

PATRICIA HERMAN

Education

MS – Biological Sciences, Southern Illinois University – Edwardsville, 2001

BS – Biological Sciences, Southern Illinois University – Edwardsville, 1998

AS – Biological Sciences, Lewis & Clark Community College, Godfrey, IL, 1996

Professional Affiliations

The Wildlife Society

Professional Experience

Patricia Herman recently joined SCS Engineers as a Staff Scientist. She is currently responsible for management of three projects and provides technical support for mining related projects in southern Illinois.

Ms. Herman graduated from Southern Illinois University Edwardsville with a Master of Science in Biological Sciences. During completion of her degrees, she studied the effects of lead mining on native fish species in Missouri Ozark streams. Working in these diverse and unique habitats made her keenly aware of the ecosystem fragility and the need to protect and rehabilitate areas affected by mining. During graduate school, she was selected by Illinois Department of Natural Resources for the Natural Heritage Residency program. The residency provided exposure to resource management in both public and private sectors, interacting with many federal, state and local agencies, as well as, NGOs and landowners. She has written and executed management plans for natural areas, nature preserves, land and water reserves, agency properties and private lands. She also gained intensive experience in land management techniques, including: prescribed burns, exotic species control, community inventories, habitat restoration and cropland conversion. The ability to find common ground with partners and private landowners and to involve these constituents in the management of the land was perhaps the most important skill she honed.

For 12 years, Ms. Herman worked for U.S. Fish and Wildlife Service. While at USFWS, she was an integral member of the Pallid Sturgeon Population Assessment Program team, lead biologist for Asian Carp Monitoring and Removal Program and lead biologist for environmental DNA collection in the Ohio River basin for early detection of invasive carp species. All of these projects required coordinating sampling efforts, supervising field crews, and working closely with partners. Additionally, she facilitated cooperative agreements and the allocation of restoration dollars for Fish Passage and National Fish Habitat Partnership projects. Coordination between USFWS Natural Resource Damage Assessment biologists and the state biologists resulted in the prevention of mobilization of contaminated tailings and, ultimately, protected the stakeholders, wildlife and habitat in the Spring River watershed.

For more than 3.5 years, Ms. Herman worked for Illinois Department of Natural Resources (IDNR) as a Land Reclamation Specialist with the Office of Mines and Minerals in the Land Reclamation Division. In this position, she conducted monthly surface inspections of underground and surface coal mines and carbon recovery operations. Additionally, she reviewed permitting actions, enforced regulations and monitored construction projects. In 2022, she was responsible for daily inspections of the construction and installation of a water pipeline and diffuser site into the Big Muddy River in

southern Illinois. Oversight of this project has entailed extensive coordination with mine representatives, landowners, contractors and various IDNR staff. This experience expanded her knowledge of executing a large-scale construction project, understanding regulations and the reclamation and restoration of a variety of habitat types.

Detailed descriptions of Ms. Herman's experience are described below.

Land Reclamation Specialist; IL Department of Natural Resources; Office of Mines and Minerals, Land Reclamation Division

- Conduct inspections of surface facilities at active, reclamation status, and carbon recovery coal mines to ensure compliance with the Surface Mine Land Conservation and Reclamation Act and applicable federal laws and proper use/conservation of natural resources.
- Maintain detailed records of inspections for each mine as well as records of all submittals sent to the Department from coal mine permittees including but not limited to groundwater and surface water quality reports, impoundment inspections, vegetative productivity reports and insurance certifications.
- Issue citations and cessations to operators violating the statutes and/or performance standards.
- Inspect water quality standards, property boundary standoff distances and environmental performance standards including removal and storage of topsoil, clean and raw coal pile perimeters and revegetation requirements.
- Ensure approved threatened and endangered bat species protection and enhancement plans are adhered to on-site by inspecting forest and woody acreage in relation to mining operations.
- Collect data regarding affected acreage, depth of nontoxic cover material on refuse disposal areas to ensure quality wildlife habitat restoration.
- Preparation of permit findings and approval letters.
- Review and process Incidental Permit Revisions, Incidental Boundary Revisions, Significant Revisions, new permits and permit reviews, as related to coal mine reclamation laws.
- Maintain and prepare correspondence and records pertaining to reclamation laws, landowner complaints, mine operators, general public and other related agencies.
- Attend and teach professional development courses.
- Provide outreach and education to local community; develop and maintain outreach materials.
- Conduct tree counts in Fish and Wildlife-Woody post-mining land use areas prior to bond release.
- Conduct projects using mobile computing equipment and mapping software.
- Maintain professional communications with coal mine permittees, operators and consultants.
- Review books and reports pertaining to wetland and wildlife management and prepare correspondence along with other staff members.
- Assist in the development of regulations related to wetland and wildlife management.
- Assist in tree and vegetation identification on mine sites and proposed mine sites.

