River Life: Maintaining 'biological hotspot' starts ugly to restore beauty

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BRISTOL -- Restoring nature in one of the nation's top biodiversity hotspots doesn't start pretty.

On 200 acres of **Torreya State Park**, dense stands of sand pine forest have been cut down, leaving only stumps. The carpet of pine needles and deer moss on the forest floor has been scraped aside, leaving only a sandy, barren moonscape.

Stumps from cleared sand pine and mostly bare ground mark 200 acres at Torreya State Park near Bristol. The cleared land will be planted and restored to the longleaf pine, and wiregrass ecosystem that previously was there. Photo by Bruce Ritchie.

However, within three years the area will have made a startling transition as it becomes carpeted with lush yellow wiregrass and the seedlings of a new longleaf pine forest.

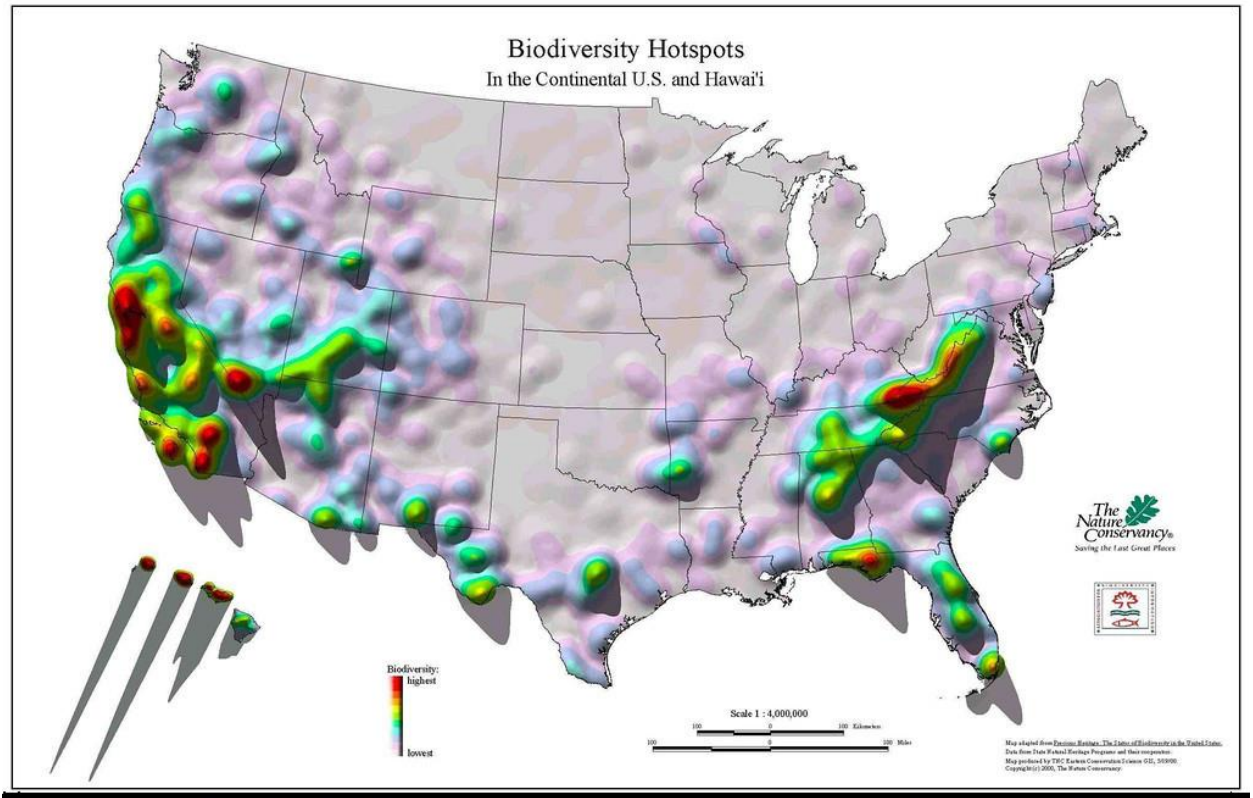
Gopher tortoises, turkeys, Bachman's sparrows and other wildlife found in the rare longleaf pine-wiregrass ecosystem will return possibly along with indigo snakes reintroduced to the region, said **David Printiss**, north Florida conservation director for **The Nature Conservancy**.

Within 10 years, young trees will tower over visitors, Printiss said, as he looked over a restored landscape on The Nature Conservancy's Apalachicola Bluffs and Ravines Preserve near Bristol.

"The nice open vista -- you can see more than a quarter mile off in the distance -- that is the target," Printiss said.

"That's what we're going for: the restored look, the proper structure of the longleaf forest. Now we just need these trees to get bigger."

Printiss said the restoration work is important to restore and maintain plants and wildlife in the Apalachicola River region, one of six "biological hotspots" in the United States designated by scientists. The designation is based largely on the number of plant and animal species within a region and the number that are at risk of extinction.



