

ALEXANDER V. ZALE

Certified Fisheries Professional

Montana Cooperative Fishery Research Unit, U.S. Geological Survey
Fish & Wildlife Management Program, Department of Ecology
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EDUCATION

University of Florida, Department of Fisheries and Aquaculture

Doctor of Philosophy Degree: Forest Resources and Conservation, December 1984

Dissertation: Applied aspects of the thermal biology, ecology, and life history of the blue tilapia, *Tilapia aurea* (Pisces: Cichlidae)

Virginia Polytechnic Institute and State University, Fisheries and Wildlife Sciences

Master of Science Degree: Fisheries and Wildlife, December 1980

Thesis: The life histories of four freshwater lampsiline mussels (Mollusca: Unionidae) in Big Moccasin Creek, Russell County, Virginia

University of Massachusetts, Department of Forestry and Wildlife Management

Bachelor of Science Degree: Fisheries Biology, June 1978

PROFESSIONAL EXPERIENCE

Montana Cooperative Fishery Research Unit, Biological Resources Division, USGS, Montana State University, 1/94 - Present

Unit Leader (1/02 - Present) and Professor (12/02 - Present); Assistant Unit Leader (1/94 - 12/01) and Associate Professor (1/94-12/02): Lead, coordinate, and administer an applied fisheries research program addressing topics and issues of concern to the State of Montana and the U.S. Department of the Interior. Responsible for mission development and execution, proposal preparation, procurement and administration of research and administrative funds, coordination of joint research efforts with Unit cooperators, study design, scheduling, analyses, report preparation, supervision of data acquisition by field personnel, presentations to professional audiences, and publication of research findings. Technical areas of special emphasis include restoration of native fishes, whirling disease, thermal ecology, population dynamics and effects of exotic fishes, and effects of environmental degradation on recreational fisheries.

As Affiliate Professor at Montana State University I teach graduate courses and seminars in fisheries and aquatic sciences, guest lectures in a variety of graduate and undergraduate courses, and thesis credits for my advisees. I chair the graduate

committees of my advisees and serve as a member of graduate committees of students advised by other faculty. In addition to a varying number of graduate students, postdoctoral associates, and technicians, I supervise the Unit's Assistant Unit Leader and Administrative Officer.

Oklahoma Cooperative Fish and Wildlife Research Unit, U.S. Fish and Wildlife Service, Oklahoma State University, 6/85 - 12/93

Assistant Unit Leader/Fisheries and Adjunct Associate Professor: Coordinated, supervised, and administered the Oklahoma Unit's applied fisheries research program addressing topics and issues of concern to the State of Oklahoma and the U.S. Fish and Wildlife Service. Responsible for proposal preparation, procurement and administration of research funds, coordination of joint research efforts with Unit cooperators, study design, scheduling, statistical data analyses, report preparation, supervision of data acquisition by field personnel, presentations to professional audiences, and publication of research findings.

Technical areas of special emphasis included effects of hydropower on fisheries, sport fisheries dynamics in rivers and impoundments of the southern Great Plains and Ozark Highlands, physiological ecology, early life history, and distribution and ecology of threatened and endangered fishes. Findings of these investigations were incorporated by various state and federal agencies into management plans designed to enhance fisheries resources throughout Oklahoma. Through these investigations, I gained expertise in regulated-river and reservoir fisheries (turbine and spillway entrainment of all life history stages, effects of water level fluctuations on reproductive success, influences of hydropower discharges on reservoir limnology, downstream fish assemblages and water quality, tailwater recreational fisheries, and reproduction of riverine fishes), population and exploitation dynamics (creel survey techniques and analyses, mortality event assessment, effects of harvest regulations, age and growth), fish assemblage surveys in streams, rivers, and reservoirs, aquatic habitat assessment, a wide variety of fish collection and enumeration techniques, serological and hematological field and laboratory techniques, and telemetry and tagging technologies.

As Adjunct Associate Professor at Oklahoma State University I taught one graduate course entitled Advanced Fisheries Science, special studies courses for graduate students, guest lectures in a variety of graduate and undergraduate courses, and thesis hours for my advisees. I chaired 13 graduate committees and served as a member on an additional 16. My supervisory obligations varied seasonally and as a function of the number of active projects, but I typically supervised 3 to 5 M.S. candidates, one doctoral candidate, 5 to 10 part-time temporary undergraduate technicians, and 1 to 3 full-time technicians. I also supervised one postdoctoral associate and two research associates.

