Schulz, M.T.Moore, E.R. Bennett, S. Smith, Jr., and C. M. Cooper. 2002. Methyl parthion effects to aquatic organisms following a simulated storm event in constructed wetland mesocosms. 4th Annual Arkansas Soil and Water Education Conference, Jonesboro, Arkansas.
- Maul, J.D. and J.L. Farris. 2001. Examination of plasma Cholinesterase inhibition in the Northern Cardinal, *Cardinalis cardinalis*, in the agricultural landscape of northeast Arkansas. Society of Environmental Toxicology and Chemistry 22<sup>nd</sup> Annual Meeting, Baltimore, MD.
- Stephens, W.W. and J.L. Farris. 2001. Biomonitoring of Effluent and Nutrient Contributions From Aquaculture. 70<sup>th</sup> Annual Meeting of the Arkansas Water Works & Water Environment Association. Hot Springs, Arkansas.
- Bouldin, J.L., C.D. Milam, J.L. Farris, M.T. Moore, S.Smith, Jr., C.M. Cooper, 2001. Effects of esfenvalerate on aquatic and sediment dwelling organisms in agricultural ditch mesocosms. 22<sup>nd</sup> Annual Meeting of Society of Environmental Toxicology and Chemistry. Baltimore, Maryland.
- Bouldin, J.L., C.D. Milam, J.L. Farris, M.T. Moore, S.Smith, Jr., C.M. Cooper. 2001. Function of agricultural ditches in minimizing non-point pollution. Arkansas Water Works & Water Environment Association, Hot Springs, AR.
- Stephens, W.W. and J.L. Farris. 2001. Legitimizing Biomonitoring for Measuring Impairments in Aquaculture Discharges. MidSouth Regional Society of Environmental Toxicology and Chemistry. Arkansas State University. Jonesboro, Arkansas.
- Feldman, D.L., J.L. Farris, C.D. Milam, M.T. Moore, S.J. Smith, and C.M. Cooper. 2001. Seasonal variation of biotic and abiotic factors that characterize agricultural drainage ditches. North American Benthological Society annual meeting, LaCrosse WI.
- Milam, C.D., J.L. Bouldin, R. Schulz, J.L. Farris, M.T. Moore, E. Bennett, C.M. Cooper, and

- S.J. Smith. 2001. Evaluating toxicity of methyl parathion application in constructed wetland mesocosms. North American Benthological Society annual meeting, LaCrosse WI.
- Winterringer, R., J. L. Farris, J.L. Harris, and C.D. Milam. 2001. Correlation of habitat characteristics to indicate mussel bed occurrence in the Middle Fork Little Red River, Arkansas. North American Benthological Society annual meeting, LaCrosse WI.
- Stephens, W.W. and J.L. Farris. 2001. Bioassessment in Consideration of TMDLs. Union County Emergency Planning Committee. El Dorado, Arkansas.
- Stephens, W.W. and J.L. Farris. 2001. Characterization of Channel Catfish Fingerling Effluents with Biomonitoring. 22<sup>nd</sup> Annual Meeting of Society of Environmental Toxicology and Chemistry. Baltimore, Maryland.
- Stephens, W.W., J.L. Farris, and P.A. Stewart. 2001. Legitimizing the Biomonitoring Approach to Aquaculture Effluent Characterization. 22<sup>nd</sup> Annual Meeting of Society of Environmental Toxicology and Chemistry. Baltimore, Maryland.
- Moore, M.T., C.M. Cooper, E.R. Bennett, S. Smith, Jr., and J.L. Farris. 2001. Fate of pesticides and nutrients in linear wetlands (ditches). 5th Annual American Farm Bureau Watershed Heroes Conference, Amana, Iowa.
- Moore, M.T., C.M. Cooper, E.R. Bennett, S. Smith, Jr., F.D. Shields, Jr., and J.L. Farris. 2001. Vegetated drainage ditch research in the Mississippi Delta Management Systems Evaluation Area (MDMSEA): Current results and future directions. 222nd American Chemical Society National Meeting, Chicago, Illinois.
- Moore, M.T., C.M. Cooper, E.R. Bennett, S. Smith, Jr., J.L. Farris, C.D. Milam, and F.D. Shields, Jr. 2001. TMDL and water quality implications of vegetated drainage ditch research. 22nd Annual Meeting of the Society of Environmental Toxicology and Chemistry, Baltimore, Maryland
- Rauschenberger, R.H., J.L. Farris, and S.E. Trauth. 2001. Viability of alligator snapping turtle, (*Macroclmys temminckii*) hatchlings incubated in treated and non-treated substrates. 22nd Annual Meeting of the Society of Environmental Toxicology and Chemistry, Baltimore, Maryland.