Fish Biologist; U.S. Fish & Wildlife Service, Carterville Fish & Wildlife Conservation Office, Marion, IL; Columbia Fish & Wildlife Conservation Office, Columbia, MO

Projects:

Environmental DNA (eDNA) Monitoring of Invasive Carps in the Ohio River, Middle Mississippi River and Chicago Area Waterway System

Asian Carp Monitoring and Removal in the Chicago Area Waterway System and Upper Illinois River
Leading-edge Black Carp Monitoring and Surveillance

Triploid Grass Carp Certification Inspections
Pallid Sturgeon Population Assessment Program
Fish Passage/National Fish Habitat Action Plan
U.S. Forest Service Mark Twain National Forest Stream Assessment
Osage Lock & Dam #1 Fish Passage Assessment
Mississippi Interstate Cooperative Resource Association Database Manager (MICRA)
Habitat Assessment & Monitoring Project
Missouri River Monitoring and Evaluation of Mitigation Sites
Mussel Surveys of Southeast Missouri Rivers

- Independently prepare, plan and execute complex surveillance and monitoring program for invasive carps in the Ohio River, Middle Mississippi River, Chicago Area Waterway System, Illinois River, lower Missouri River and associated backwaters and tributaries.
- Independently develop and write project proposals to facilitate understanding of life history stages and movement patterns of aquatic invasive species; estimate project costs and track expenditures of budgets.
- Work closely with state and non-governmental partners to identify potential locations for leading-edge aquatic invasive species and to develop response strategies for confirmed species presence.
- Independently prepare, plan and execute multi-faceted, complex monitoring program and handling protocol for federally endangered Pallid Sturgeon.
- Work closely with state and non-governmental partners to provide habitat improvements for aquatic organism passage through the Fishers and Farmers and Fish Passage cooperative agreements.
- Facilitate grant and cooperative agreement awards, provide regulatory guidance and review compliance for Section 7, NEPA, RHPO and appropriate permitting.
- Provides technical advice, management recommendations and coordinates aquatic organism field surveys to US Forest Service Mark Twain National Forest partners.
- Supervise field personnel; develop individual performance and career development plans, address performance and conduct situations, facilitate conflict resolution.
- Compile data, perform and interpret statistical analyses and literature synthesis to produce annual reports, technical reports, formal conference and committee presentations and informational/outreach articles.
- Member of eTEAM (eDNA technical committee) to facilitate communication of field implementation and execution of complex surveillance activities in the Great Lakes Region.
- Responsible for implementing and enforcing adherence to field crew safety check-in protocol; provide 24-hour point-of-contact for local and remote field crews.
- Custodial Property Officer: ensure capital and local property is adequately maintained, tracked and records are up-to-date. Act as primary acquisitioner of equipment and supplies with \$30,000 approval.
- Collateral duty safety officer: provide monthly facility inspections and guidance to ensure strict adherence to OSHA standards and USFWS safety policies.

USFWS Detail – Southwestern Native Aquatic Recovery Resources Center; U.S. Fish and Wildlife Service, Dexter, NM.

- Performed humane fish necropsies and disease testing as part of annual National Fish Hatchery Fish Health Inspections for federal trust species.
- Strictly followed Standard Operating Procedures for euthanasia, bacteriology and virology testing, presence of whirling disease and Asian tapeworm infestations.
- Prepared chemical solutions for disease testing.
- Maintained high standard of cleanliness, organization and equipment monitoring.

USFWS Detail – Biochemistry and Physiology; U.S. Geological Survey, Center for Environmental Research, Columbia, MO.