University of Florida, Florida Cooperative Fish and Wildlife Research Unit, 1/85 - 6/85

Postdoctoral Associate: Developed a conceptual framework for the comprehensive evaluation of existing and potential marsh-management strategies at Merritt Island

National Wildlife Refuge (Kennedy Space Center), Florida, directed at enhancement of ecological production and diversity. Compiled and synthesized existing information on the structure, ecological function, and management of coastal impoundments along the Atlantic coast of the southeastern United States in the context of their influence on coastal wetlands habitats and their biota. Supervised the development of an identification manual for the early life history stages of selected fishes of north-central Florida, an assessment of the sport fishery of Loxahatchee National Wildlife Refuge, Florida, and an examination of the potential hazards of diphacinone and chloraphacinone rodenticides to nontarget fishes. Supervised one biologist, two technicians, and two MS candidates.

University of Florida, Florida Cooperative Fish and Wildlife Research Unit, 1/84 - 12/84

Biologist: Developed a mathematical Habitat Suitability Index model for use in evaluation of relative capacities of candidate habitats along the U.S. coast of the Gulf of Mexico to support nesting by laughing gulls. Supervised laboratory research by a foreign exchange student on acute effects of environmental pH on blue tilapia. Prepared and submitted grant proposals and, subsequent to funding, initiated contracted work prior to official appointment as a postdoctoral associate (see above).

University of Florida, Florida Cooperative Fish and Wildlife Research Unit, 9/80 - 12/83

Graduate Research Assistant: Conducted laboratory and field research on the distribution, thermal biology, ecology, and life history of the exotic blue tilapia (lower lethal temperatures, age and growth, reproductive biology, interspecific territoriality, movements, trophic ecology of early life history stages, electivity by predators). Supervised two part-time technicians. Assisted in the teaching of undergraduate courses in fisheries science.

Virginia Polytechnic Institute and State University, Virginia Cooperative Fishery Research Unit, 9/78 - 9/80

Graduate Research Assistant: Conducted research on the life histories of four freshwater mussel species in southwestern Virginia (reproductive biology, glochidial parasitism of host fishes, age and growth). Surveyed distributions of populations of endangered mussel species in southwestern Virginia. Supervised one full-time technician.

University of Massachusetts, Massachusetts Cooperative Fishery Research Unit, 3/76 - 9/78 (intermittent appointments)

Fisheries Technician: Assisted U.S. Fish and Wildlife Service personnel and University of Massachusetts graduate students in research on movements, reproductive biology, and population ecology of anadromous and endangered fishes of the Connecticut River.

Crew Chief in 1978. Techniques used: ultrasonic and radio telemetry of adult and juvenile American shad and Atlantic salmon smolts, ichthyoplankton sampling and identification, gill netting, electrofishing, beach seining.

GRADUATE STUDENTS SUPERVISED

Completed Theses and Dissertations

Gale, S. B. 2005. Entrainment losses of westslope cutthroat trout into screened and unscreened irrigation diversion canals on Skalkaho Creek, Montana. M.S. Thesis, Montana State University, Bozeman. 87 pages.

De Rito, J. N. 2004. Assessment of reproductive isolation between Yellowstone cutthroat trout and rainbow trout in the Yellowstone River, Montana. M.S. Thesis, Montana State University, Bozeman. 60 pages.

Lukins, H. J. 2004. Dynamics of the waterborne stage of *Myxobolus cerebralis* estimated directly by packed-bed filtration. M.S. Thesis, Montana State University, Bozeman. 53 pages.

Jaeger, M. E. 2004. An empirical assessment of factors precluding recovery of sauger in the lower Yellowstone River: movement, habitat use, exploitation, and entrainment. M.S. Thesis, Montana State University, Bozeman. 115 pages.

Ryce, E. K. N. 2003. Factors affecting the resistance of juvenile rainbow trout to whirling disease. Ph.D. Dissertation, Montana State University, Bozeman. 124 pages.

Yerk, D. B. 2000. Population characteristics and habitat use of a developing walleye population in Canyon Ferry Reservoir, Montana. M.S. Thesis, Montana State University, Bozeman. 195 pages.

