

Ruth M. Sofield (Harper), Associate Professor

Department of Environmental Sciences
Huxley College of the Environment
Western Washington University

MS 9181

Bellingham, WA 98225

ruth.sofield@wwu.edu

(360) 650-2181 office

(360) 650-2496 lab

EDUCATION

Doctorate of Philosophy in Environmental Science and Engineering with a minor in Management,
May 2002

Colorado School of Mines, Golden, CO

Dissertation Title: Genetically Based Tolerance to Chemical Exposure in the Grass Shrimp, *Palaemonetes pugio*.

Research Advisor: Dr. Philippe Ross, Colorado School of Mines

Master of Science in Environmental Science and Engineering, December 1999

Colorado School of Mines, Golden, CO

Master of Science in Environmental Science, May 1995

McNeese State University, Lake Charles, LA

Bachelor of Arts in Biology, May 1993

West Virginia University, Morgantown, WV

SELECTED WORK EXPERIENCE

Associate Professor, Department of Environmental Sciences, Huxley College of the Environment,
Western Washington University, 2009-present

Assistant Professor, Department of Environmental Sciences, Huxley College of the Environment,
Western Washington University, 2003-2009

Marine and Estuarine Science Program Faculty, Shannon Point Marine Center, 2004- present

Post-doctoral Fellow, Colorado School of Mines, 2002- 2003

Field Biologist, Center for Coastal Environmental Health and Biomolecular Research, Marine
Ecotoxicology Branch, National Ocean Service, NOAA, Charleston, SC, 1999 -2002

Marine Ecotoxicology Teaching Assistant, June 2001 - July 2001

The Bermuda Biological Station for Research, Inc.

Toxicology Investigator, July 2000 – May 2002

Investigation of acute toxicity of mine tailings leachate to *Daphnia magna*, *Vibrio fischeri*, and *Lactuca sativa* using standard testing procedures, including ASTM and Microtox protocols.

RESEARCH - SELECTED RESEARCH

**Effects of Environmental Ligands on Plutonium and Uranium Mobility in the Subsurface
Environment: Radionuclide Chemistry** Post-doctoral Research, June 2002 – September 2003

Funded under NABIR by Department of Energy.

Investigation of how increasingly complex environmental ligands affect stability of Plutonium and Uranium in the vadose and non-vadose zone. Work done in collaboration with Brookhaven National Laboratory and Texas A&M at Galveston. End goal is to apply knowledge to possible bioremediation of radionuclide contaminated areas.

Genetically Based Tolerance to Chemical Exposure in the Grass Shrimp, *Palaemonetes pugio*, Ph.D.
Dissertation Research, January 1999 – May 2002

Primarily funded by the National Ocean Service, NOAA, Charleston, SC.
Investigation of whether *P. pugio* (grass shrimp) that are tolerant to chemical (endosulfan, chromium, and fluoranthene) exposure have different allozyme frequencies than grass shrimp that are not tolerant to chemical exposure.

Research included "Time to Death" tests of adult *P. pugio*, hatchability and development of *P. pugio* embryos, allozyme analysis, and computer modeling of effects to *P. pugio* populations.

Hydrologic and Geochemical Functions of Southern Rocky Mountain Wetlands,

May 1997 – May 1999

Funded by Colorado Geologic Survey and Colorado Scientific Society.

Investigated wetland functions; involved characterization of wetland hydrology and wetland biogeochemistry.

RESEARCH PUBLICATIONS

Fortner JC, **Sofield RM**. 2009. Phototoxicity of Contaminated Groundwater. Final Report: Submitted to Washington Department of Ecology. <http://www.ecy.wa.gov/biblio/0909045.html>

Martins M, Bollinger C, **Harper R**, Ribeiro R. 2009. Effects of Acid Mine Drainage on the Genetic Diversity and Structure of a Natural Population of *Daphnia longispina*. *Aquatic Toxicology*. 92:104-112.

