

Nature gets a

Helping Hand

Learn how habitat banking restores the land,
benefits native wildlife and reduces flood risks

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‘BANKING’ ON HABITAT HELPS PEOPLE AND WILDLIFE

BY DEBBIE ARRINGTON

Westervelt Ecological Services’ Tule Red project restored about 350 acres of tidal wetlands in the Suisun Marsh.

PHOTO COURTESY OF WESTERVELT ECOLOGICAL SERVICES

Westervelt Ecological Services specializes in environmental restoration on a large scale

How do you help the environment and development, too? By pooling resources.

That’s the basic idea behind habitat banking, a means of restoring native habitat on a large and impactful scale.

In such states as California, every development project – from highways to sewers to shopping centers – is required to mitigate (or reduce) its potential environmental impact. Mandatory mitigation has led sometimes to a patchwork of mini conservation efforts, such as saving one oak tree amid a mall parking lot.

What if you could save a whole woodland? Or restore hundreds of acres of habitat as a trade-off for that developmental impact? That’s where habitat banking comes in.

Habitat banking allows landowners, businesses and government agencies to get mitigation credits from large-scale restoration projects for wetlands, streams, and other wildlife habitats; often projects have all three components. Mitigation and conservation banks make it easier for

private and public development projects to fulfill their environmental impact requirements in a way that benefits the environment.

Instead of piecemeal compensatory mitigation projects, habitat banking protects and restores larger, more functional, and longer-lasting ecological systems that are professionally managed and preserved.

“Instead of doing little projects, take all of the postage stamp-sized mitigation efforts and combine them into one regional conservation project,” says Greg Sutter, Vice President and General Manager of Westervelt Ecological Services (WES). “Everyone benefits from the economy of scale. You get a much better project.”

WES is a leader in habitat banking. Part of a 135-year-old business, The

Westervelt Company, WES owns and operates mitigation and conservation banks nationwide and provides environmental mitigation and habitat planning services to private landowners, businesses, government agencies, nonprofits, land trusts and more.

“We call our projects ‘banks’ because they consolidate the credits for environmental mitigation into one larger project,” Sutter says.

So far, WES’s projects include more than 30,000 acres of restored, managed and protected lands. The restoration

projects provide habitat to about 50 federally or state-protected plants and animals.

The company has restored 20 miles of streams and

rivers, helping flood control while also preserving habitat for native wildlife. “Habitat

banking is good for both conservation and the environment, allowing infrastructure to occur in an environmentally mindful manner,” Sutter explains. Mitigation projects also can

bolster flood control, help water quality and provide jobs.

“Clearly, conservation helps wildlife directly,” Sutter says of such projects. “Indirectly, it helps people a lot. (A project in the Delta) reduces flood risk all the way to Sacramento, and enhances water delivery to people and agriculture.”

Much of WES’s work in the state takes place in Northern and Central California, and the Sacramento and San Joaquin valleys including Alameda, Butte, Colusa, Merced, Placer, Sacramento, Solano, Sutter and Yolo counties. More than a dozen conservation and mitigation banks offer protection and habitat to endangered or threatened species such as California tiger salamander, California red-legged frog, Callippe silverspot butterfly, Valley elderberry longhorn beetle, Central Valley Steelhead, Chinook salmon, Burrowing owls, Giant garter snakes and the San Joaquin kit fox.

Currently, WES hopes to restore a large Solano County parcel producing dairy forage known as the Little Egbert Tract (LET). Once restored, the property will benefit endangered species like the Delta smelt and Swainson’s hawks.

“LET needs to be for the public benefit,” Sutter says. “It’s a large piece of the puzzle. LET is big enough to really make a difference for flood control and species conservation in the Delta.”

“Habitat banking is good for both conservation and the environment, allowing infrastructure to occur in an environmentally mindful manner.”

GREG SUTTER
Vice president and general manager,
Westervelt Ecological Services



HOMES FOR WILDLIFE

How habitat banking
creates necessary native
environments like vernal
pools

BY KRYSTA SCRIPTER

As human populations increase and we develop what had been open land or forest, native wildlife populations are compromised. Endemic species, adapted to specific local conditions, have a hard time adjusting to habitat loss and fragmentation.

“That’s why the Central Valley has been hit the hardest,” says Dr. Brent Helm, a wildlife biologist, botanist and ecologist specializing in wetlands. “Close to 50% of our land is tied up in some sort of public (development).”