These are the six biological hotspots in the United States: The Florida Panhandle including the Apalachicola River, the southern Appalachian Mountains, Southern California, the Death Valley region, the San Francisco Bay area and Hawaii. Map copyrighted by The Nature Conservancy, printed with permission, and adapted from "Precious Heritage: The Status of Biodiversity in the United States."

More than 50 rare fish and wildlife species are found around the Apalachicola River, plus dozens of rare and threatened plant species. Also more than 30 endangered plant and animal species are found across the South in the reduced acreage of the longleaf pine wiregrass ecosystem.

Restoring the forest along the Apalachicola River means removing sand pine, which naturally live only near the coast in North Florida, Printiss said. Few plant and animal species live among the dense, shaded rows of sand pine.

Few plant species, and therefore few animals, live within a sand pine plantation at Torreya State Park, says David Printiss, north Florida conservation director for The Nature Conservancy. His group is removing the rows of sand pines and is replacing them with longleaf pine and wiregrass ecosystems. Photo by Bruce Ritchie.

One of Florida's oldest state parks, Torreya covers 13,725 acres after the state in 2002 added 7,000 acres along Sweetwater Branch, according to the **Florida Department of Environmental Protection**.

The Nature Conservancy has completed restoration of 1,200 acres of longleaf pine forest at Torreya State Park since 2007 at a cost of about $420,000, Printiss said. The **Florida Park Service** and the **Florida Fish and Wildlife Conservation Commission** also have been involved in the restoration work.

The group also has restored 2,800 acres of pine forest at its Apalachicola Bluffs and Ravines Preserve covering 6,295 acres adjacent to the state park.

The group received funding for restoration from the **Southern Co.**, the **National Fish and Wildlife Foundation**, the Florida Fish and Wildlife Conservation Commission and the **Orianne Society**, which seeks to reintroduce the threatened indigo snake to the TNC preserve.

Returning fire regularly to the forest to clear underbrush and promote plant diversity also is a key part of restoration, Printiss said. The Nature

Seeds from wiregrass and other plants are vacuumed from the floor of newly restored forests and kept at The Nature Conservancy's Apalachicola Bluffs and Ravines Preserve near Bristol until they can be spread over a newly cleared area as part of the longleaf pine forest restoration. Photo by Bruce Ritchie.

Conservancy is using techniques that have evolved through nearly 30 years of experience in replanting wiregrass groundcover, a critical component of the fire-dependent ecosystem.

While scientists more than 20 years ago didn't know that seeds helped spread wiregrass across the landscape, The Nature Conservancy now has perfected techniques for vacuuming a mixture of wiregrass and other seeds from the forest floor.

The sand pine plantation with its rows of trees is cleared by tractors, a process that Printiss describes as an "industrial operation." Then a tractor pulls along another machine called Grasslander to drop the seed mix -- about a ton of it at a time. The Grasslander's row of tires presses the seed mix into the bare, sandy soil to help it start growing.

The Grasslander planter distributes seed mix over the bare ground for forest restoration. Pulled by a tractor, the Grasslander measures the amount of seed that is spread and its tires push the seed into the sandy soil to help them germinate. Longleaf pine seedlings are planted by hand during the process. Photo by Bruce Ritchie.

The Nature Conservancy previously used a blower to distribute the seed, but that required five people to operate instead of one for the Grasslander. Using the blower, Printiss said, also could result in too much seed being used while at the seed sometimes would blow away or wouldn't sprout at other times.

Standing over the sand pine stumps and scraped ground extending off into the horizon, Printiss said it's a tough sell to convince the public that the rough clearing is environmental restoration.

But he said it becomes easier when people see the 3-year-old restored forests with its wavy yellow wiregrass and emerging long leaf pine -- and see the wildlife as it finds a new home in the forest.

"It wasn't three months after we did the planting and the plants were just starting to come up, we had bobwhite quail, turkey (and) I found a gopher tortoise burrow out there," Printiss said. "I mean, it was immediately."

"You know what they say: 'If you build it, they will come'," he said. "We built -- and they're still coming."

Three years after clearing and replanting, a young longleaf pine has grown above the newly planted wiregrass and other native ground cover. The Nature Conservancy will vacuum seeds from this new forest to use in growing wiregrass in another area cleared for restoration. Photo by Bruce Ritchie.

Related Research:

* "Looking at the Big Picture: Apalachicola River and Bay," by the Northwest Florida Water Management District
* The Nature Conservancy Apalachicola Bluffs and Ravines Preserve
* The Orianne Society Eastern Indigo Snake Initiative
* "Ecosystems: What We're Doing" by the Southern Co.

David Printiss of The Nature Conservancy looks across a restored longleaf pine forest at the group's Apalachicola Bluffs and Ravines Preserve near Bristol. "The nice open vista -- you can see more than a quarter mile off in the distance -- that is the target," Printiss said. Photo by Bruce Ritchie.

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