Opitz, S. T. 1999. Effects of whirling disease on recruitment of brown trout in the Ruby River and Poindexter Slough, Montana. M.S. Thesis, Montana State University, Bozeman. 97 pages.

Mitro, M. G. 1999. Sampling and analysis techniques and their application for estimating recruitment of juvenile rainbow trout in the Henrys Fork of the Snake River, Idaho. Ph.D. Dissertation, Montana State University, Bozeman. 288 pages.

Katzman, L. M. 1998. Effects of Predation on Status of Arctic Grayling at Red Rock Lakes National Wildlife Refuge, Montana. M.S. Thesis, Montana State University, Bozeman. 207 pages.

Zollweg, E. C. 1998. Piscine predation on bull trout in the Flathead River, Montana. M.S. Thesis, Montana State University, Bozeman. 97 pages.

Simmonds, R. L., Jr. 1995. Effect of piscivorous birds, particularly cormorants, on reservoir and aquacultural fishes in Oklahoma. M.S. Thesis, Oklahoma State University, Stillwater. 91 pages.

Shutters, M. K. 1992. Effects of the addition of hydropower to Kaw Dam on striped bass egg abundances in the Arkansas River, Oklahoma. M.S. Thesis, Oklahoma State University, Stillwater. 61 pages.

Cunningham, K. K. 1991. Assessment of the effects of environmental variables on the fishery of the Kaw Lake tailwater, Oklahoma. M.S. Thesis, Oklahoma State University, Stillwater. 70 pages.

Adornato, T. G. 1990. Comparative influences of environmental parameters on abundances of hybrid striped bass and white bass in the Grand Lake tailwater, Oklahoma. M.S. Thesis, Oklahoma State University, Stillwater. 51 pages.

Bohnsack, B. L. 1990. Factors affecting spawning locations and reproductive success of striped bass in the Arkansas River, Oklahoma. M.S. Thesis, Oklahoma State University, Stillwater. 83 pages.

Jacks, L. S. 1990. Movements and dynamics of a riverine stock of striped bass (*Morone saxatilis*). M.S. Thesis, Oklahoma State University, Stillwater. 47 pages.

Sorenson, K. M. 1990. Entrainment susceptibilities of fishes inhabiting the lower portion of Grand Lake, Oklahoma. M.S. Thesis, Oklahoma State University, Stillwater. 55 pages.

Stubbs, K. C. 1990. Relative population abundance and size structure dynamics of white crappie in Skiatook Lake, Oklahoma, during a 5-year stage-fill. M.S. Thesis, Oklahoma State University, Stillwater. 37 pages.

Travnichek, V. H. 1990. Estimated entrainment of ichthyoplankton through the Pensacola Dam hydroelectric facility. M.S. Thesis, Oklahoma State University, Stillwater. 88 pages.

Current Graduate Students

Brown, P. Ph.D. candidate. Evaluation of the efficiency and efficacy of non-native fish eradication and exclusion techniques for native fish restoration.

Shepard, B. B. Ph.D. candidate. Factors that influence invasion of nonnative brook and rainbow trout and their interactions with native Yellowstone and westslope cutthroat trout.

Davis, W. N. M.S. candidate. Effects of coalbed natural gas development and extraction on prairie fish assemblages.

Bahn, L. M.S. candidate. Assessment of losses of native fish to irrigation diversions on selected tributaries of the Bitterroot River, Montana.

Harnish, R. A. M.S. candidate. Efficacy of fish screens and irrigation canal siphons on Skalkaho Creek, Montana.

Steed, A. C. M.S. candidate. Spatial dynamics of Arctic grayling in the Gibbon River, Yellowstone National Park.

Spinelli, J. P. M.S. candidate. Factors influencing turbine and spillgate losses of fish from Hauser Reservoir, Montana.

CONTRACTS AND GRANTS

Evaluation of habitat restoration for the fluvial Arctic grayling in the Big Hole River, Montana. 2006. Wild Fish Habitat Initiative, Montana University System Water Center and U.S. Fish and Wildlife Service, \$30,430.

Montana prairie riparian native species study: spatiotemporal dynamics of prairie stream fishes. 2006. Montana Department of Fish, Wildlife & Parks, \$101,000.