Sofield RM and Bollinger C. 2009. Trans-Boundary Metal Pollution in the Okanagan Regions of British Columbia and Washington State: An Assessment of Metal Toxicity and Speciation in the Columbia River. Final Report: Submitted to the Border Policy Research Institute, Western Washington University. www.wwu.edu/bpri/files/2009_Jun_Report_No_7_Columbia_Metals.pdf

Harper RM, Kantar C, and Honeyman BD. 2008. Binding of Pu (IV) to Galacturonic Acid and Extracellular Polymeric Substances (EPS) from *Shewanella putrefaciens*, *Clostridium* sp., and *Pseudomonas fluorescens*. *Radiochimica acta*. 96:753-762.

Harper RM, Tinnacher R. 2008. Ecotoxicology: Plutonium. Sven Erik Jorgensen & Brian D. Fath, 2008. Encyclopedia of Ecology, 1st Edition, Elsevier B.V., Oxford, pp 2845- 2850.

Harper RM, Kantar C. 2008. Ecotoxicology: Uranium. Sven Erik Jorgensen & Brian D. Fath, 2008. Encyclopedia of Ecology, 1st Edition, Elsevier B.V., Oxford, pp 3662-3665.

Martins N, Lopes I, **Harper R**, Ross P, and Ribeiro R. 2007. Differential Resistance to Copper and Mine Drainage in *Daphnia longispina*: Relationship with Allozyme Genotypes. *Environmental Toxicology and Chemistry*. 26(9):1904-1909.

Kantar C, Gillow JG, **Harper-Arabie RM**, Honeyman BD, and Francis AJ. 2005. Determination of Stability Constants of U(VI)-Fe(III)-Citrate Complexes. *Environmental Science and Technology*. 39(7): 2161-2168.

Harper-Arabie RM, Wirth EF, Fulton MF, Scott GI, and Ross PE. 2004. Protective Effects of Allozyme Genotype During Chemical Exposure in the Grass Shrimp, *Palaemonetes pugio*. *Aquatic Toxicology*. 70(1): 41-54.

Harper-Arabie RM, and Kolm KE. An Integrated Approach to Wetlands Characterization in Determining Hydrologic Functions. *In: The First International Symposium on Integrated Technical Approached to Site Characterization*, Argonne National Laboratory, Illinois, 1998.

Kolm KE, **Harper-Arabie RM**, and Emerick JC. 1998. Chapter *In* Final Report: Characterization and Functional Assessment of Reference Wetlands in Colorado; A Preliminary Investigation of Hydrogeomorphic (HGM) Classification and Functions for Colorado's Wetlands. Colorado Department of Natural Resources and U.S. EPA, Region VIII, Denver, CO.

CURRENT WRITING PROJECTS

Chair of revisions for Standard Methods 8050: *Bacterial Bioluminescence* and Standard Methods 8711: *Daphnia*.

Book contract with CRC Press for: Landis WG, **Harper RM**, and Yu MH. Introduction to Environmental Toxicology: Impacts of Chemicals Upon Ecological Systems. 4th Edition. Delivery date December 1, 2009.