- Schulz, R., Moore, M.T., Bennett, E.R., Milam, C.D., Bouldin, J.L., Farris, J.L., Smith, S. and Cooper, C.M. 2001. Methyl-parathion effects on macroinvertebrates in vegetated and unvegetated wetland mesocosms. 22nd Annual Meeting of the Society of Environmental Toxicology and Chemistry, Baltimore, Maryland.
- Bennett, E.R., M.T. Moore, R. Schulz, C.M. Cooper, J.L. Farris. 2001. Comparative mitigation of methyl-parathion associated runoff in vegetated and non-vegetated wetlands. 22nd Annual Meeting of the Society of Environmental Toxicology and Chemistry, Baltimore, Maryland.
- Milam, C.D., J.L. Bouldin, R. Schulz, J.L. Farris, M.T. Moore, E.R. Bennett, C.M. Cooper, and S. Smith. 2001. Methyl parathion effects to aquatic organisms following a simulated storm event in constructed wetland mesocosms. 22nd Annual Meeting of the Society of Environmental Toxicology and Chemistry, Baltimore, Maryland.
- Winterringer, R.M., J.L. Farris, J.L. Harris, and C.D. Milam. 2001. Habitat Characterization and Current status of *Lampsilis streckeri* (Frierson 1927) in the Middle Fork Little Red River, Arkansas. Freshwater Mollusk Conservation Society Symposium, Pittsburgh, PA.
- Farris, J.L., C.D. Milam, J.L. Bouldin, M.T. Moore, S. Smith, Jr., C.M. Cooper, 2001. Evaluating

- toxicity of Asana XL (esfenvalerate) amendments in agricultural ditch mesocosms. North American Benthological Society annual meeting. Lacrosse, WI.
- Farris, J.L., C.D. Milam, T.J. Newton, E.M. Monroe, J.D. Maul, and T.L. Chapman. 2000. Impacts on unionid populations in the Middlefork Holston River: biomarker responses following a mussel die-off. Society of Environmental Toxicology and Chemistry 21<sup>st</sup> Annual Meeting, Nashville, TN.
- Milam, C.D., J.L. Farris, M. Moore, S. Smith, Jr., and C. Cooper. 2000. Understanding the structure and function of drainage ditches in Northeast Arkansas. Arkansas Soil and Water Education Conference, Jonesboro, Arkansas.
- Cooper, C.M., M.T. Moore, E.R. Bennett, S. Smith, Jr., and J.L. Farris. 2000. Alternative environmental benefits of agricultural drainage ditches. SIL Conference, Australia.
- Maier, K.J., J.W. Grubaugh, L. Gipson, S.T. Nawrocki, C.D. Milam, and J.L. Farris. 2000. Assessment of the biotic integrity and ambient toxicity of McKellar Lake, 1973-1999. Society of Environmental Toxicology and Chemistry Annual Meeting, Nashville, TN.
- Moore, M.T., C.M. Cooper, R.R. Bennett, S. Smith, Jr., and J.L. Farris. 2000. Reinventing the ditch: Using drainage channels for agricultural runoff remediation. Society of Environmental Toxicology and Chemistry Annual Meeting, Nashville, TN.
- Stephens, W.W. and J.L. Farris. 2000. Biomonitoring effluent impacts of nutrient loading from aquaculture. 21<sup>st</sup> Annual Meeting of the Society of Environmental Toxicology and Chemistry. Nashville, Tennessee.
- Davis, S. and J.L. Farris. 2000. The Globe Program<sup>R</sup>: A teaching strategy for environmental education. 21<sup>st</sup> Annual Meeting of the Society of Environmental Toxicology and Chemistry. Nashville, Tennessee.
- Farris, J.L. 2000. Biomonitoring considerations for assessing environmental changes in navigable rivers. Arkansas Conference on Waterborne Transportation, Little Rock, AR.
- Maul, J. D., M. T. Moore, J. L. Farris and C. M. Cooper. 2000. Water Quality Regulations Affecting Agricultural Production Practices in the 21st Century: TMDLs. Arkansas Crop Management Conference 2000, Little Rock, AR.
- Farris, J.L., C.M. Cooper, M.T. Moore, and D.L. Feldman. 2000. Attributes of ditch ecosystems as constricted remnant wetlands. Sustainability of Wetlands and Water Resources Conference. Oxford, MS.
- Feldman, D.L., J.L. Farris, M.T. Moore and C.M. Cooper. 2000. Characterization of macroinvertebrate communities and the conditions that define agricultural drainage ditches. North American Benthological Society Annual Meeting, Denver, CO.
- Ash, T.V., D.L. Feldman and J.L. Farris. 2000. Assessing river impact in an intact priority watershed designated for restoration. North American Benthological Society Annual Meeting, Denver, CO.