



ECOLOGICAL RESTORATION



SWCA'S APPROACH FOR ECOSYSTEM SOLUTIONS

SWCA has served as a valued environmental resources partner to private and public clients in a range of geographies for more than 40 years. Our dedicated ecological restoration and engineering team designs, permits, and builds environmental restoration projects. We have the expertise and the relationships necessary to seamlessly guide clients' projects from inception to completion. With a strong record of project delivery, our team will help you achieve your project goals through sound science, creative solutions, and technical excellence.

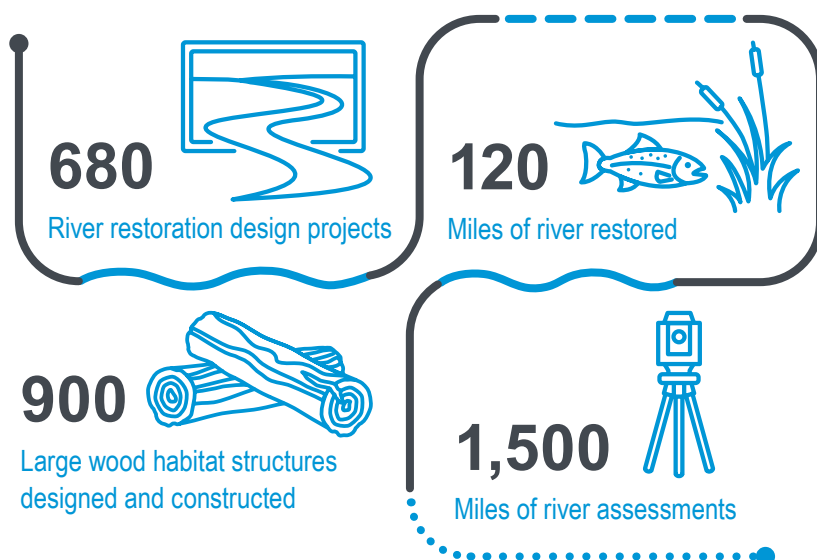
Ecosystems, with their intricate web of interactions, have the inherent ability to buffer against the shocks of a changing climate. They provide a natural solution for the protection of wildlife, and against flooding, coastal degradation, and other disasters. When aligned with climate adaptation policies, ecological restoration can enhance the natural resiliency of communities. Our experts provide support for federal, state, and municipal agencies, private companies, and non-profits in conceptualizing and completing resilience projects, including nature-based solutions, no matter the size.

FULL-SERVICE SOLUTIONS

By offering a comprehensive range of ecosystem services, SWCA provides clients with streamlined timelines and reduced project costs. Our clients benefit from a seamless integration of diverse services that simplifies decision-making, reduces the complexities of managing multiple partners, and fosters a holistic approach to finding solutions.

DAM REMOVAL AND RIVER RESTORATION

Dam removal and river restoration are critical to restoring the health, safety, and connectivity of our waterways. At SWCA, we support communities, agencies, and partners in transforming outdated or unsafe dams into opportunities for ecological renewal and public benefit. By reconnecting rivers, improving fish passage, reducing flood risk, and revitalizing habitats, dam removal projects breathe new life into ecosystems while enhancing recreation, cultural values, and climate resilience. Our integrated approach combines science, engineering, and stakeholder engagement to deliver lasting, nature-positive results.



SERVICE HIGHLIGHTS

NATURE-BASED SOLUTIONS

SWCA delivers resilient, sustainable outcomes that align with both ecological integrity and client goals. By leveraging the power of natural systems—such as wetlands for water filtration, native vegetation for erosion control, and habitat restoration for biodiversity—we create innovative solutions that enhance environmental function while supporting infrastructure, development, and conservation priorities. Our approach turns nature into a strategic asset, helping clients meet regulatory requirements, mitigate risk, and achieve long-term project success.





COMMUNITY DRIVEN

Experienced working with local, regional, state, federal, tribal, and non-government organizations, SWCA leads an inclusive planning process from inception to implementation. We engage with community leaders to learn about their values, concerns, and sense of place to create ecological restoration plans that meet their needs. We also use a variety of engagement strategies to reach the public and gain their input for ecological restoration plans.

SCIENTIFICALLY SOUND

SWCA is an established leader in ecological restoration. Our experience includes providing coastal resiliency services with living shorelines, wetland and stream mitigation solutions for regulatory driven impacts, guiding habitat management plans to protect threatened species, and beyond. We anchor our solutions in sound science that enables project partners to make informed decisions on critical matters.

TECHNOLOGY ENABLED

We capture and merge relevant project data in near real time with a variety of technologies operating from land, sea, air, and space. Every project is different, and our data acquisition planners develop solutions tailored to your requirements. Our dedicated technologies team supports ecological restoration projects with advanced modeling and analysis, drones, satellite imagery, AI and machine learning, interactive online content (e.g., story maps, central websites), custom field data collection systems, and digital and online public meeting spaces.