SELECTED PRESENTATIONS

- Smith KS, Ranville JF, Diedrich DJ, McKnight DM, **Sofield RM**. 2010. Influence of Dissolved Organic Matter in Determining Aquatic Copper Toxicity in Iron-Rich Environments. Seventh National Monitoring Conference National Water Quality Monitoring Council (NWQMC), Denver, Colorado. Abstract Submitted.
- Smith KS, Ranville JF, Diedrich DJ, McKnight DM, **Harper RM**. 2009. Consideration of Iron-Organic Matter Interactions when Predicting Aquatic Toxicity of Copper in Mineralized Areas. 8th ICARD (International Conference on Acid Rock Drainage), Skellefteå, Sweden.
- Honeyman BD, Tinnacher R, Diaz A, Kantar C, **Harper R**, Gillow J. 2009. Biogeochemistry of Pu Transport. American Chemical Society Annual Meeting, Salt Lake City, UT.
- Plante J, Bollinger C, Lenaker, P, **Harper RM**. 2008. Development of a Benthic Index to Assess Metals Contamination Associated with Mining Waste in Canyon Creek (Coeur d' Alene). Pacific Northwest SETAC Annual Meeting, Corvallis, OR.
- Fortner JC, **Harper RM**, Sternberg D. 2008. Shedding Light on Toxicity Testing – UV Light and PAH-Contaminated Groundwater. Pacific Northwest SETAC Annual Meeting, Corvallis, OR.
- Fortner JC, **Harper RM**, Sternberg D. 2007. Using WET Test Methods to Detect Phototoxic Effects in PAH-Contaminated Groundwater. Society of Environmental Toxicology and Chemistry (SETAC) 28th Annual North America Meeting, Milwaukee, WI.
- Honeyman B, **Harper R**, Kantar C, Moran P. 2007. The Complexation of U(VI), Pu(IV) and Np(V) With Natural Organic Ligands Using the Affinity Distribution Approach. *Migration 2007*, 11th Conference. Munich, Germany.
- Harper R**, Bollinger C. 2007. Evaluating the Effects of Metal Contamination on Aquatic Environments using Laboratory Assays, Field Assessments, and Chemical Models. Invited talk to *Joint Seminar on Environmental Science and Disaster Mitigation 2007*, Muroran, Hokkaido, Japan.
- Fortner JC, **Harper RM**, Sternberg D. 2007. Phototoxicity in Whole Effluent Toxicity Testing: Lighting Considerations. Pacific Northwest SETAC Annual Meeting, Port Townsend, WA.
- Stoddard JL, **Harper RM**. 2007. Effects of Multi-Generational Acclimation on the Toxicity of Copper, Cadmium, and Zinc to *Daphnia magna*. Pacific Northwest SETAC Annual Meeting, Port Townsend, WA.
- Bollinger C, **Harper R**. 2007. Metal Speciation and Toxicity in Upper Columbia River and the Tributaries along the U.S. – Canadian Border using the Biotic Ligand Model and VMINTEQ. Pacific Northwest SETAC Annual Meeting, Port Townsend, WA.
- Bollinger C, **Harper R**. 2006. Assessment of Metal Speciation and Toxicity in Upper Columbia River and the Tributaries along the U.S. – Canadian Border using the Biotic Ligand Model and VMINTEQ. 33rd Annual Aquatic Toxicity Workshop, Jasper, AB, Canada.
- Bollinger C, **Harper R**. 2006. Population and Community Level Effects of Macroinvertebrates in Mining Impacted Streams. SETAC Europe 16th Annual Meeting, The Hague, The Netherlands.
- Harper-Arabie, RM**. 2005. Environmental Toxicology: Metals, Genes, Enzymes, and Size. Invited talk presented to the Biology Department, University of Aveiro, Portugal.
- Diedrich D, Ranville J, Ross P, **Harper-Arabie R**, Brinkman S, Hoff D, and Wall D. Zinc toxicity to Brown Trout of various chronological ages and stages of acclimation. Society of Environmental Toxicology and Chemistry (SETAC) 26th Annual North America Meeting, Baltimore, MD 2005.
- Bollinger C, **Harper-Arabie R**. 2005. AFLP analysis of *Hyalella azteca* collected from metals contaminated sediments. Society of Environmental Toxicology and Chemistry (SETAC) 26th Annual North America Meeting, Baltimore, MD.

