

CHRISTOPHER D. ARP

U.S. Geological Survey, Alaska Science Center,
Anchorage, AK 99508-4664
907-786-7119 (office), 907-223-8839 (cell) • carp@usgs.gov

A creative, forward thinking hydroecologist with a diversity of practical experiences in water resources, fisheries, forestry, and agriculture. A strong capability to conduct research using concepts and methods from multiple disciplines to produce comprehensive integrated results applicable to environmental policy and management. A long-term professional goal of helping people to understand and appropriately manage ecosystems and their services and resources.

EDUCATION

Ecology

Ph.D. - 2006

Utah State University – Logan, UT

Dissertation Research: Geomorphology, hydrology, and biogeochemistry of stream-lake ecosystems in the Sawtooth Mountains, Idaho, USA

Advisor: Michelle A. Baker

Watershed Science

M.S. - 1998

Colorado State University - Fort Collins, CO

Thesis Title: Chemical and water-level influences on litter decomposition in subalpine fens of Colorado

Advisor: John D. Stednick

Fisheries and Wildlife Biology / Environmental Studies

B.S. - 1994

Iowa State University - Ames, IA

(double major)

Advisor: John Summerfelt

RELEVANT WORK EXPERIENCE

10/06 -
present

Research Ecologist (limnologist)

U.S. Geological Survey, Alaska Science Center – Anchorage, AK

- Interdisciplinary basic and applied research of lakes, streams and rivers, and wetlands in complex watersheds of Alaska.

5/02 – 9/06

Research Assistant

Department of Biology / The Ecology Center – Logan, UT

- Interdisciplinary aquatic ecosystem research focused on nitrogen cycling in streams and lakes
- Field work involving hydrologic instrumentation, monitoring, and experiments; mapping and geomorphic surveys; water chemistry sampling and experimentation.
- Modeling, data analysis, proposal and manuscript writing, and oral presentations.
- Teaching assistant for a course in watershed hydrology

3/97 – 1/99,

5/01 – 5/02

Research Consultant

Dr. David J. Cooper, Consulting Ecologist – Boulder, CO

By Project (contract agency is in parenthesis)

- Prospect Basin fen baseline and post-development monitoring and oversight (Telluride Ski & Golf)
- Analysis of long-term channel dynamics and cottonwood reproduction: Gunnison River, CO (NFRIA)
- In-stream flow requirements of riparian tree communities: San Miguel River, CO (BLM)
- Functional assessment of sedimentation and erosion in riverine and slope wetlands (State of Utah)
- Floristic and water chemical characterization of iron fens (Colorado Natural Areas)
- Functional assessment of sediment and carbon budgets in wetlands (Colorado Geologic Survey)
- Cottonwood establishment and health on regulated rivers (Bureau of Reclamation)
- Hydrogeomorphic classification system for Colorado wetlands (Colorado Geologic Survey)

ADDITIONAL WORK EXPERIENCE

5/99 – 4/01 **Development Worker** U.S. Peace Corps – Loja, Ecuador, S.A.
 9/96 - 2/97 **Soil Science Technician** Colorado State University – Fort Collins, CO
 7/94 – 8/96 **Domestic Fisheries Observer** Saltwater, Inc – Anchorage, AK
 (intermittent)
 3/94 – 7/94 **Park Restoration Crew Leader** FEMA – Boone, IA
 5/92 – 8/93 **Biological Science Technician** U.S. Fish & Wildlife Service – North Dakota
 (summers)

TEACHING EXPERIENCE

8/05 - 12/05 Teaching Assistant for a course in Watershed Hydrology Department of Aquatic, Watershed, and Earth Resources, Utah State University - Logan, UT
 7/00 - 11/00 Technical Trainer for development workers in an aquaculture extension program US Peace Corps - Quito, Ecuador
 8/99 - 2/00 Professor for a course in Hydrology and Water Quality Programa Carrera Ingeniería en Acuicultura, Universidad Nacional de Loja - Loja, Ecuador
 11/98 Guest lecturer for a course in Land-use and Water Quality Department of Earth Resources, Colorado State University - Fort Collins, CO

PROFESSIONAL SKILLS

- environmental analysis
- research design, implementation, & evaluation
- experimental & modeling statistics
- water quality sampling & analysis
- mapping; topographic & stratigraphic
- isotope, dye, and salt tracers
- hydrologic instrumentation & monitoring
- report & proposal writing
- public speaking
- Spanish writing & speaking
- field work excellence
- educating, mentoring, & training (formal & non-formal)
- teamwork & interdisciplinary planning
- networking & leadership

COMPUTER SOFTWARE AND MODELS**Proficiency**

Word • Excel • Other Microsoft Applications
 SAS • SigmaStat • SigmaPlot
 ArcGIS, ArcHydro • Surfer
 OTIS-P (river solute transport model)

