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Researchers investigate rare iron-fen outside Silverton

Wetland is one of the Earth's unique features

By Jonathan Romeo (/staff/48-jonathan-romeo) Herald staff writer
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Anthony Culpepper, an ecologist with Mountain Studies Institute, walks into the mushy wetlands just west of Silverton to document plant life left behind when glaciers retreated 10,000 years ago during the last ice age.

Culpepper and a summer intern are taking part in long-term project to study changes in vegetation at one of the rarest ecological features on Earth: the iron fen.

"Iron fens are a global phenomenon," Culpepper said. "From a researcher standpoint ... you have a biodiversity that's a Pleistocene relic."

There are only a handful of known iron fens around the country, and even fewer documented globally. But here in San Juan County, researchers have spotted anywhere from four to 10 of the unique wetlands.

And, the high-elevation Colorado county is also home to the largest iron fen in North America at 30 acres, called the Chattanooga, which motorists pass on the west side of U.S. Highway 550 outside Silverton before Red Mountain Pass.

Iron fens are a type of wetland considered unique because of their highly acidic water with a 4.5 pH or less, which results in a diverse array of plant life. Many of these plant species are found only in the boreal forests of Canada and Alaska, more than 1,200 miles away, such as the Sphagnum mosses.

The wetlands have attracted the attention of researchers and scientists from all over the world, many of whom believe it is essential to protect the ecological rarity from adverse impacts.

Looking for the water source

One of the key components and previously unknown elements in this effort was understanding and locating water sources for the iron fens. So, the River Protection Workgroup initiated a study to do exactly that.

"These iron fens are unique, and any land disturbance that could potentially affect their hydrology, you need to know about," said Mark Oliver of Basin Hydrology, a Durango-based river, watershed and wetland consulting service. "You need to know where that water is coming from."

Last fall, Oliver and other researchers started investigating the source of the Chattanooga iron fen's water. They used seismic surveys, water testing, age dating and drilled wells.

The iron fen, at an elevation of about 10,150 feet, has a long history. Drained dry by Western settlers who wanted to use flat land as a staging area for mining operations, the area has since been restored, mostly through the efforts of Mountain Studies Institute (http://www.mountainstudies.org/).

The research found water was not coming from deep groundwater, which is about 16,000 years old. Instead, water found in the iron fen was closer to 500 years old, leading researchers to believe it was coming from surface runoff.

Matching water quality found in the iron fen to water tested in the surrounding area, researchers pinpointed a location upslope, west to northwest of Chattanooga with highly mineralized geology from prehistoric volcanic activity.

Now, should any operation occur, such as road construction or mining, planners can take into account where Chattanooga gets its water so as not to adversely affect it.

Across the West, protecting and restoring wetlands are a priority, especially in combating climate change.

Best estimates show there were probably 2 million acres of wetlands before Westerners settled in Colorado. Now, that number has been cut in half because of development and other human impacts.

And while wetlands cover a very small portion of the landscape – about 1 to 1.5 percent – it's estimated that 75 percent of all wildlife in the state depend on the habitat.

Marcie Bidwell, executive director of Mountain Studies Institute, said wetlands account for 2 percent of the Earth's surface but sequester 20 percent of emitted carbon.

"(The wetlands are important) in figuring out the world of climate change," she said.

Old mine feeds iron fen

Bill Simon, a retired coordinator of the Animas River Stakeholders Group, said there's a shallow mine just upslope of the Chattanooga iron fen that was drilled in Silverton's early days that turned out to be a bust.

The group found that the mine was one of the top 33 contributors to metal loading in the Animas River watershed, dumping high amounts of aluminum and iron into Mineral Creek.

However, Simon said the group determined it wouldn't be prudent to clean up the site, which would have cut off a major water source to the iron fen.

"Water used to enter the iron fen from springs and seeps, and now it does from a mine and it's gone on for more than 100 years," Simon said. "There's no point in changing it. It wouldn't serve any purpose."

Indeed, the Environmental Protection Agency did not list the mine in its recently declared Superfund listing of polluting mines around San Juan County, which includes 48 mining-related sites.

The 10.33-acre property, which includes the Gold Finch Mine, is listed for sale for $177,700 and is marketed as an "extreme skier's delight," where one may build a home.

Regardless, Oliver and others would like to implement a second phase of the study to validate their findings and possibly expand research to other, nearby iron fens. However, the River Protection Workgroup disbanded this spring, and its funding with it.

"I'm crossing my fingers, but I'm just not sure if it's going to happen," Oliver said. "There's a lot of interest in it. Most people aren't aware because it just looks like a wetland, but it's very unique and there's very little known about it."

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