- Diedrich DJ, Ranville, JF, Ross PE, **Harper-Arabie, RM**. 2005. Zinc Toxicity to Brown Trout of Various Chronological Ages. Pacific Northwest SETAC Annual Meeting, Port Townsend, WA.
- Diedrich DJ, Brinkman S, Ranville, JF, Ross, PE, **Harper-Arabie RM**, Hoff DJ, Wall DV. 2005. The Effects of Chronological Age on the Toxicity of Zinc to Brown Trout (*Salmo trutta*). Rocky Mountain SETAC Annual Meeting, Leadville, CO.
- Harp AM, and **Harper-Arabie RM**. 2004. Effects of Water Chemistry on Metal- Metal Interaction in *Daphnia magna*. Society of Environmental Toxicology and Chemistry (SETAC) 25th Annual North America Meeting, Portland, OR.
- Harper-Arabie RM**, and Landis WG. 2004. Environmental Toxicology at Western Washington University. Invited speaker at SETAC 25rd Annual North America Meeting, Portland, OR.
- Harper-Arabie RM**, Hung CC, Buckley P, and Honeyman BD. 2004. Interactions of Microbial Exopolysaccharides with Plutonium in the Subsurface Environment. Pacific NorthWest SETAC Annual Meeting, Port Townsend, WA.
- Martins N, **Harper-Arabie RM**, Lopes I, Ross PE, and Ribeiro R. 2003. Adaptation of Starch Gel Electrophoresis Techniques for Allozyme Analysis in Two Natural Populations of *D. longispina*. 5th Iberian Congress and 2nd Iberoamerican on Environmental Contamination and Toxicology Annual Meeting, Porto, Portugal.
- Honeyman BD, **Harper-Arabie RM**, Francis AJ, Gillow JG, Dodge CJ, Santschi PH, and Hung CC. Plutonium Organic Complexes in the Environment: Stability and Biodegradation. 2003. Migration Conference, Korea.
- Harper-Arabie R. M.**, Honeyman B. D. 2003. Effects of Organic Ligands on Uranium Speciation and Implications to Microbial Stabilization of Uranium. Conference Proceedings. Uranium Geochemistry 2003 Conference. Nancy, France.
- Harper-Arabie RM**, Fulton M, Wirth EF, and Ross PE. 2002. Reproductive Effects of Metals Exposure to *Palaemonetes pugio*: Influence of Genetics. SETAC 23rd Annual North America Meeting, Salt Lake City, UT.
- Manock JJ, Wells PG, Owen RJ, Depledge ME, and **Harper-Arabie RM**. 2002. Marine Ecotoxicology Course at the Bermuda Biological Station for Research (1978-2002). SETAC 23rd Annual North America Meeting, Salt Lake City, UT.
- Smith KS, **Harper-Arabie RM**, and Ross PE. 2002. Toxicity of Mine-Waste Leachates to Aquatic Organisms as a Function of pH and Trace-Metal Concentrations. Geological Society of America Annual Meeting, Denver, CO.
- Harper-Arabie RM**, Wirth EF, Fulton M, and Ross PE. 2002. Reproductive Effects of *In situ* Chromium Exposure to *Palaemonetes pugio* (grass shrimp). SETAC, Europe 12th Annual Meeting, Vienna, Austria .
- Harper-Arabie RM**, Ross PE, and Wirth EF. 2001. Genetic Basis of Tolerance in *Palaemonetes pugio* (grass shrimp) exposed to endosulfan, chromium, and fluoranthene. SETAC 22nd Annual North America Meeting, Baltimore, MD.
- Harper-Arabie RM**, Smith KS, and Ross PE. 2001. Toxicity of Metal Laden Leachate from Mining Waste Dumps to *Daphnia magna* and *Vibrio fischeri*. SETAC 22nd Annual North America Meeting, Baltimore, MD.
- Harper-Arabie RM**, Ross PE, and Wirth EF. 2001. Genetically Based Tolerance to Toxicant Exposure in *Palaemonetes pugio* (grass shrimp). Rocky Mountain SETAC Chapter Meeting, Denver, CO.
- Harper-Arabie RM**, and Kolm KE. 1999. A Hydrologic Analysis of Wetlands in the Southern Rocky Mountains of Colorado. American Geophysical Union, San Francisco, CA.
- Kolm KE, Glover KC, **Harper-Arabie RM**, and Pavlik MC. 1999. Relating Reduction-Oxidation Chemistry of Wetlands to Variations in Hydrogeomorphic, Geochemical and Biological Structure, and Position in the Landscape. American Geophysical Union, San Francisco, CA.

Harper-Arabie RM and Kolm KE. 1998. An Integrated Approach to Wetlands Characterization in Determining Hydrologic Functions. The First International Symposium on Integrated Technical Approached to Site Characterization, Argonne National Laboratory, IL.

Glover KC, Kolm KE, **Harper-Arabie RM**, and Emerick JC. 1998. Determining hydrogeologic controls on a mountain wetland ecosystem using integrated ground water and water quality characterization, modeling, and sensitivity analysis. Geological Society of America Abstracts with Programs, vol. 30 no 7.

Harper-Arabie RM, and Kolm KE. 1998. A stepwise, Integrated Hydrogeomorphic Approach for the Classification of Wetlands and Assessment of Wetland Hydrological Function in the Southern Rocky Mountains of Colorado. Geological Society of America Annual Meeting, Toronto, Canada.