Effects of coalbed methane development on Great Plains fish assemblages. 2005. Wild Fish Habitat Initiative, Montana University System Water Center and U.S. Fish and Wildlife Service, \$63,923

Factors influencing turbine and spillgate losses of fish from Hauser Reservoir, Montana. 2005. Montana Department of Fish, Wildlife & Parks and PPL Montana, \$90,253

Assessment of losses of native fish to irrigation diversions on selected tributaries of the Bitterroot River, Montana. Montana Department of Fish, Wildlife & Parks. 2004. \$82,065

Literature review and development of a study plan to assess the effects of coalbed natural gas activities on fish assemblages. 2004. Bureau of Land Management, \$107,058

Spatial dynamics of Arctic grayling in the Gibbon River, Yellowstone National Park. 2004. National Park Service, \$65,752

Movements of resident and non-resident anglers in Montana: implications for transferring whirling disease among drainages. 2004. National Partnership on the Management of Wild and Native Cold Water Fisheries, \$106,641

Evaluation of habitat restoration for conservation of cutthroat trout. 2004. Wild Fish Habitat Initiative, Montana University System Water Center and U.S. Fish and Wildlife Service, \$85,412

Evaluation of the efficiency and efficacy of piscicides for use in non-native fish eradication. 2003. Wild Fish Habitat Initiative, Montana University System Water Center and U.S. Fish and Wildlife Service, \$115,502

Use of the Powder and Tongue rivers by sauger for spawning. 2003. Montana Department of Fish, Wildlife & Parks, \$25,000

Temporal, spatial, and discharge-mediated dynamics of triactinomyxon abundances and infection risk estimated directly by packed-bed filtration. 2002. National Partnership on the Management of Wild and Native Cold Water Fisheries, \$55,128

Montana prairie riparian biodiversity survey. 2002. Montana Department of Fish, Wildlife & Parks, \$390,672

Evaluation of entrainment losses of westslope cutthroat trout at private irrigation diversions on Skalkaho Creek, Montana. 2002. Wild Fish Habitat Initiative, Montana University System Water Center and U.S. Fish and Wildlife Service, \$280,945

Bacterial coldwater disease in westslope cutthroat trout: hatchery epidemiology and control. 2002. Wild Fish Habitat Initiative, Montana University System Water Center and U.S. Fish and Wildlife Service, \$121,083

Thermal requirements of westslope cutthroat trout. 2002. Wild Fish Habitat Initiative, Montana University System Water Center and U.S. Fish and Wildlife Service, \$83,137

Fish inventories in four park units of the Rocky Mountain Network. 2001. National Park Service, \$20,000

Determination of the maximum weight radio tag that can be implanted in westslope cutthroat trout without affecting swimming performance: a challenge to the "2% rule." 2001. Montana University System Water Center, \$3,342

Spatial and temporal spawning distributions of Yellowstone cutthroat trout and rainbow trout in the upper Yellowstone River drainage. 2000. Montana Department of Fish, Wildlife & Parks, National Fish and Wildlife Foundation, and Jackson Hole One-Fly Foundation, \$88,780

Distribution, movements, and life history characteristics of genetically pure westslope cutthroat trout *Oncorhynchus clarki lewisi* in the Fan Creek drainage, Yellowstone National Park. 2000. U.S. National Park Service and Yellowstone Park Foundation, \$43,750

Movements and exploitation of sauger in the lower Yellowstone River, Montana. 2000. Montana Department of Fish, Wildlife & Parks, \$120,000

Effects of size versus age on the development of whirling disease in rainbow trout. 2000. National Partnership on the Management of Wild and Native Cold Water Fisheries, \$52,554

Field collecting the triactinomyxon stage of *Myxobolus cerebralis* using combined filtration methods. 2000. National Partnership on the Management of Wild and Native Cold Water Fisheries, \$25,878

Comparative use of modified and natural habitats of the upper Yellowstone River by juvenile salmonids. 1999. U.S. Army Corps of Engineers, \$97,536

Assessment of the biological integrity of prairie streams in the Missouri and Yellowstone River basins, Montana. 1999. U.S. Environmental Protection Agency, \$297,813

Fishery survey of the streams of the Charles M. Russell National Wildlife Refuge, Montana. 1999. Biological Resources Division, U.S. Geological Survey and U.S. Fish and Wildlife Service, \$14,000

The effect of initial exposure to *Myxobolus cerebralis* on the development of resistance to reinfection in rainbow trout. 1999. National Partnership on the Management of Wild and Native Cold Water Fisheries, \$61,651

