

Research in the Ozarks

The USGS Columbia Environmental Research Center (CERC) is active with several research projects in the Ozark Highlands, a unique ecoregion that reaches into Missouri, Arkansas and Oklahoma. The Ozark Highlands is home to many endemic terrestrial and aquatic species, not only important ecologically, but is a strong economic base for many communities. CERC recognizes this ecoregion as a critical natural resource and works with partners to provide needed information and strategies for the management of this valued area.

CERC Projects:

- Ecological classification of riparian systems, characterization and mapping of vegetation communities, plant population demographics and microhabitat variables in the context of global climate change.
- Determination of potential effects of lead-zinc mining on the biological resources in southern Missouri.
- Development of standardized methods for conducting freshwater mussel toxicity tests, protecting endangered and threatened species.
- Use of passive samplers and toxicity testing to determine water quality in Ozark caves to protect endangered karst species.



Crayfish play an important functional role in detrital leaf processing in Ozark streams. Mining-derived metals were shown to decrease crayfish populations in the Black River system in southeast Missouri.

CERC scientists are evaluating the functional significance of the depauperate crayfish populations by using *in-situ* enclosure/exclosure experiments assessing relative rates of leaf processing in the presence and absence of crayfish. The results will be used to determine the effects of mining-derived metals on critical ecosystem functional processes in streams.

For more information, please contact:

Michael J. Mac, PhD Center Director
Columbia Environmental Research Center
4200 New Haven, Columbia, MO 65201
phone: 573-876-1900 email: mmac@usgs.gov
<http://www.cerc.usgs.gov/>



Scientists at CERC document the management action of prescribed burning in selected Ozark forested areas, and closely follow the recovery of many diverse plants on the forest floor. (Note: these two photos are not before and after, they were taken at different areas).

Relevant CERC Online Publications

<http://www.cerc.usgs.gov/pubs/pubs.htm>

- Concentrations of Metals in Aquatic Invertebrates from the Ozark National Scenic Riverways, Missouri (USGS OFR 2007-1435)
- Mapping Vegetation Communities in Ozark National Scenic Riverways (ONSR) (USGS OFR 2006-1354)
 - ONSR USNVC Natural Community Description
 - ONSR Altered Community Descriptions
 - Field Key to ONSR Vegetation Communities
 - ONSR USNVC Community Fuel Loading Photo Key
- Physical Aquatic Habitat Assessment Data, Ozark Plateau, Missouri and Arkansas (USGS DS-94)
- Physical Stream Habitat Dynamics in Lower Bear Creek, Northern Arkansas (USGS/BRD/BSR-2003-0002)
- Relations Among Geology, Physiography, Land Use, and Stream Habitat Conditions in the Buffalo and Current River Systems, Missouri and Arkansas
- Hydraulic Modeling of In-channel Habitats in the Ozark Highlands of Missouri: Assessment of Physical Habitat Sensitivity to Environmental Change
- Environmental Contaminants and Their Effects on Fish in the Mississippi River Basin
- Assessment of Elemental Concentrations in Streams of the New Lead Belt in Southeastern Missouri, 2002-05 (SIR 2007-5057)
- Determination of Polychlorinated Biphenyls, Selected Persistent Organochlorine Pesticides, and Polybrominated Flame Retardants in Fillets of Fishes from the 2006 Missouri Department of Conservation Monitoring Programs (USGS OFR 2008-1028)
- Assessing Contaminant Sensitivity of Federally Endangered and Threatened Freshwater Fish and Mussels
- Contaminant Sensitivity of Freshwater Mussels
- Neosho Madtom Spawning
- An Integrated Assessment of the Trophic Status of Fort Cobb Reservoir, Oklahoma