Harper-Arabie RM, and Kolm KE. 1997. The Pennsylvanian Mine Wetland: A Case Study Using an Integrated, Multidisciplinary Approach to Characterize Wetland Ecosystem Structure, Hydrology, and Biogeochemistry. Geological Society of America Annual Meeting, Salt Lake City, UT.

FUNDING AWARDED

Department of Ecology, WA, Research Grant. Awarded 2006. Groundwater Study of R. G. Haley and Little Squalicum Creek.

Border Policy Research Institute, Research Grant. Awarded 2006. Trans-Boundary Pollution in the Okanagan Regions of B.C. and the U.S.

Research Advisory Committee, WWU 2005 Summer Research Grant. Awarded 11/10/04, AFLP Technique Development and Assessment in Genetic Toxicology.

Li-COR Biosciences 4300L DNA Analyzer Equipment Grant. Awarded 8/17/04. Integration of Genomic Analysis with the Environmental Sciences: Equipment for Experiential Learning at the Huxley College of the Environment.

Research Advisory Committee, WWU Grant in Aid Request. Awarded 7/23/04. Joint Action of Metals in the Environment: Toxicity to *Daphnia magna*.

ON-GOING STUDENT RESEARCH AT WWU

Matthew Ferguson, Huxley MS graduate student. Determination of Sorption Constants of Nanoparticles to Algae.

Emily Duncanson, Huxley BS Student, Macroinvertebrate Identification from Mining Impacted Streams.

COMPLETED STUDENT THESIS RESEARCH AT WWU

Jason Fortner, Huxley MS graduate student, graduated Spring, 2009. Application of Whole Effluent Toxicity test methods to groundwater in Western Washington. Illuminating Whole Effluent Toxicity Testing: Ultraviolet Radiation, Phototoxicity, and PAH-Contaminated Groundwater. Funded by Washington Department of Ecology.

http://content.wwu.edu/cdm4/item_viewer.php?CISOROOT=/theses&CISOPTR=314&CISOBX=1&REC=10

Catherine Bollinger, Huxley MS graduate student, graduated Winter, 2008. Modeling Metal Speciation and Toxicity in the Columbia River and its Tributaries, British Columbia and Washington. Funded by the Border Policy Research Institute, Western Washington University.

Daniel Diedrich, Huxley MS graduate student, graduated Spring, 2007. The Effects of Chronological Age and Size in Juvenile Brown Trout Exposed to Zinc. Funded by Region VIII USEPA.

Melody Feden, Huxley BS student, graduated Spring, 2008. Senior Thesis: Organism Consideration in Ecotoxicological Testing: Enzyme Response to PAH Exposures in Red and Green Autochthonous Crabs (*Carcinus maenus*).

James Plante, Huxley BS student, graduated Summer, 2008. Senior Thesis: Benthic Invertebrate Metal Exposure and Community-Level Effects Associated with Mining Waste in Canyon Creek (Coeur d'Alene).

Jamey Stoddard, Huxley BS student, graduated Winter, 2007. Senior Thesis: Investigation of Adaptation in *Daphnia magna* Populations Exposed to Metals.

PROFESSIONAL DEVELOPMENT

2006 International Canadian Studies Institute – Faculty Fellow, July 18 – 30, 2006

Sponsored by the Pacific Northwest Canadian Studies Consortium and Canadian Consulate General, Seattle.

PEEL Workshop, July 20, 2005

Sponsored by Center for Instructional Innovation, WWU

Incorporating Diversity and Intercultural Awareness into Learner-Centered Practices

NSF National Dissemination Workshop, June 23 - 27, 2005

Washington State University, Pullman, WA

New Approaches and Techniques for Teaching Science: Addressing Environmental Problems to Stimulate Undergraduate Learning.

Microsatellite/AFLP course, June 7-9, 2005

Li-Cor Biosciences, Lincoln NE

Round-table Discussion - Faculty Participant, May 17, 2005

Sponsored (and invited) by WWU Writing Center

From Groan to Grin: Cultivating Joyful Engagement in Writing

NSF Regional Grants Conference, April 4-5, 2005

Sponsored by NSF and MESA, Oakland, CA

Fundamentals of College Teaching, 2002

Colorado School of Mines Graduate Level Course.