Laboratory assessment of possible selection for resistance to whirling disease among progeny of Colorado River rainbow trout. 1998. National Partnership on the Management of Wild and Native Cold Water Fisheries, \$22,000

Growth and survival temperature criteria for bull trout. 1998. National Council of the Paper Industry for Air and Stream Improvement and Biological Resources Division, U.S. Geological Survey, \$81,400

Laboratory investigations of mountain whitefish *Prosopium williamsoni* susceptibility to *Myxobolus cerebralis*. 1998. National Partnership on the Management of Wild and Native Cold Water Fisheries, \$26,870

Effects of age, dose, and environmental stress on development of whirling disease in rainbow trout. 1997. National Partnership on the Management of Wild and Native Cold Water Fisheries, \$57,568

Development of a method for field collecting the triactinomyxon stage of *Myxobolus cerebralis* using paired rotating-drum filtration. 1997. National Partnership on the Management of Wild and Native Cold Water Fisheries, \$22,932

Effects of whirling disease on recruitment of brown trout in the Ruby River and Poindexter Slough, Montana. 1996. Montana Department of Fish, Wildlife & Parks, \$57,448

Effects of predation on status of Arctic grayling *Thymallus arcticus* at Red Rock Lakes National Wildlife Refuge, Montana. 1995. U.S. National Biological Service and U.S. Fish and Wildlife Service, \$39,000

Development and potential management of an illegally introduced walleye population in Canyon Ferry Reservoir, Montana. 1995. Montana Department of Fish, Wildlife & Parks, \$40,000

Lake trout predation on juvenile bull trout in the Flathead River System. 1995. Montana Department of Fish, Wildlife & Parks and Bonneville Power Authority, \$17,600

Recruitment of rainbow trout in the Henrys Fork of the Snake River, Idaho. 1994. Idaho Department of Fish and Game, \$108,626

Travel grant to Romania: larval and juvenile fish assemblages as indicators of environmental health and biological productivity in the Danube Delta. 1994. U.S. National Academy of Sciences, \$2,500

Leopard darter mark and recapture study. 1993. Oklahoma Department of Wildlife Conservation, \$79,998

Travel grant to Latvia: design, development, and initiation of a nationwide ichthyofaunal survey of Latvian stream and river habitats. 1993. U.S. Fish and Wildlife Service and Latvian Academy of Sciences, \$6,800

Effect of piscivorous birds, particularly cormorants, on reservoir and aquacultural fishes in Oklahoma. 1992. U.S. Fish and Wildlife Service, \$49,590

Travel grant to Latvia: collaborative aquatic environmental assessments. 1992. U.S. Fish and Wildlife Service and Latvian Academy of Sciences, \$6,400

Kaw Hydroelectric Project: Keystone Reservoir recruitment investigations. 1992. Oklahoma Municipal Power Authority, \$4,795

An evaluation of the effect of decreased chloride concentration in the Red River Basin on primary production and sport fish abundance in Lake Texoma. 1991. U.S. Army Corps of Engineers, \$20,619

Status of the speckled chub in the Arkansas River Basin. 1991. Oklahoma Department of Wildlife Conservation, \$26,666

Status of the Neosho madtom in Oklahoma. 1991. Oklahoma Department of Wildlife Conservation, \$3,333

Life history and distribution of the Arkansas River shiner in Oklahoma. 1989. Oklahoma Department of Wildlife Conservation, \$60,000

Preliminary studies on the laboratory rearing of leopard darters, *Percina pantherina*. 1988. U.S. Army Corps of Engineers, \$30,000

Career opportunities for minorities in the fisheries and wildlife professions: an awareness-enhancement workshop for junior high school students. 1988. U.S. Fish and Wildlife Service, \$3,000

Effects of the Pensacola Hydropower Project on the fishery resources of the Grand River. 1987. Grand River Dam Authority, \$403,098

Status of smallmouth bass populations in eastern Oklahoma. 1987. Oklahoma Department of Wildlife Conservation, \$105,191

Kaw Hydroelectric Project: aquatic resources investigations. 1987. Oklahoma Municipal Power Authority, \$182,000

Reproductive ecology of the leopard darter. 1986. Oklahoma Department of Wildlife Conservation, \$80,721