At **SWCA**, we can lead complex ecological restoration projects from planning through implementation, backed by decades of experience in habitat design, permitting, construction oversight, and long-term monitoring.



RESILIENCY PLANNING

SWCA empowers communities and agencies to proactively reduce risk and enhance safety before disaster strikes. Our team works collaboratively to identify hazards, assess vulnerabilities, and develop FEMA-compliant mitigation plans that protect people, infrastructure, and natural resources. By integrating nature-based solutions, climate data, and community priorities, we deliver actionable, forward-thinking strategies that build resilience, secure funding, and support sustainable growth.





ECOLOGICAL RESTORATION LIFECYCLE

SWCA has negotiated and obtained tens of thousands of environmental and cultural resource permits, approvals, and entitlements and helps clients meet federal, state, and local regulations. By combining ecological and cultural expertise, our team provides time and expense efficiencies to keep projects moving, while reducing costs and maintaining compliance.

- National Environmental Policy Act
- Federal and state permitting
- Resource assessments and agency consultations
- Ecological restoration permit streamlining and statutory/categorical exemptions
- Compensatory mitigation plans and designs

With a long history of working with partners that have been awarded or are exploring funding through grants, our team has a unique understanding of the compliance challenges grantees face. SWCA guides grantees through the regulatory process, regardless of project type or organizational experience with federal funding and regulations.

- Funding source identification
- Grant proposal preparation
- Technical project support
- Grant application assistance
- Grant eligibility assessment

FUNDING

PLANNING

PERMITTING

SWCA can help you understand your project site's constraints and potential. This information allows our clients to seize opportunities and avoid costly permitting or engineering problems while site planning. Decision analysis and workshop facilitation help guide collaborative efforts for funding, planning, building, and operating complex projects across multiple jurisdictions.

- Habitat assessments
- Watershed planning
- Flood analysis
- Post-fire restoration planning
- Wetland assessments and delineations
- Mitigation bank site identification
- Phase I and Phase II Environmental Site Assessments
- Archaeological assessments



SWCA offers many services to support construction of your restoration project. Our experienced team can assist with all aspects of project management — from site preparation and plant installation to construction oversight and post-construction monitoring and maintenance. Our team understands the complexity of construction projects, building every project to last.

- Native seeding
- Wetland planting
- Biological monitoring
- Tree and shrub planting
- Sediment and erosion control measures
- Construction oversight
- Environmental inspections

Monitoring ecological restoration projects creates a record of natural systems development and guides adaptive management. Through monitoring techniques like field inspections, satellite imagery, and remote sensing, SWCA tracks changes in vegetation cover and species distribution. Monitoring ensures early detection of invasive species cover, sediment transport, species distribution, and other disturbances.

- Remote instream monitoring
- Surface and groundwater monitoring
- Statistical sampling design
- Vegetation monitoring
- Field surveys



SWCA's engineers and designers have planned all types of restoration projects, including dam removal, floodplain restoration/reconnection, meadow restoration, channel design, daylighting, culvert replacement/retrofits, streambank stabilization, and bioengineering. Our team has developed a design process through more than 80 years' collective experience with fluvial geomorphic assessments and river restoration design projects.

- Fluvial geomorphic assessments
- Natural Channel Design (NCD)
- Sediment supply and transport modeling
- Hydrologic and hydraulic modeling
- Fish passage design
- River migration studies

SWCA develops management plans and removes/controls plants in upland, wetland, and aquatic sites. Some plant management techniques that SWCA uses include foliar low-pressure and cut-stump herbicide applications, stem injection, wiping/wicking, and biological controls. Our specialists work primarily in sensitive resource areas. They have experience identifying native-desirable species and non-native-invasive species, while limiting disturbance of non-target species.

- Invasive species control
- Biological control of species
- Herbicide application
- Permit compliance
- Integrated Pest Management (IPM) planning
- Natural area stewardship



SWCA

ECOLOGICAL RESTORATION PROJECT MAP HIGHLIGHTS



Link to website



SWCA projects



SWCA projects highlighted in Relevant Project Experience section



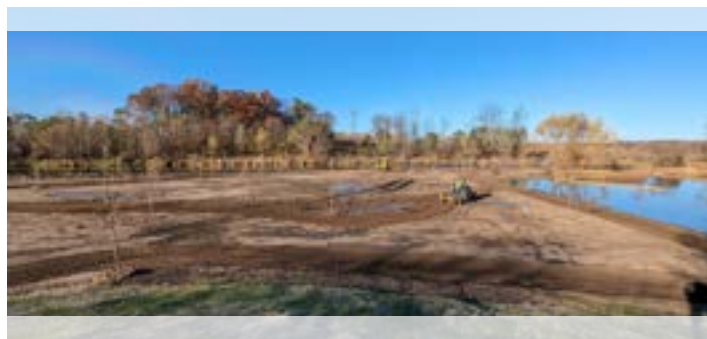


RELEVANT PROJECT EXPERIENCE



AMERICA THE BEAUTIFUL CHALLENGE (ATBC) GRANTEE FEDERAL COMPLIANCE TECHNICAL ASSISTANCE—National Fish and Wildlife Foundation (NFWF); Nationwide