Course included discussion of learning styles, active learning principles and methods, cooperative learning principles and methods, and assessment of learning.

PHREEQC Modeling: The Basics, 2002

International Ground Water Modeling Center Short Course, Golden CO.

A computer program for speciation, batch-reaction, one-dimensional transport, and inverse geochemical calculations.

The Bermuda Biological Station for Research, 2000

Marine Ecotoxicology Summer Course.

Conducted an ecological risk assessment of contaminated areas in Bermuda. Course involved sample collection, chemical analysis of sediment and water, and bioassays such as the sea urchin (*Lytechinus variegatus*) embryo toxicity test, and acetylcholine esterase inhibition.

Integrated Watershed Approaches: TMDLs or Tylenol PM, 2000

Annual Symposium.

The Colorado Section of the American Water Resources Association.

Introduction to Pesticide Probabilistic Ecological Risk Assessment, 1999

Short Course.

Society of Environmental Toxicology and Chemistry.

PROFESSIONAL AFFILIATIONS

Society of Environmental Toxicology and Chemistry, 1999 – present

Society of Wetland Scientists, 1998 - 2004

American Chemical Society, 2002 - present
Society of Women Engineers, 2000 - 2003
Sigma Xi Scientific Research Society, 2004-present

PROFESSIONAL SERVICE

Standard Methods Committee appointment, 2008 - present
Member of Marine Monitoring Advisory Group for the Capital Regional District in British Columbia, 2008 - present
NSF Graduate Research Fellowship Program Panelists, 2008 and 2009
Technical Reviewer for Teck Cominco Metals, Ltd. *Aquatic Ecological Risk Assessment*, 2008
NSF Population Dynamics Program Proposal Reviewer, 2007
Workshop participant for West Coast Marine Research and Information Plan being developed by California, Oregon and Washington Sea Grant Program, 2007
Reviewer for *Science of the Total Environment* Journal on ad hoc basis, 2007
Reviewer for *Chemosphere* Journal on ad hoc basis, 2007 - 2009
Reviewer for *Risk Analysis* on ad hoc basis, 2007
Reviewer for new textbook, *Fate and Transport of Contaminants in the Environment*, College Publishing, 2007
Technical Reviewer for Teck Cominco Metals, Ltd. *Terrestrial risk modeling Level of Refinement 3*, 2006-2007
Research Experience for Undergraduates (REU) advisor, Shannon Point Marine Center, Anacortes, WA, 2006.
Sigma Xi National Delegate, WWU Chapter Representative, Seattle, 2005
Sigma Xi: The Scientific Research Society, WWU Chapter President, 2005 – 2006, 2008-2009
Reviewer for Book Proposal: *Poisons, People and the Environment*, John - Wiley and Sons, 2005
Reviewer for *Environmental & Engineering Geoscience* Journal on ad hoc basis, 2005
Reviewer for *Georgia Journal of Science* on ad hoc basis, 2005
Reviewer for *U.S. Civilian Research and Development Foundation* of proposal submitted to the International Science and Technology Center, 2005
Scientific Technical Services University Advisory Committee (WWU), 2005 – present
Graduate Program Committee (WWU), 2005- 2007
Scholar's Week University Committee (WWU), 2005 - present
Huxley College Air and Waste Management ES Faculty Mentor (with J. Melious, WWU), 2004- present
NSF Biogeosciences Program Proposal Reviewer, 2004
Reviewer for *Environmental Pollution* Journal on ad hoc basis, 2004
Faculty Mentor for University Challenge, Pacific Northwest International Section of Air and Waste Management, student teams placed 2nd and 3rd in competition (2004) and 1st and 5th (2005).
Reviewer for *Environmental Toxicology and Chemistry* Journal on ad hoc basis, 2003-present
Chairperson of Uranium Geochemistry Session, Uranium Geochemistry 2003 Conference, Nancy, France
Laboratory for Applied and Environmental Radiochemistry Educational Outreach, 2003
Sigma Xi: The Scientific Research Society, WWU Chapter President Elect, 2003 – 2005, 2006 - 2008
Curriculum Committee Member, WWU 2003 - 2005

TEACHING - COURSES DEVELOPED AND TAUGHT

Environmental Risk Assessment (ESCI 490), 4 credits, WWU, Spring, 2009.
Chronic Effects and Toxicity of Contaminants to Organisms in Aquatic and Marine Systems
Case Studies in Environmental Toxicology (ETOX 420). 1 Day workshop for Northwest
Environmental Training Center, Seattle, WA. July 17, 2008.