Analysis of the suitability of keystone reservoir, Oklahoma, for habitation by adult striped bass. 1986. Oklahoma Department of Wildlife Conservation, \$57,080

Movements of striped bass in the Arkansas River downstream from Keystone Reservoir. 1986. Oklahoma Department of Wildlife Conservation, \$50,622

Development of a white crappie fishery in a stage-fill impoundment in Oklahoma. 1986. Oklahoma Department of Wildlife Conservation, \$136,132

Movements and harvest of striped bass in the Arkansas River below Keystone Dam. 1986. Oklahoma Department of Wildlife Conservation, \$1,725

Telemetric observation of movements of striped bass in the Arkansas River below Keystone Dam. 1986. Oklahoma Department of Wildlife Conservation, \$5,000

Impact of hydropower releases on striped bass in the Arkansas River. 1986. Benham-Holway Power Group, \$1,209

Distribution and abundances of the leopard darter, *Percina pantherina* (Moore and Reeves). 1986. U.S. Army Corps of Engineers, \$59,000

Population parameters of striped bass x white bass hybrids in a turbid Oklahoma reservoir. 1985. Oklahoma Department of Wildlife Conservation, \$26,710

Survey of literature on the role of intermittent Great Plains prairie streams in the dynamics of associated terrestrial and aquatic systems. 1985. U.S. Fish and Wildlife Service, \$4,000

Species profiles of the ladyfish and tarpon, and the reef-building tube worm. 1985. U.S. Fish and Wildlife Service, \$4,000

A conceptual model of salt marsh management on Merritt Island, Florida. 1984. National Aeronautics and Space Administration, \$21,196

Impounded coastal wetlands of the Atlantic coast of the southeastern United States: literature synthesis and management options. 1984. U.S. Fish and Wildlife Service, \$21,000

PROFESSIONAL AFFILIATIONS

American Fisheries Society
American Society of Ichthyologists and Herpetologists
North American Benthological Society

PROFESSIONAL SERVICE

Lead Co-editor, Fisheries Techniques, 3rd edition, Education Section, American Fisheries Society, 2005-present
Co-editor, AFS Guide to Fisheries Employment, 2nd edition, Education Section, American Fisheries Society, 2004-present
Member, Presentation and Poster Guidelines Committee, American Fisheries Society, 2005-present
Member, Meeting Oversight Committee, American Fisheries Society, 2004-present
Member, Award of Excellence Committee, American Fisheries Society, 2002-present
Member, Program Committee, Western Division, American Fisheries Society, 2005-present
Member (Graphic Designer), Program Committee, North Central Division, American Fisheries Society, 2002
Associate Editor for Fisheries, Intermountain Journal of Sciences, 1994-2001
Member, Editorial Board, Intermountain Journal of Sciences, 1994-2001
Chair, Nominating Committee, Education Section, American Fisheries Society, 2000
Member, Nominating Committee, American Fisheries Society, 1998-2000
President, Education Section, American Fisheries Society, 1997-1999
Member, Certification Revision Implementation Committee, American Fisheries Society, 1997-1998

Member, Special Management Committee, American Fisheries Society, 1997-1998
Member, Program Development Committee, American Fisheries Society, 1997-1998
Member, Certification Revision Task Force, American Fisheries Society, 1996-1997
Chair, Program Committee, Education Section, American Fisheries Society, 1995-1997
Member, Publication Awards Committee, American Fisheries Society, 1995-1996
Chair, Board of Professional Certification, American Fisheries Society, 1994-1996
Secretary-Treasurer, Education Section, American Fisheries Society, 1993-1995
Member, Board of Professional Certification, American Fisheries Society, 1993-1994
Southern Division Representative, Education Section, American Fisheries Society,
1991-1993
Secretary-Treasurer, Introduced Fish Section, American Fisheries Society, 1990-1993
Newsletter Editor, Oklahoma Chapter American Fisheries Society, 1990-1993
Contributed Paper Vice-Chair, 1992 Annual Meeting Program Committee, American
Fisheries Society, 1991-1992
Associate Editor, North American Journal of Fisheries Management, 1990-1992
Member, Warmwater Streams Technical Committee, Southern Division, American
Fisheries Society, 1988-1992
Chair, Purposeful Introductions Committee, Introduced Fish Section, American
Fisheries Society, 1990-1991
Chair, Contributed Paper Session, Program Committee, Southern Division American
Fisheries Society, 1990
President, Oklahoma Chapter American Fisheries Society, 1989-1990
Chair, Student Concerns Committee, Education Section, American Fisheries Society,
1989-1990
Chair, Student Presentation and Poster Awards Committee, Education Section,
American Fisheries Society, 1989-1990
Member, Native Peoples' Fisheries Committee, American Fisheries Society, 1989-1990
Chair, Program Committee, Oklahoma Chapter American Fisheries Society, 1988-1989
Member, Student Presentation and Poster Awards Committee, Education Section,
American Fisheries Society, 1988-1989
Chair, Awards Committee, Oklahoma Chapter American Fisheries Society, 1987-1989
Chair, Membership Committee, Introduced Fish Section, American Fisheries Society,
1987-1988
President, Virginia Tech Chapter American Fisheries Society, 1979-1980

