

Ecosystem restoration reverses 160 years of habitat decline



Lynne Dodd and her team of biologists assess plant and wildlife along the shoreline before re-introducing missing or scarce native plants.

Story & photo by Jim Frisinger
USACE, Fort Worth District

Lynne Dodd, a research biologist for the Environmental Laboratory, U.S. Army Engineer Research and Development Center, still recalls her summer hike three years ago. She walked drainages between subdivisions in Frisco, a booming suburb, conducting a pre-construction vegetation survey.

The first settlers to the Peters Colony 160 years ago encountered bison and a vibrant prairie. It spread across rolling hills that overlook rich North Texas riparian bottomlands. This Blackland Prairie "once exploded with a riot of colorful wildflowers and grasses," wrote Matt White, author of *Prairie Time*. "From flowers that bloom barely above the ground to others 10 feet or more in height, the variety of plant life that existed within just a few feet was remarkable."

Dodd took note that many species once common 160 years ago were missing: blackjack oaks, red oaks, pecans, bur oaks and red mulberries. Their fruits and nuts sustain wildlife in a healthy, diverse ecosystem.

Her team found only small patches of Blackland Prairie species, big and little bluestem, black-eyed Susans, side oats gramma and snow on the prairie. Powerful invasive species Johnsongrass, giant ragweed and cheatgrass had moved into the area as ecological disturbances occurred, replacing many of the Texas natives.

Settlers and ranchers share some of the blame by clearing lands and building log homes.

The Corps of Engineers impounded the Elm Fork to create Lewisville Lake for water supply and to reduce flood risk.

Dodd said the surviving trees were "disturbance specialists," cedar elm, green ash and sugarberry, that can survive lake flooding.

With little quality wetland acreage available, migratory waterbirds were few.

Jim Giocomo of the American Bird Conservancy said habitat loss throughout the Central Flyway hurt bird breeding. But rather than just charting decline, Dodd and her colleagues were the vanguard for a turnaround.

The City of Frisco and USACE, Fort Worth District staged an environmental revival along more than 200 acres of Stewart and Hackberry creeks in partnership under Section 1135 of the Continuing Authorities Program. The national program helps habitat recover from the impact of Corps of Engineers projects, such as Lewisville Lake.

For George Purefoy, Frisco city manager, the project would take a slice of suburban environment back to its past glory.

For the first time, the city could connect to outdoor recreation at Lewisville Lake. It would help achieve Frisco's vision to have a natural greenway cutting across the city from the northeast to the southwest.

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To get there, the Corps team designed six ponds to capture enough runoff to create six wetland plant communities at the heart of the project. Its Frisco partners worked with subdivision developers to obtain sufficient land adjacent to Corps-controlled floodplains. An excavation contractor built berms and water control structures. Biologists actively re-introduced missing or scarce native plants. But when the earthmovers moved in, there were some who were alarmed.

"They were used to that view of the bottomland hardwood forest so the disturbance this construction created caused a little bit of an uproar," said Jon Loxley, CAP program manager. "We took great care to limit our area of disturbance to maintain as much of the remaining, valuable edge habitat area as possible."

"The city worked face-to-face with the neighbors to help them understand that this was part of the construction process, which would look better over time," he said.

It worked. Neighbors brought the crew

tea. Another used her garden hose to water newly planted trees. Three miles of trails are already getting regular use.

"The ability to have an urban neighborhood so close to a very naturalized area is what the project was all about," said Rick Wieland, Frisco assistant director of Parks and Recreation. "It gave us a great opportunity to partner with the Corps of Engineers and to be able to provide something that our residents have always desired."

Twenty-one different aquatic species make these wetlands far more diverse than typical willow-cattail wetlands nearby.

All wetlands retain water during flooding and improve water quality by naturally filtering sediments and pollutants from runoff.

Nesting boxes went up to attract wood ducks and mergansers. Berms were seeded with 5 dozen grassland species. Old field habitat was planted with 25 different trees, shrubs and vine species.

Reforestation creates a diverse

seedbank that will benefit adjacent tree savanna and riparian forest for future generations.

Loxley said great credit is due to Dodd and other talented research biologists at the Corps' nearby Lewisville Aquatic Ecosystem Research Facility. Its nursery and staff raised all 4,000 plants placed so far and will help Frisco learn how to maintain the biodiversity that is the soul of ecosystem restoration.

It's already off to a good start. Eastern screech owls occupied one nesting box. Mallards and American wigeons made migratory pit stops in February.

Post-project habitat assessments using Habitat Evaluation Procedure analysis can measure indicator species: ducks, barred owls, Carolina chickadees, eastern meadowlarks, fox squirrels, raccoons, eastern cottontails and red-tailed hawks.

Jayce Proctor, a graduate student at the University of North Texas, is collecting migratory waterfowl numbers here for a master's thesis.

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