Introduction to Aquatic Toxicology (ETOX 410). 2 Day Workshop for Northwest Environmental Training Center, Seattle, WA. Taught multiple times since 2007.
Invited instructor for “Metal as Environmental Stressors: Ecotoxicology and Risk Assessment” short course, University of Coimbra, Portugal May 29 - June 2, 2006
Introduction to Huxley College (ESCI 306), 1 credit. WWU, Winter 2006.
Pollution in the Environment. Academy for Lifelong Learning, Western Washington University (WWU). Part 1, Jan 2005 and Part 2, Oct 2005.
Contaminant Movement in the Environment (Fate and Transport) (ESCI 497/ESCI 460), 4 credits. WWU, Spring 2004 & Winter 2005 -2009.
Contaminant Movement in the Environment Lab. (ESCI 497G), 1 credit. WWU, Spring, 2004.
Aquatic Toxicology (ESCI 459), 3 credits. WWU, Spring 2005 - 2009.
Environmental Toxicology I (ESCI 455/555), 4 credits. WWU, Fall 2003 - 2009.
Environmental Toxicology I Laboratory (ESCI 457/557), 4/3 credits. WWU, Fall 2003 – 2009.
Introduction to Environmental Toxicology (ESCI 397/ESCI 333), 4 credits. WWU, Winter 2004 & Spring 2005-2009.
Environmental Biology (ESGN 301), 3 credits. CSM, Spring, 1996.
Anatomy and Physiology Laboratory, 3 credits. McNeese State University, All semesters Fall 1993- Spring 1995.

SCHOLARSHIPS AND HONORS

Students under my advisement:

Sigma Xi, Grants-in-Aid of Research, 2008
Best Graduate presentation, PNW SETAC, 2008
Best Undergraduate poster, PNW SETAC, 2008
The Environmental Challenge, Air and Waste Management, Annual Conference and Exhibition – 1st place (2008)
The Environmental Challenge, Air and Waste Management, Pacific Northwest International Section - 2nd and 3rd place (2004), 1st and 5th place (2005), 1st and 2nd place (2006), 1st and 3rd (2007)
Honorable mention (undergraduate), WWU – Sigma Xi – College of Science and Technology Scholar’s Week Poster Fair, 2007
Best graduate student poster, PNW SETAC, 2007
Honorable mention (graduate), WWU Sigma Xi – College of Science and Technology Scholar’s Week Poster Fair, 2006
Best student presentation, Rocky Mountain SETAC, 2005
Sigma Xi, Grants-in-Aid of Research, 2005

Personal:

Best Student Talk, Colorado School of Mines Graduate Research Fair, 2002
Best Student Poster, Colorado School of Mines Graduate Research Fair, 2001
Best Student Presentation, Rocky Mountain Regional SETAC meeting, 2001
Sigma Xi Research Grant, 2001
National Science Foundation Undergraduate and Graduate Scholarship/Research Funds, 2000-2002
C.V. Starr Foundation Scholarship, Bermuda Biological Station for Research, 2000
American Water Resources Association, Colorado Div., Rich Hebert Memorial Scholarship, 1998
Colorado Mountain Club Fellowship, 1998
Colorado Scientific Society, Edwin B. Eckel Memorial Research Grant, 1997
Edna Bailey Sussman Environmental Internship, 1996
Graduate Scholarship, McNeese State University, August 1993 - May 1995
Presidential Scholarship, West Virginia University, August 1989 - May 1993
Golden Key National Honor Society, West Virginia University, October 1991 - May 1993

Ruth M. Harper
ruth.harper@wwu.edu

Arts and Science Scholar, West Virginia University, 1991 and 1992

Beta Beta Beta National Biology Honorary, April 1991 - May 1993

Dean's List, West Virginia University, 6 semesters

Helvetia Sophomore Honorary, West Virginia University, August 1990 - September 1991