ACADEMIC SERVICE

Faculty Advisor, Fly Fishing Club, Montana State University, 2005-present
Member, Institutional Animal Care and Use Committee, Montana State University,
2004-present
Chief Scientist, Wild Fish Habitat Initiative, Montana Water Center, 2002-present
Co-chair, Department of Ecology Seminar Committee, Montana State University, 2005-
2006
MSU Representative, Aquatic Sciences Laboratory Steering Committee, 1999-present

Member, Department of Ecology Executive Committee, Montana State University, 2002-2003

Chair, A.J.M. Johnson Aquatics Laboratory Design Committee, Montana State University, 2002

TECHNICAL SERVICE

Member, Montana Cutthroat Technical Committee, 2005-present

Member, Montana Department of Transportation Wildlife and Transportation Technical Panel, 2000-present

Member, Technical Advisory Committee, Governor's Upper Yellowstone River Task Force, 1999-2003

Invited Participant, NPS Greater Yellowstone Network Vital Signs Monitoring Workshop, 2003

Panelist, USEPA Bull Trout Temperature Criteria Peer Review Panel, 2002

Member, Grand Canyon Monitoring and Research Center Review Panel, 1999

Member, Science Sub-committee, Montana Whirling Disease Task Force, 1995-1999

Member, Oklahoma Aquaculture Advisory Group, 1989-1993

HONORS AND AWARDS

2006 Research Grade Promotion, USGS

2005 STAR (Special Thanks for Achieving Results) Award, USGS

2004 STAR Award, USGS

2003 Co-author of Honorable Mention, Best Student Paper at the Annual Meeting of the American Fisheries Society (Matthew Jaeger)

2003 Leadership Award, National Cooperative Research Units Recognition Awards Program, USGS

2002 Promoted to Full Professor, Department of Ecology, Montana State University

2001 Co-author of Best Student Paper at the Annual Meeting of the Montana Chapter of the American Fisheries Society (Eileen Ryce)

2000 Co-author of Outstanding Student Presentation at the Annual Meeting of the American Fisheries Society (Eileen Ryce)

2000 STAR Award, USGS

1998 Co-author of Honorable Mention, Outstanding Student Presentation at the Annual Meeting of the American Fisheries Society (Matthew G. Mitro)

1998 Co-author of the Best Student Presentation at the Annual Meeting of the Montana Chapter American Fisheries Society (Laura Katzman)