Habitat restoration and banking is so important for species that require specific habitats like vernal pools and wetlands. The California tiger salamander, for example, needs vernal pools, a type of seasonal wetland, to lay their eggs every year.

“And then the (eggs) have to go through a metamorphosis—they go through a tadpole stage, and then they become a sub-adult and then they leave that aquatic habitat,” he says. “They go into the upland and they stay there for the rest of the year until they come back and do the whole process again.”

The salamander’s breeding habits make vernal pools necessary, Dr. Helm explains. Vernal pools form in depressions filled by winter rain

The California
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eggs every year.

Vernal pools (above) and the California tiger salamander (lower left) have been helped by habitat banking and restoration.

or flooding, but the dams, levees, and leveled agricultural land in California’s Central Valley have nearly eradicated these seasonal pools.

Measuring the success of habitat banking depends largely on the species in question, he adds. One project often has multiple agencies involved, too, making enacting and enforcing appropriate measures even more complicated.

“Depending upon the agency that has jurisdiction for protection, whether it’s the (California) Department of Fish and Wildlife or U.S. Fish and Wildlife Service or National Marine Fisheries Service, each species and habitat type have their own specific requirements,” Dr. Helm says. “So it really is on a case-by-case basis (for each species).”

By mitigating some of the human effects on California’s land, however, habitat banking allows a return to natural systems that protect native wildlife and their habitat.

SAVING SPECIES

Westervelt Ecological Services develops habitat banks to create diverse habitats that protect many threatened and endangered species. Semi-aquatic species like the **California tiger salamander**¹, **Conservancy fairy shrimp**², and **Giant garter snake**³ benefit from the creation of wetlands, vernal pools, floodplains and other aquatic habitats in the Central Valley and west slope of the Sierra Nevada Mountains. Other species that benefit from WES’s restoration projects include the Sandhill crane in the Delta and California red-legged frog in the Sierra. Eric Hansen, a conservation biologist and consultant, says Westervelt’s approach benefits not only target species, but others that occupy the same system. “The best part of that approach is not just safeguarding species that are in trouble, but also in preventing others from making it onto the Endangered Species List in the first place.”



PROVIDING HABITATS AND RESOURCES FOR AT-RISK FISH

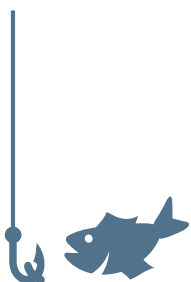


Projects by Westervelt Ecological Services (WES) help protect many fish species, including the Delta smelt and local salmon. By creating more wetland habitats, threatened and endangered fish species have a fighting chance.

"Delta smelt is one of the species that lives in the open waters and small tidal channels," says Ramona Swenson, restoration ecology program manager with Environmental Science Associates. "The fish and wildlife service identified several years ago that the historic loss of wetlands as well as water diversions really impaired Delta smelt's ability to survive."

WES creates wetlands as part of restoration projects all over California. Wetland habitats not only benefit the Delta smelt, but also provide migrating juvenile salmon a place to find food and escape fast moving river channel waters on their way to the ocean.

"When those young fish are migrating out to the ocean, they need some places to feed along the way to grow and become larger," Swenson says. "So places like this are really valuable for salmon, not just in one place but along that whole migration route."



NATURAL INFRASTRUCTURE

How wetland restoration can benefit California's water distribution dilemmas

BY KRYSTA SCRIPTER

California's water systems have deteriorated over time—making aquatic habitat banking crucial not just for water flow, but also water availability.

"I think California is obviously unique in that it's water-challenged in a few different ways," says Sara Johnson, who works with the Ecological Restoration Business Association. "Both in water scarcity and then additionally when you do have water available or you do have a flooding event, almost (all) natural systems have been altered so that they can't necessarily handle that quantity of water."

Wetland habitat restoration, which can include floodplains, is one method of maintaining and diverting water resources in the event of flooding or scarcity.

"Being able to return to these natural states and kind of undo the gray infrastructure and constraints that were put in place in the state's water systems over the past several years is a real recognition of the value of our ecosystems, the strength that they offer in their natural state to make communities more resilient," says Johnson.