SWCA is providing technical guidance and federal compliance review support to NFWF for their flagship Bipartisan Infrastructure Law + Inflation Reduction Act-funded program ATBC. The ATBC is focused on implementing large-scale conservation, restoration, and sustainability projects throughout the United States and its territories. SWCA works with grantees (primarily state governments, Tribal governments, and environmental nonprofits) to ensure compliance with federal regulatory compliance mechanisms such as the National Environmental Policy Act, Endangered Species Act, and National Historic Preservation Act. SWCA has worked on over 100 projects that cover all 50 states, four territories and the District of Columbia.



PLAINWELL SPILLWAY REMOVAL AND CHANNEL RESTORATION—Taplin Group; Plainwell, Michigan

SWCA provided services associated with the restoration of roughly 7,000 linear feet degraded riverbank and 10 acres floodplain along the Kalamazoo River near Plainwell, Michigan. With federal funding made available through the Great Lakes Restoration Initiative, SWCA is working with their client to remediate the site and establish native vegetation throughout the newly created floodplain. Work includes the installation of over 10 acres of native seed, 550 b&b trees, over 900 containerized shrubs, and overseeing the installation of over 30 root-wad structures. SWCA worked with local plant material vendors to supply materials with local genetics to improve client resiliency. The project team also assisted in the redesign of the bank restoration based on current field conditions, construction feasibility, and ecological value. SWCA provided critical coordination among the varied stakeholders that included site contractors, environmental oversight professionals, Michigan DNR staff, and restoration engineers.



KLAMATH DAM REMOVALS—AECOM, CDM Smith/ Klamath River Renewal Corporation; California and Oregon

Team development of an Environmental Impact Statement (EIS) for the potential removal of four Klamath River dams, focusing on dam removal and fish passage alternatives. The final EIS, informed by public and tribal consultations, analyzed various impacts and benefits. Selected as a strategic partner to advance the Klamath River Renewal Corporation's dam removal plan. Performed aquatic resource mitigation, river restoration, sediment evaluation, public outreach, and fire management planning. Also provided fisheries support, relocated endangered suckers, and ensured compliance during dam removal.



NC-24 RESILIENCY AND LIVING SHORELINE PROJECT– North Carolina Department of Transportation (NCDOT); Swansboro, North Carolina

SWCA received a Project Merit Award from the Climate Change Business Journal for collaborating with NCDOT to stabilize a vulnerable stretch of highway using a living shoreline and coastal restoration. SWCA is the lead designer on this project for three separate marsh restoration, stormwater treatment, sidewalk rehabilitation, and living shoreline projects along the NC-24 causeway. The current design includes converting and enhancing approximately 2,000 feet of hardened shoreline to living shorelines with the restoration and creation of two acres of tidal marsh along the causeway. The existing sidewalk will be stabilized to allow pedestrians to view the marsh, oyster reef, and living shoreline system as they walk along the top of the bank.



CHANDELEUR ISLAND RESTORATION PROJECT - SEAGRASS SURVEY–Louisiana Coastal Protection and Restoration Authority; St. Bernard Parish, Louisiana

SWCA is currently providing environmental services to support the design and implementation of a barrier island reconstruction benefiting the Chandeleur Islands in coastal Louisiana. The project will focus on the restoration and reconstruction of the main Chandeleur Island. SWCA developed and executed a rapid assessment survey for approximately 3,000 acres of seagrasses along the barrier island chain, providing a comprehensive baseline dataset to support the project design and habitat restoration plan.



KOOTENAI RIVER RESTORATION PROGRAM (KRHRP)– Kootenai Tribe of Idaho; Bonners Ferry, Idaho

Ecosystem-based restoration effort spanning 55-miles of the Kootenai River in northern Idaho with a comprehensive framework for undertaking large-scale habitat restoration to address reach-scale limiting factors related to geomorphology, vegetation and aquatic habitat. The holistic approach for addressing the decline of Kootenai River white sturgeon (*acipenser transmontanus*) included side channel enhancement, island/floodplain creation, bank restoration and pool creation. Performed planning, design, hydraulic modeling, bid document preparation, construction oversight, and monitoring for a more resilient ecosystem capable of sustaining diverse native plant and animal populations, and tolerance of natural disturbances and altered regimes.