1995 Quality Performance Award, U.S. National Biological Service

1995 Research Grade Promotion, U.S. National Biological Service

1994 Quality Performance Award, U.S. National Biological Service

- 1994 Appointed Senior Advisor and Review Panel Committee Member, U.S. National Academy of Sciences Young Investigator Program on Agricultural Impacts on Water Quality in Latvia and Lithuania
- 1993 Special Achievement Award, U.S. Fish and Wildlife Service
- 1992 Special Achievement Award, U.S. Fish and Wildlife Service
- 1992 Director's Award for Excellence in Management, presented to the Oklahoma Cooperative Fish and Wildlife Research Unit, Cooperative Research Units Center, U.S. Fish and Wildlife Service
- 1991 Co-author of the Outstanding Fisheries/Wildlife Presentation at the Annual Meeting of the Oklahoma Academy of Science (William Stark)
- 1991 Selected for the 1991-92 U.S.--Romanian Summer Program for Young Investigators in Ecology/Environmental Sciences, U.S. National Academy of Sciences
- 1991 Conservation Organization of the Year Award, presented to the Oklahoma Cooperative Fish and Wildlife Research Unit, Oklahoma Wildlife Federation
- 1990 Oklahoma Fishery Worker of the Year Award, Oklahoma Chapter American Fisheries Society
- 1990 Quality Performance Award, U.S. Fish and Wildlife Service
- 1989 Co-author of the Outstanding Fisheries Presentation at the Annual Meeting of the Oklahoma Academy of Science (William Stark)
- 1989 Special Achievement Award, U.S. Fish and Wildlife Service
- 1988 Promoted to Associate Professor, Oklahoma State University
- 1988 Quality Performance Award, U.S. Fish and Wildlife Service
- 1987 Special Achievement Award, U.S. Fish and Wildlife Service
- 1978 Graduated Magna Cum Laude, University of Massachusetts, Amherst
- 1978 Outstanding Fisheries Biology Student Award, University of Massachusetts, Amherst

PUBLICATIONS

Refereed Journal Articles

- Jaeger, M. E., A. V. Zale, T. E. McMahon, and B. J. Schmitz. 2005. Seasonal movements, habitat use, aggregation, exploitation, and entrainment of sauger in the lower Yellowstone River: an empirical assessment of factors affecting population recovery. *North American Journal of Fisheries Management* 25:1550-1568.
- Zale, A. V., C. Brooke, and W. C. Fraser. 2005. Effects of surgically implanted transmitter weights on growth and swimming stamina of small adult westslope cutthroat trout. *Transactions of the American Fisheries Society* 134:653-660.

- Bramblett, R. G., T. R. Johnson, A. V. Zale, and D. G. Heggem. 2005. Development and evaluation of a fish assemblage index of biotic integrity for northwestern Great Plains streams. *Transactions of the American Fisheries Society* 134:624-640.
- Ryce, E. K. N., A. V. Zale, E. MacConnell, and M. Nelson. 2005. Effects of fish age versus size on the development of whirling disease in rainbow trout. *Diseases of Aquatic Organisms* 63:69-76.
- Ryce, E. K. N., A. V. Zale, and E. MacConnell. 2004. Effects of fish age and parasite dose on the development of whirling disease in rainbow trout. *Diseases of Aquatic Organisms* 59:225-233.
- Mitro, M. G., A. V. Zale, and B. A. Rich. 2003. The relation between age-0 rainbow trout (*Oncorhynchus mykiss*) abundance and winter discharge in a regulated river. *Canadian Journal of Fisheries and Aquatic Sciences* 60:135-139.
- Mitro, M. G., and A. V. Zale. 2002. Seasonal survival, movement, and habitat use of age-0 rainbow trout in the Henrys Fork of the Snake River, Idaho. *Transactions of the American Fisheries Society* 131:271-286.
- Mitro, M. G., and A. V. Zale. 2002. Estimating abundances of age-0 rainbow trout by mark-recapture in a medium-sized river. *North American Journal of Fisheries Management* 22:188-203.
- Selong, J. H., T. E. McMahon, A. V. Zale, and F. T. Barrows. 2001. Effect of temperature on growth and survival of bull trout, with application of an improved method for determining thermal tolerance in fishes. *Transactions of the American Fisheries Society* 130:1026-1037.
- Ryce, E. K. N., A. V. Zale, and R. B. Nehring. 2001. Lack of selection for resistance to whirling disease among progeny of Colorado River rainbow trout. *Journal of Aquatic Animal Health* 13:63-68.
- Mitro, M. G., and A. V. Zale. 2000. Use of distance sampling to estimate rainbow trout redd abundances in the Henry's Fork of the Snake River, Idaho. *Intermountain Journal of Sciences* 6:223-231.
- Bramblett, R. G., and A. V. Zale. 2000. The ichthyofauna of small streams on the Charles M. Russell National Wildlife Refuge, Montana. *Intermountain Journal of Sciences* 6:57-67.
- Zale, A. V., R. L. Simmonds, Jr., and R. T. Eades. 2000. Getting a job or assistantship: How to surpass the competition. *Fisheries* 25(6):24-31.

- Mitro, M. G., and A. V. Zale. 2000. Predicting fish abundance using single-pass removal sampling. *Canadian Journal of Fisheries and Aquatic Sciences* 57:951-961.
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