A lot of California's man-made (or "gray") infrastructure has affected how

water runoff and flooding are dealt with, but by creating wetlands and re-connecting floodplains to rivers, Johnson points out, water can be managed in ways that are both safer and more ecologically sound.

and phosphorus that may be high. And so you're using nature as natural flood control and natural filtration, rather than relying on, say, the traditional gray infrastructure of levies or some other dam system to try to control that."

Johnson says mandatory environmental mitigation is just one example of California's commitment to preservation and resiliency, a theme she's seeing across the country.

"We're seeing at a national stage now these themes of resiliency—everyone's talking about resiliency and natural infrastructure, rightfully so," Johnson says. "It's finally becoming a part of that conversation."

The success of habitat banking isn't just about one goal, like water preservation or filtration. Rather, it's about ensuring the best possible outcome for a variety of concerns, from water management to species protection.

"That's what these companies specialize in—going out and finding a key location where it really will make a difference in the overall floodplain," Johnson says. "So it's not just restoring, but it's also enhancing and going a step beyond the state that some of these systems may have been in 50 years ago."

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about resiliency and natural
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SARA JOHNSON
Ecological Restoration
Business Association

"By giving the water a place to go with these restored floodplains, you're funneling that water toward a location where it can be used," she explains. "It can be filtered through a natural system that will also remove things like nitrogen



WES land stewardship team monitors fish populations.
PHOTO COURTESY OF WESTERVELT ECOLOGICAL SERVICES

VALUING OPEN SPACE

How California's commitment to the environment is furthered by habitat banking

BY WHIP VILLARREAL

When it comes to habitat banking, bigger can be better.

"Prior to habitat banking, most developers had to come up with their own solutions for these habitats and often they would buy small parcels of land and commit that as their environmental offset location," says Matt Gause, Ecological Resources and Land Stewardship Director for Westervelt Ecological Services (WES). "These small 20- or 30-acre parcels would just persist and oftentimes would end up getting surrounded by other developments and become degraded, trespassed and neglected."

Instead, habitat banking consolidates conservation efforts where they can do the greatest good. So far, WES has been part of more than 30 projects in Northern California and the Central Valley, helping flood control as well as wildlife.

An example is the Cosumnes Floodplain Mitigation Bank about 20 miles south of Sacramento near the Cosumnes River preserve. Covering about 500 acres, the former vineyard and farm fields flooded every 10 to 15 years, creating huge expense and headaches for its owners as well as neighbors. In 2009, WES started its mitigation bank project at the site, and encouraged nature to take its course.

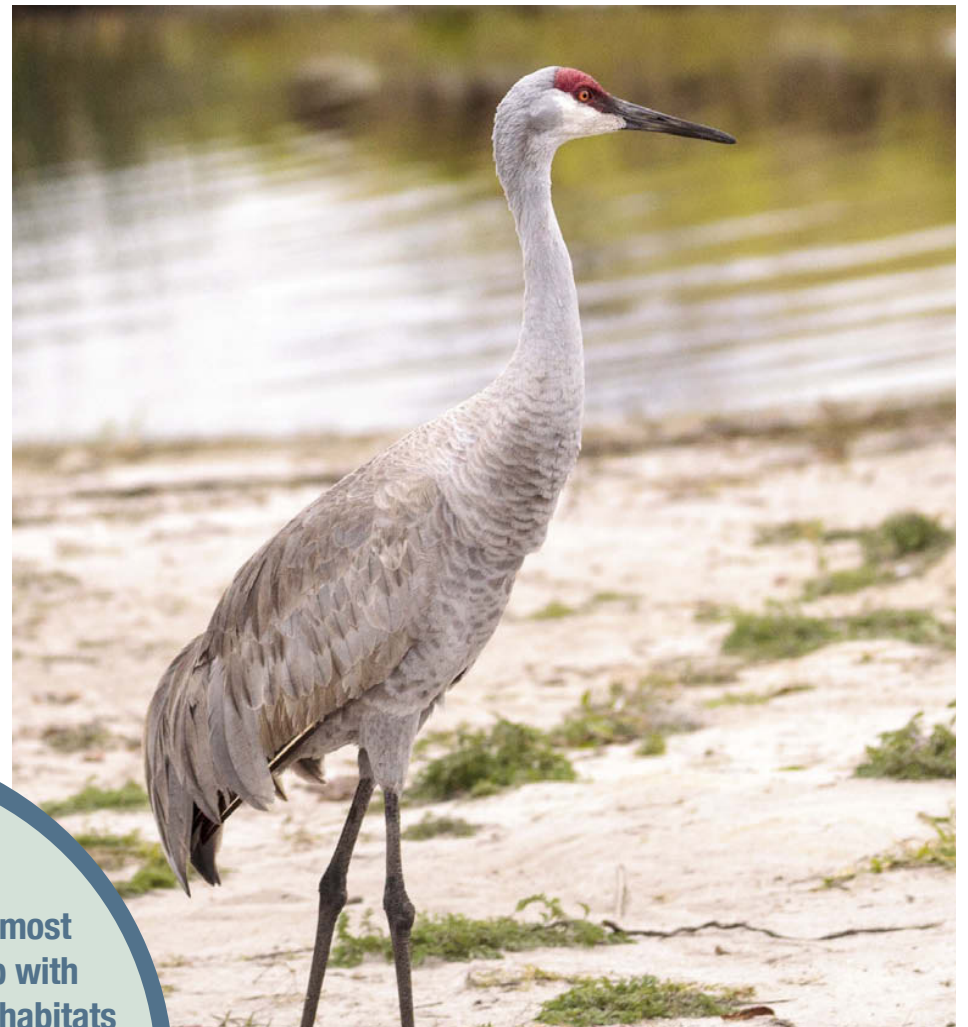
"Acres and acres of willows and cottonwoods have sprung up," says Gause, who has worked on this project since its start. "It's become a genuine riparian habitat.