- Strict adherence to federal policies and protocols for successfully spawning, rearing, husbandry and preservation of larval Pallid Sturgeon.
- Independently developing, designing, implementing and executing larval Pallid Sturgeon behavioral experiment in an artificial stream.
- Implementing and executing larval Pallid Sturgeon physiology and feeding studies.
- Laboratory processing, sectioning, staining and histological analyses of larval Pallid Sturgeon.
- Coordinating and partnering with research sections, external research facilities and government agencies.

USFWS Detail – Ecological Services; U.S. Fish and Wildlife Service, Columbia Missouri Ecological Services Field Office, Columbia, MO.

- Assess potential threats posed by environmental contaminants to National Wildlife Refuges; providing Contaminant Assessment Process (CAP) for Great Rivers National Fish & Wildlife Refuge.
- Evaluating environmental impacts of proposed development projects, conducted consultations and prepared written responses pursuant to Section 7 of the Endangered Species Act, Clean Water Act Section 404, Migratory Bird Treaty Act, Bald and Golden Eagle Treaty Act and Contaminants Review.
- Participating with endangered species surveys (Eastern Massasauga Rattlesnake).
- Participating in avian contaminant study (lead) in potentially contaminated sites to determine the effects of environmental contaminants on Federal trust resources for Natural Resource Damage Assessment (NRDA).
- Providing comments to senior biologist on proposed large river fisheries model and mitigation plan.

Natural Resource Specialist; Mecklenburg County Park and Recreation Department, Charlotte, NC Division of Natural Resources, McDowell Nature Preserve

- Nature Preserve and Natural Areas management, restoration and monitoring.
- Endangered and threatened species monitoring, management and mapping.
- Greenhouse management: Greenhouse construction and operation, rare plant (listed and non-listed) propagation, restoration, relocation and seed collections.
- Central Carolina Amphibian and Reptile Initiative (CCARI) program: Catawba River Corridor Coverboard Project; monthly coverboard surveillance, species identification, data collection, digital photography and regional meeting presentations.
- Grassland Bird Nesting Study: Searching, identification, monitoring and data collection.
- Exotics control: Chainsaw/brushcutter use and maintenance, herbicide application. Prescribed burning: Equipment maintenance; backhoe and ATV operation, drip torch, flapper, rake and pump sprayer operation.

MEETING PRESENTATIONS

Jones, C., J. Rocks, D. Henderson, M. Brodnicki, P. Herman, S. Adams, K. Kosa, J. Rose and K. Schulz. 1998. Tree seedling recruitment and mortality over three years in damaged Mississippi River lowland forest. Illinois State Academy of Sciences. University of Illinois at Chicago, Chicago, Illinois.

Herman, P., S. Welch and P. Brunkow. 1999. Morphological differences in fish from an unvegetated reservoir. Illinois State Academy of Sciences. Carbondale, Illinois. April 9-10.