Experience

Macintosh • DOS • UNIX
 MINTEQA2 (chemical equilibrium model)
 MODFLOW (groundwater flow model)
 TauDEM (hydrographic analysis model)
 Interactive Data Language (IDL)

RESEARCH AFFILIATIONS

- Society of Wetland Scientists
- North American Benthological Society
- American Society of Limnology and Oceanography
- American Geophysical Union
- Geological Society of America

GRANTS, HONORS & AWARDS

- U.S. Environmental Protection Agency STAR Fellowship – present (\$37,000 / year)
- Subsurface Science Fellowship, Inland Northwest Research Alliance (DOE) – 2002-03 (\$26,500 / year)
- Ecology Center Graduate Fellowship – 2004 (\$3,500)
- Alpha Zeta National Agricultural Honorary Society, Iowa State University – 1993

PROFESSIONAL SERVICE & PARTICIPATION

- Short Course: Morphology, Morphodynamics, and Ecology of Mountain Rivers - National Center for Earth Surface Dynamics, Berkeley, California – 2005
- Peer-reviewer for *Journal of Geophysical Research*, *Landscape Ecology*, *Journal of the North American Benthological Society*
- *RED DE EXTENSION PISCICOLA AMAZONICA*, External Director – 2001-04
- 1st Annual Water Symposium committee, Colorado State University – 1997
- American Water Resources Association, Colorado State University Student Chapter President – 1996-97

PEER-REVIEWED PUBLICATIONS

- Arp, C.D.**, M.N. Gooseff, M.A. Baker, and W. Wurtsbaugh. 2006. Surface-water hydrodynamics and regimes of a small mountain stream-lake ecosystem. *Journal of Hydrology*, 329: 500-513.
- Arp, C.D.** and D.J. Cooper. 2004. Analysis of sediment retention in western riverine wetlands: the Yampa River Watershed, Colorado. *Environmental Management*, 33(3):318-330.
- Cooper, D.J., R.A. Andrus, and **C.D. Arp**. 2002. *Sphagnum balticum* in a Southern Rocky Mountain iron fen. *Madrono*, 49(3):186-188.
- Arp, C.D.**, D.J. Cooper, and J.D. Stednick. 1999. The effects of heavy metals from acid rock drainage on *Carex aquatilis* leaf litter decomposition in Rocky Mountain fens. *Wetlands*, 19(3):665 - 674.
- Arp, C.D.**, J.C. Schmidt, M.A. Baker, and A. Myers. in press. Stream geomorphology in a mountain lake district: hydraulic geometry, sediment sources and sinks, and downstream effects. *Earth Surface Processes and Landforms*.

MANUSCRIPTS IN PREPARATION

- Arp, C.D.** and M.A. Baker. in review. Lakes disrupt nutrient uptake in mountain streams. *Limnology and Oceanography*.
- Arp, C.D.**, M.N. Gooseff, and M.A. Baker. in preparation. Discharge and hydrogeomorphic controls on transient storage in mountain streams: hyporheic vs. in-channel processes. *Water Resources Research*.
- Myers, A.K. A. Marcarelli, **C.D. Arp**, W. Wurtbaugh, and M.A. Baker. in revision. Disruption of downstream fining of channel bed sediment by lakes and effects on benthic biofilms. *Journal of the North American Benthological Society*.
- Hall, R.O., M.A. Baker, **C.D. Arp**, and B.J. Koch. in preparation. Hydrologic control of nitrogen uptake, storage, and export in mountain stream. *Ecology*.

CONSULTING AND EXTENSION REPORTS

- Cooper, D.J. and **C.D. Arp**. 2003. North Fork of the Gunnison River riparian vegetation analysis. North Fork River Improvement Association.
- Cooper, D.J. and **C.D. Arp**. 2002. Prospect Basin fens: baseline monitoring for the year 2001. Prospect Bowl Fen Protection Oversight Committee.
- Arp, C.D.** and E. Benítez G. 2001. A review concerning the potential use of native Amazonian fishes for aquaculture in Ecuador, *Red de Extensión Piscícola Amazónica* Publication, *Programa Carrera en Acuicultura, Universidad Nacional de Loja*, Loja, Ecuador.
- Arp, C.D.** and D.J. Cooper. 1999. Analysis of sediment fluxes in riparian and slope wetlands: Yampa River Watershed, Colorado. Department of Environmental Quality, State of Utah.
- Cooper, D.J., **C.D. Arp**, and D.C. Anderson. 1999. Importance of the 1997 Flaming Gorge Dam bypass flows for native ecosystem maintenance along the Green River in Browns Park and Lodore Canyon, Colorado. Bureau of Reclamation.
- Cooper, D.J. and **C.D. Arp**. 1999. Riparian vegetation of the San Miguel River: surface and groundwater interactions, plant water sources, plant water status, and susceptibility to impacts from changing river base flows. Bureau of Land Management
- Cooper, D.J., **C.D. Arp**, and R. Chimner. 1998. The sediment retention, carbon storage, and carbon export functions performed by four wetlands in Colorado, pp. 1-52. In: *Characterization and Functional Assessment of Reference Wetlands in Colorado*, Colorado Department of Natural Resources / Environmental Protection Agency.