"Prior to habitat banking, most developers had to come up with their own solutions for these habitats and often they would buy small parcels of land and commit that as their environmental offset location."

MATT GAUSE
Ecological Resources & Land Stewardship
Director for WES

"It's a really neat project," he adds. "I go back at least once a month to see the changes. You can hear 50 different bird species. You can see Sandhill cranes in fall. Swainson's hawks make their home there as well as a host of native raptors. When there's a big rain, it's crowded with bird life; California quail, American white pelicans and so many more."

That's part of stewardship, Gause explains. "At WES, we have a really strong attachment to our projects and learn from them. Each is a living, learning



The Sandhill crane, one of North America's biggest birds, benefiting from habitat banking.
PHOTO COURTESY OF WESTERVELT ECOLOGICAL SERVICES

laboratory for the next project. Over the years, you can see results. It's very rewarding."

Companies like WES are made up of trained ecologists and biologists who know how to manage the land properly for years or decades to come.

"Regulations that protect the environment and interpretation of those regulations have directly correlated to the efficacy and benefits we see in habitat reserves," Gause says. "It boils down to the citizens of California and how much they value the natural environment and keeping it around. I think we all need to keep that in the back of our minds; how much we value having our environment and open space intact as we move forward."

PROTECTED SPECIES

Numerous wildlife species and habitats in California have benefited from mitigation banking. The Central Valley was once a vast network of marshes and wetlands. As early as the 19th century, farmers and pioneers were creating levees to reduce marshlands and vernal pools and protect their agricultural interests. With habitat restoration from mitigation, native wildlife species are regaining habitat critical to their survival.

A few threatened and endangered birds in California benefiting include the Burrowing owl, White-faced Ibis, Swainson's hawk and Sandhill cranes. Other wildlife species benefiting from these large swaths of land include the Giant garter snakes, San Joaquin kit foxes, California tiger salamanders, Callippe silverspot butterflies, and western Spadefoot toads.

A MODEL FOR THE FUTURE

WES's preservation efforts for the California High-Speed Rail Authority illustrate the power of an effective partnership

BY MATT JOCKS

There is balance in nature—and preserving it takes balance, too, in the offices and on the construction sites needed to make progress and conservation work together.

It was a hard-earned lesson for the California High-Speed Rail Authority (CHSRA), the agency charged with producing one of the most important projects that will carry California to its future.

At the Lazy K Ranch, near Chowchilla, the CHSRA had assumed the job of developing hundreds of acres near the Chowchilla River as a mitigation site. It was not a task the CHSRA was built or equipped for.

“It was a huge lift,” says Margaret Cederroth, Director of Sustainability and Planning for CHSRA.

“Our internal staff is small, so mitigation activity at this scale was daunting.

“We needed a partner with the skill set and capacity to get this done well—and Westervelt Ecological Services has proven to be a great fit.”

“This project plays a tremendous role in shaping California’s growth and accommodating future generations. The mitigation activity must be leveraged to the benefit of the state’s biodiversity and natural lands conservation.”