- Herman, P., S. Welch and P. Brunkow. 1999. Morphological variation in sunfish from deep and shallow sites in a vegetation-free reservoir. American Society of Ichthyologists and Herpetologists. State College, Pennsylvania. June 24-30.
- Herman, P., S. Welch and P. Brunkow. 1999. Morphological variation of sunfish in a vegetation-free reservoir. Ecological Society of America. Spokane, Washington. August 8-12.
- Herman, P. and P. Brunkow. 2000. Fluctuating asymmetry in fish from a lead-contaminated Ozark stream. Illinois State Academy of Sciences. Rock Island, Illinois. April 7-8.
- Brunkow, P., J. Badasch and P. Herman. 2000. Decline of salamander populations due to the great flood of 1993? Illinois State Academy of Sciences. Rock Island, Illinois. April 7-8.
- Brunkow, P., J. Badasch and P. Herman. 2000. Effects of flooding on salamanders in the Horseshoe Lake State Conservation Area. Illinois Groundwater Consortium. April 13.
- Herman, P. and P. Brunkow. 2000. Lead contamination and fluctuating asymmetry in Ozark stream fish. Ecological Society of America. Snowbird, Utah. August 6-10.
- Herman, P. and P. Brunkow. 2001. Fluctuating asymmetry of stonerollers from regions of varying lead contamination in the Ozark Mountains. Illinois Academy of Sciences. Macomb, Illinois. April 20-21.
- Herman, P. and P. Brunkow. 2001. Fluctuating asymmetry in stonerollers from streams of varying lead contamination history. Ecological Society of America. Madison, Wisconsin. August 5-10.
- Brunkow, P. and P. Herman. 2001. Lead contamination and developmental stability in an Ozark stream fish. Pioneer Forest Symposium. St. Louis, Missouri. October 18.
- Herman, P. 2001. Fluctuating asymmetry as a sublethal indicator of lead contamination history in an Ozark stream fish. Master of Science Thesis Defense. Southern Illinois University-Edwardsville. December 7.
- Herman, P. 2004. Catawba River corridor coverboard project. Central Carolina Amphibian and Reptile Initiative. North Carolina State Museum of Natural Resources, Raleigh, North Carolina.
- Herman, P. 2005. Catawba River corridor coverboard project. Central Carolina Amphibian and Reptile Initiative. Davidson College. Davidson, North Carolina.
- Herman, P. 2005. Catawba River corridor coverboard project. Central Carolina Amphibian and Reptile Initiative. North Carolina State Museum of Natural Resources, Raleigh, North Carolina.
- Herman, P., W. Doyle, E. Kunz and T. Hill. 2008. Evaluating wound treatments of shovelnose sturgeon egg checks. Missouri River Natural Resources Conference, Nebraska City, Nebraska.
- Herman, P., W. Doyle, E. Kunz and T. Hill. 2008. Evaluating wound treatments of shovelnose sturgeon egg checks. 69th Annual Midwest Fish and Wildlife Conference, Columbus, Ohio.
- Herman, P., L. Johnson, J. Candrl, A. Delonay and D. Papoulias. 2012. Passive and active drift patterns of pallid sturgeon from hatch to bottom settling. 73rd Annual Midwest Fish and Wildlife Conference, Wichita, Kansas.
- Candrl, J., P. Herman, L. Johnson, R. Claunch and D. Papoulias. 2012. Defining the point-of-no-return in first-feeding pallid sturgeon larvae using environmental temperature profiles. 73rd Annual Midwest Fish and Wildlife Conference, Wichita, KS.
- Herman, P., L. Johnson, J. Candrl, V. Velez, A. Delonay and D. Papoulias. 2014. Pallid sturgeon free embryo drift behavior from hatch to swim bladder inflation. 2014 Missouri River Natural Resources Conference, Nebraska City, Nebraska.

- Herman, P. 2015. Aquatic invasive species – potential threats to Missouri. 2015 Annual Missouri Natural Resources Conference, Osage Beach, Missouri.
- Herman, P., L. Johnson, J. Candri, A. Delonay and D. Papoulias. 2015. Pallid sturgeon drift behavior from hatch to swim bladder inflation. 53rd Annual Meeting of the Illinois Chapter of American Fisheries Society, Grafton, Illinois.