RELEVANT PROJECT EXPERIENCE [Link to website](#)



BOIS D'ARC CREEK—Resource Environmental Solutions; Fannin County, Texas [↗](#)

SWCA was retained to design the stream and wetland restoration components of the comprehensive Permittee Responsible Mitigation (PRM) to offset Clean Water Act Section 404 impacts to waters of the U.S. resulting from the construction of the Lower Bois d'Arc Creek Reservoir by the North Texas Municipal Water District in Fannin County, Texas. The project was the largest stream and wetland mitigation project on a single site in the U.S. to date and included 30 miles of Rosgen Priority 1 and 2 stream restoration; 40 miles of Rosgen Priority 3 stream restoration and riparian-only restoration; and over 10,000 acres of emergent, scrub/shrub, and forested wetland restoration on a contiguous 15,000-acre tract of land largely occupied by the historic Riverby Ranch on the southern banks of the Red River. SWCA also conducted cultural resources monitoring during construction.



OTAY RIVER MITIGATION—HomeFed Corporation; Chula Vista, California [↗](#)

SWCA is leading the restoration design and permitting of a habitat restoration project at the Otay River mainstream through an area historically disturbed by sand mining and now invaded with tamarisk. The project team is recreating a braided channel network and active floodplains to support riparian, transitional, and upland native habitats totaling approximately 148 acres where no riverine functions currently exist. The project team has worked with the regulatory agencies, the City of Chula Vista, and the private developer to finalize the design, and implemented the first phase (approximately 40 acres of restoration) in the fall 2016. SWCA continues to work with HomeFed and the City of Chula Vista to implement a Mitigation Bank (an additional ~140 acres of restoration directly downstream of the first phase) for the extended protection of sensitive animal and plant species, while promoting public engagement and education via implementation of trails that create an interpretative experience.

SERVICE HIGHLIGHTS

VEGETATION MANAGEMENT PLANNING

SWCA advances projects by integrating vegetation and soil management strategies that boost ecosystem services, reduce maintenance costs, and support beneficial habitats. These approaches align with regulatory trends, improve public perception, and deliver lasting environmental and operational benefits. SWCA's interdisciplinary team—including restoration ecologists, soil scientists, and botanists—develops revegetation and Vegetation Management Plans nationwide, ensuring compliance with NRCS and EPA guidance throughout all project phases via adaptive management and expert oversight.





RANCHO CAÑADA FLOODPLAIN RESTORATION– McBain Associates; Carmel, California [↗](#)

SWCA's comprehensive services for this important project include biological and cultural resources assessments; field investigations, including, but not limited to, establishing a survey control, conducting a topographic survey and Light Detection and Ranging (LiDAR) flight of the project area, fish habitat mapping, geomorphic mapping, vegetation mapping, and bathymetric survey; permit preparation; conceptual, 30%, and 60% design; environmental review; grant writing assistance; and extensive public outreach to incorporate community feedback into the design and restoration process. SWCA's natural resources and restoration specialists are working closely with the design team to select a preferred design that will avoid sensitive resources to the greatest extent possible and identify opportunities for the restoration of multiple species habitat.

NATIONAL RESOURCES CONSERVATION SERVICE (NRCS) NATIONWIDE ON-CALL CONTRACT–American Conservation Experience; Nationwide

SWCA, in partnership with American Conservation Experience, holds an on-call contract with the NRCS to provide nationwide environmental and ecological restoration services in support of restoration of degraded streams, wetlands, and floodplains through NRCS easement programs. SWCA is currently providing ecological restoration services for the NRCS from Massachusetts to Oregon. SWCA is assisting with assessment, design, planning, permitting, contracting, and implementation of restoration.

MITIGATION SOLUTIONS

SWCA delivers comprehensive mitigation services that address environmental impacts while supporting project goals and regulatory compliance. Our multidisciplinary team designs and implements effective mitigation strategies, including habitat restoration, wetland creation, and conservation planning. We work collaboratively with clients and stakeholders to identify site-specific solutions, navigate permitting requirements, and ensure long-term ecological success. Through adaptive management and expert oversight, SWCA's mitigation services provide lasting benefits to both the environment and project operations across diverse landscapes.



LOCAL EXPERTISE, BIG FIRM SUPPORT

Founded on a commitment to sound science and creative solutions, SWCA Environmental Consultants is a leader in environmental and management consulting services. We combine scientific expertise and in-depth knowledge of the industries we serve to tackle global environmental challenges.

Our diverse team of experts collaborates across disciplines to deliver comprehensive solutions in environmental planning and permitting, cultural resource management, biological and ecological services, climate driven services, water resources management, air quality planning, and sustainability consulting. Since 1981, SWCA has helped clients navigate the environmental compliance process and become more sustainable. As a 100% employee-owned company, all 1,700 employees across 45 offices are invested in our collective success, driving excellence in every project we undertake.

For more information, visit SWCA.com.

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