MARGARET CEDEROTH, DIRECTOR OF SUSTAINABILITY AND PLANNING
California High Speed Rail Authority

WES has taken on the heavy lifting of procuring the acreage and meeting the mitigation requirements for the preservation of wildlife habitat. WES involvement has allowed the high-speed rail project to proceed while minimizing the impact on both wildlife and agricultural land.

“It has really enabled us to focus more on our core environmental planning work,” Cederroth says. “We know there are always going to be challenges, but with this partnership we have confidence that the mitigation will get done.”

The work of CHSRA and Westervelt represent one of the best illustrations of the power of mitigation. It’s a project that spans much of the state and is designed to ultimately benefit the economy and environment. While some environmental disruption is inevitable in its construction, the partnership with WES is designed to minimize and mitigate that disruption.

In the Central Valley, the project has contributed to the conservation and restoration of almost 2,400 acres — and is on track to add more than 2,000 additional acres by the time the first

segment is completed in 2022. Some of this land are larger parcels connected to existing habitat, maximizing the overall benefit of the preservation work.

On the economic side, more than \$1 billion in income and \$3.3 billion in economic output were generated between July 2006 and June 2019 by the high-speed rail project. That included the involvement of 173 Central Valley small businesses and more than 4,000 construction workers.

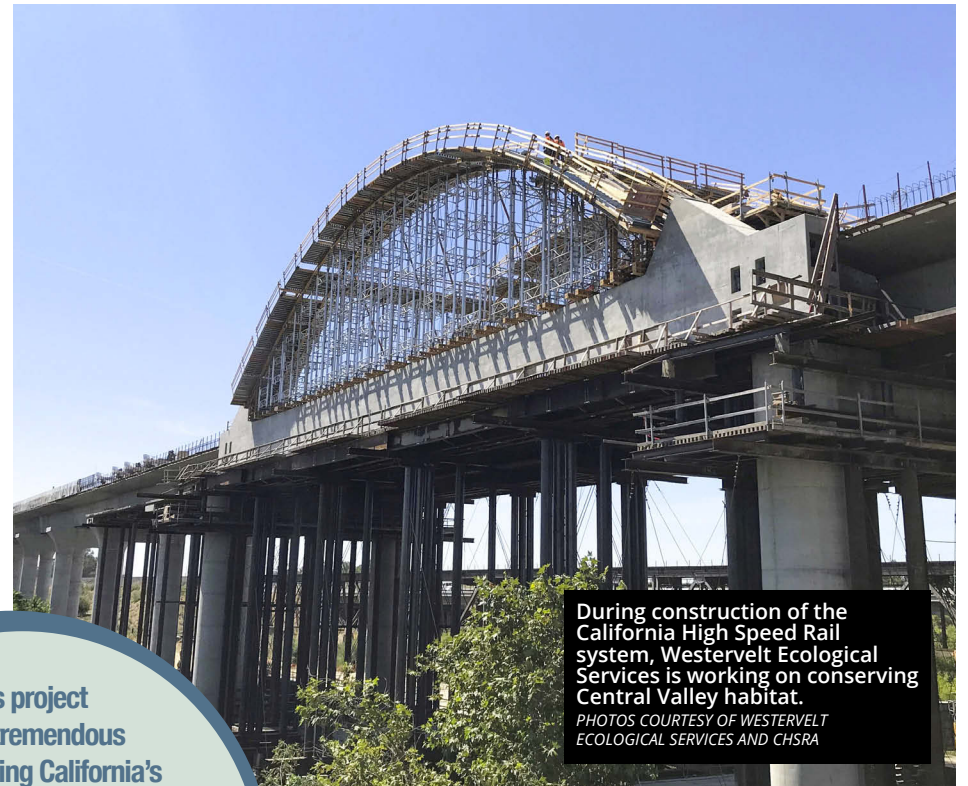
The partnership with WES is particularly vital, given the limited size of CHSRA.

“We are intended to be a lean organization,” Cederroth says.

When completed, in addition to providing the environmental benefits of electric rail, the CHSRA project will reduce the eight-hour San Francisco-Los Angeles road trip—or 10-hour traditional rail trip—to three hours.

The short-term mitigation and long-term benefits have allowed CHSRA to develop candid relationships with the farmers and environmental groups concerned with potential disruption.