PUBLICATIONS

- Schulz, K., C. Jones, J. Rocks, M. Brodnicki, D. Henderson, P. Herman, K. Kosa and S. Adams. 1998. Contrasting demography and contrasting process: tree seedling recruitment on Mississippi River bottomlands near St. Louis, Missouri. Proceedings of Eighth Annual Groundwater Consortium, April 1-2. Makanda, Illinois. Pages 247-258.
- Brunkow, P., J. Badasch and P. Herman. 2000. Effects of flooding on salamanders in the Horseshoe Lake State Conservation Area. Proceedings of the Tenth Annual Groundwater Consortium. Carbondale, Illinois. Pages 111-124.
- Herman, P. 2005. Piedmont prairies. Natural Connections. Vol.105 Issue 1. Mecklenburg County Division of Natural Resources. Charlotte, North Carolina. Page 3.
- Plauck, A., N. Utrup, W. Doyle, P. Herman and T. Hill. 2007. Pallid sturgeon population monitoring for the Missouri River: Segment 13. 2006 Annual Report. U.S. Fish and Wildlife Service.
- Utrup, N., A. Plauck, W. Doyle, P. Herman and T. Hill. 2007. Pallid sturgeon population monitoring for the Missouri River: Segment 14. 2006 Annual Report. U.S. Fish and Wildlife Service.
- Herman, P., A. Plauck, N. Utrup and T. Hill. 2008. Three year age and growth report for sicklefin chub (*Macrhybopsis meeki*). Contract report to the U.S. Army Corps of Engineers - Northwest Division. U.S. Fish and Wildlife Service, Columbia National Fish and Wildlife Conservation Office, Columbia, Missouri.
- Herman, P., A. Plauck, N. Utrup and T. Hill. 2008. Three year age and growth report for sturgeon chub (*Macrhybopsis gelida*). Contract report to the U.S. Army Corps of Engineers - Northwest Division. U.S. Fish and Wildlife Service, Columbia National Fish and Wildlife Conservation Office, Columbia, Missouri.
- Herman, P., A. Plauck, N. Utrup and T. Hill. 2008. Three year age and growth report for speckled chub (*Macrhybopsis aestivalis*). Contract report to the U.S. Army Corps of Engineers - Northwest Division. U.S. Fish and Wildlife Service, Columbia National Fish and Wildlife Conservation Office, Columbia, Missouri.
- Plauck, A., N. Utrup, W. Doyle, P. Herman and T. Hill. 2008. Pallid sturgeon population monitoring for the Missouri River: Segment 13. 2007 Annual Report. U.S. Fish and Wildlife Service.
- Utrup, N., A. Plauck, W. Doyle, P. Herman and T. Hill. 2008. Pallid sturgeon population monitoring for the Missouri River: Segment 14. 2007 Annual Report. U.S. Fish and Wildlife Service.
- Plauck, A., P. Herman, W. Doyle and T. Hill. 2009. Pallid sturgeon population monitoring for the Missouri River: Segment 13. 2008 Annual Report. U.S. Fish and Wildlife Service.
- Herman, P., A. Plauck, W. Doyle and T. Hill. 2009. Pallid sturgeon population monitoring for the Missouri River: Segment 14. 2008 Annual Report. U.S. Fish and Wildlife Service.
- Plauck, A., P. Herman, W. Doyle and T. Hill. 2010. Pallid sturgeon population monitoring for the Missouri River: Segment 13. 2009 Annual Report. U.S. Fish and Wildlife Service.
- Herman, P., A. Plauck, W. Doyle and T. Hill. 2010. Pallid sturgeon population monitoring for the Missouri River: Segment 14. 2009 Annual Report. U.S. Fish and Wildlife Service.

- Herman, P. and T. Hill. 2012. A survey of Lock and Dam #1 on the lower Osage River, Missouri. Final report prepared for U.S. Fish and Wildlife Service, Ecological Services - Columbia Field Office. U.S. Fish and Wildlife Service, Columbia Fish and Wildlife Conservation Office. Columbia, Missouri.
- Wrasse, C., P. Herman and C. Ridenour. 2014. 2013 Annual report: Pallid sturgeon population assessment and associated fish community monitoring for the Missouri River: Segment 13. United States Fish and Wildlife Service Columbia Fish and Wildlife Conservation Office. Columbia, Missouri.
- Herman, P., C. Wrasse and A. McDaniel. 2014. 2013 Annual report: Pallid sturgeon population assessment and associated fish community monitoring for the Missouri River: Segment 14. United States Fish and Wildlife Service Columbia Fish and Wildlife Conservation Office. Columbia, Missouri.
- Wrasse, C., P. Herman, J. Smith, A. Masters, C. Yonce and J. Henry. 2015. 2014 Annual report: Pallid sturgeon population assessment and associated fish community monitoring for the Missouri River: Segment 13. United States Fish and Wildlife Service Columbia Fish and Wildlife Conservation Office. Columbia, Missouri.
- Herman, P. and C. Wrasse. 2015. 2014 Annual report: Pallid sturgeon population assessment and associated fish community monitoring for the Missouri River: Segment 14. United States Fish and Wildlife Service Columbia Fish and Wildlife Conservation Office. Columbia, Missouri.
- Garrison, H., P. Herman and J. Finley. 2015. Fish species survey of select creeks in the U.S. Forest Service Mark Twain National Forest: Poplar Bluff Ranger District. United States Fish and Wildlife Service Columbia Fish and Wildlife Conservation Office. Columbia, MO.
- Herman, P. and C. Wrasse. 2016. 2015 Annual report: Pallid sturgeon population assessment and associated fish community monitoring for the Missouri River: Segment 14. United States Fish and Wildlife Service Columbia Fish and Wildlife Conservation Office. Columbia, Missouri.