CONFERENCE PRESENTATIONS

- Arp C.D.**, E.W. Hood, and E.G. Neal. 2006. Recent changes in the magnitude and timing of discharge in glacial and non-glacial watersheds in southeast Alaska. *American Geophysical Union*, San Francisco, California.
- Arp, C.D.**, M.N. Gooseff, and M.A. Baker. 2006. Transient storage behavior across stream-reaches with varying discharge, bedform, and groundwater influx. *North American Benthological Society*, Anchorage, Alaska.
- Arp, C.D.** and M.A. Baker. 2005. Relating hydrogeomorphic attributes to nutrient uptake in alluvial streams of a mountain lake district. *American Geophysical Union*, New Orleans, Louisiana.
- Baker, M.A., **C.D. Arp**, M.N. Gooseff, and R.O. Hall. 2005. Developing a method for partitioning transient storage into hyporheic and in-channel dead zone components. *American Geophysical Union*, New Orleans, Louisiana.
- Myers, M.A., A.M. Marcarelli, **C.D. Arp**, W. Wurtsbaugh, and M.A. Baker. 2005. Lake disruptions on sediment mobility and effects on benthic chlorophyll. *American Geophysical Union*, New Orleans, Louisiana.
- Arp, C.D.**, J.C. Schmidt, and M.A. Baker. 2005. The effect of lakes on stream geomorphology in a mountain lake district. *American Society of Limnology and Oceanography*, Salt Lake City, Utah.
- Wurtsbaugh, W.A., K.R. Nydick, M.A. Baker, **C.D. Arp**, R.O. Hall, and J.W. Haefner. 2005. Lacustrine control of nutrient flux through Rocky Mountain watersheds: physical and biological mechanisms. *American Society of Limnology and Oceanography*, Salt Lake City, Utah.
- Hall, R.O., M.A. Baker, J.L. Tank, **C.D. Arp**, and B.J. Koch. 2005. Export of particulate nitrogen during storms interpreted from ¹⁵N tracer studies in streams. *American Society of Limnology and Oceanography*, Salt Lake City, Utah.
- Arp, C.D.** 2004. Using hydrogeomorphic templates in aquatic ecosystem science and management: examples from the Rocky Mountain West. *Utah State University Spring Runoff Conference*, Logan, Utah.
- Nydick, K., W. Wurtsbaugh, M.A. Baker, R.O. Hall, and **C.D. Arp**. 2004. Biologic and hydrologic controls on nitrogen cycling in mountain watersheds: results of ecosystem ¹⁵N stable isotope tracer additions. *Utah State University Spring Runoff Conference*, Logan, Utah.
- Arp, C.D.**, M.A. Baker, M. Gooseff, and J.C. Schmidt. 2003. Are lake connected streams different in ways other than the connection? Lake effects on stream geomorphology and implications to hydrologic and ecological functioning. *American Geophysical Union*, San Francisco, California.
- Arp, C.D.**, M.A. Baker, and M. Gooseff. 2003. Modeling hyporheic exchange and nitrate retention in a mountain stream. *Subsurface Science Symposium*, Salt Lake City, Utah.
- Nydick, K., **C.D. Arp**, M.A. Baker, R.O. Hall, and W. Wurtsbaugh. 2003. Retention of nitrogen in stream-lake linkages during snowmelt. *Ecological Society of America*, Portland, Oregon.
- Arp, C.D.**, M.A. Baker, and R.O. Hall. 2003. Spatial patterns of transient storage and nitrate uptake along a stream reach flowing into a mountain lake. *North American Benthological Society*, Athens, Georgia.
- Hall, R.O., M.A. Baker, W.A. Wurtsbaugh, B. Koch, and **C.D. Arp**. Storage of nitrogen-15 during snowmelt in 2 mountain streams separated by a lake. *North American Benthological Society*, Athens, Georgia.
- Baker, M.A., R.O. Hall, W.A. Wurtsbaugh, M.M. Bozeman, and **C.D. Arp**. Dissolved nitrogen dynamics in a coupled stream-lake ecosystem during snowmelt quantified using 15-N nitrate. *North American Benthological Society*, Athens, Georgia.