“This project plays a tremendous role in shaping California’s growth and accommodating future generations,” Cederroth says. “The mitigation activity must be leveraged to the benefit of the state’s biodiversity and natural lands conservation.”



MITIGATION 101

Westervelt regional director Hal Holland covers the basics of habitat banking and conservation solutions

BY MELANIE ANDERSON

What are mitigation and conservation banks?

Mitigation and conservation banks are forms of providing environmental offsets for impacts related to projects. A mitigation bank relates to wetlands and a conservation bank relates to species.

The banks are typically created by private investment ventures, so our company is actively investing in the conservation landscape through developing these banks. The process involves identifying and securing property that has appropriate habitat for either species or wetlands, getting regulatory agency approval for the process of conserving the acreages, and then habitat values are approved into credits which can be sold to offset future impacts.

What types of projects use these banks?

It can be any type of public or private project. These include infrastructure projects such as bridges, levees and power lines. It can also be private projects such as a new housing development or commercial building.

How do project applicants purchase credits?

The project applicant goes through negotiations with the regulatory agencies to get a permit. If there is a bank within the service area, they can propose in their permit that they're going to purchase credits to provide their offsets. If there's not a bank, then they'll look into permittee responsible mitigation, which is developing a one-time conservation or mitigation project specific to their permit. Westervelt can do either form of fulfilling permit obligations.

What types of experts are involved with developing and operating the banks?

One thing that's relatively unique for Westervelt Ecological Services compared to other mitigation providers is that we're doing everything from land acquisition to stewardship. We have landscape architects on staff that do design work and ecologists that specialize in biologic factors on the sites. We've got a team that does long-term land stewardship and monitoring because, once we record the conservation easement, we manage the property in perpetuity.

Tell us about the Little Egbert Tract in Solano County. Why is this area a priority?

The Little Egbert project is located at the confluence of Cache Slough and the Sacramento River—an area that's considered a hot spot for fish species. Over the past 150 years, a lot of the Sacramento-San Joaquin Delta has been leveed off, so there's very limited habitat remaining for these species.

The 3,480-acre agricultural property has a restricted height levee on it. In both 1986 and 1997, the levee breached and the property flooded, causing significant financial impact for the farmer who had to pay out of his own pocket to restore



A mitigation bank specifically helps restore or preserve wetlands.

PHOTO COURTESY OF WESTERVELT ECOLOGICAL SERVICES

"We've got a team that does long-term land stewardship and monitoring because we keep these properties in perpetuity..."

HAL HOLLAND
Regional director, Western Region,
Westervelt Ecological Services



pressures on the adjacent agricultural lands, and create habitat elevations so species have the ideal habitat once the floodplain is reconnected to the waterway.

What's your approach to working with local communities?

On a project such as Little Egbert, we work with the community, the county, and regional planners in an open and transparent way to make sure that we're molding the project based on what's going to be good for the fish and for the region—and that it's going to be sustainable.

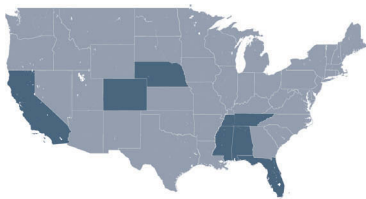
the berm along the Sacramento and Cache Slough waterways. There's been a longstanding concern that this property, if it were to breach again, would not be reclaimed for agriculture and would just be a standing open water area.

What's the objective?

We're looking to work directly with the state to develop the Little Egbert Tract as a multi-benefit project. The objective is to strategically restore this property back to floodplain. This outcome will lower flood elevations upstream to reduce flood

Habitat banking ADDS UP

Westervelt Ecological Services (WES) is a nationwide leader in environmental mitigation and conservation. To reach its conservation goals, WES collaborates with private landowners, businesses, land trust organizations, nonprofits, and government entities. The company's efforts help restore and conserve America's streams, wetlands, and wildlife habitats. The goal is to protect precious natural resources for generations to come.

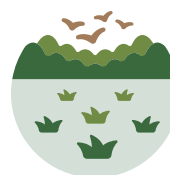


WES restored habitat in **7 states:**

Alabama
California
Colorado
Florida

Mississippi
Nebraska
Tennessee

WES established
27 mitigation
and conservation banks.



WES restored
20 miles
of streams, rivers
and waterways.

WES helped conserve
30,000 acres
of habitat for
over 50 species
that are threatened and endangered



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