

Tracking climate impacts in world's southernmost tree

By KRISTIAN FODEN-VENCIL
Oregon Public Broadcasting

For scientists, building a true understanding of how climate change is affecting the planet is complicated. A conversation in a Portland pub led to one solution — find the tree at the bottom of the world and see how it's being affected by rising temperatures.

The idea took root a few years ago when University of Colorado associate professor Brian Buma attended a landscape ecology conference in Portland. Afterward, he went out for a beer with Portland State University geography associate professor, Andrés Holz.

Common interests had them chatting about everything from climate change to a study of the northernmost trees in Siberia. And that got them thinking.

"The southern hemisphere is very understudied compared to the northern hemisphere," Buma said.

Climate change likely impacts trees at the top of the world differently from those at the bottom. The northern hemisphere is dominated by large, dry land masses, such as Russia and North America, whereas the southern hemisphere is dominated by oceans.

The scientists pitched the idea of an expedition to find the southernmost tree to the National Geographic Society, which agreed to sponsor a team of a dozen scientists along with the Universidad des Magallanes in Chile. The researchers studied everything from the southernmost tree to invasive species, birds and possible ancient human settlement.

The first part of their expedition was simple. Satellite imagery showed the southernmost tree was likely on Cape Horn at the bottom of South America. But once they got there, Holz said nothing could have prepared them for the conditions.

Winds were so strong and so constant that unsheltered vegetation grew sideways. They think ice crystals in the wind slice new buds, so only growth on the sheltered side of plants survive.

In some spots the team



Andrés Holz

Portland State associate professor Andrés Holz stands next to the southernmost trees on the planet.

'THE SOUTHERN HEMISPHERE IS VERY UNDERSTUDIED COMPARED TO THE NORTHERN HEMISPHERE.'

Brian Buma | University of Colorado associate professor

had to literally walk on top of trees to get around.

"Sometimes you would ... step on a branch and you thought it would hold and you would go all the way down to your hips or even to your chest. And then up again. Especially with heavy backpacks," Holz said.

Walking wasn't the only problem. Cape Horn is one of the most hazardous shipping routes in the world. There are the high winds, strong currents, icebergs and even waves known as greybeards, long, powerful waves that grow enormous as they travel around the world, unbroken by land.

Holz said just hauling supplies off their boat was hazardous: "For a couple of

days we just had pasta but no sauce, because that was in a different box. And it was so risky to get in and out."

To be certain they found the actual southernmost tree, the team had to check the sea cliffs. That meant hiring a local chef, who owned a 65-foot wooden boat. He let them know mid-voyage he'd never actually rounded Cape Horn before.

Holz said they chose a relatively calm day.

"That said, I was really dizzy," he said. "And then looking via binoculars trying to find the actual tree ... we didn't find anything, luckily, because otherwise we would have to climb down, rappel down and basically sample it."

Rappelling down a sea cliff in winds of 40 mph or more was not something they wanted to do, although a professional climber was part of the expedition. During their six-day stay, they experienced winds of more than 85 mph and lost two tents.

But by using GPS and walking a grid, the scientists did eventually identify the southernmost tree. It was a Magellan's Beech and was actually among a small clump of seven trees south of the island's main forest.

Holz said they decided these were the trees at the bottom of the world, rather than a collection of bushes, because their branches grew along one main stem — not multiple stems.

"The trees were all having that main stem, but it was all along the ground. And so you could see along 10 or 15 feet trees that could not go higher than five centimeters above the ground," Holz said. "It looks like a bulldozer went over the tree. Totally flattened it."

Holz took core samples and found the oldest trees were about 48 years old. They seemed healthy.

A big question for the team of scientists was why the tree line stopped with this particular clump. Holz said he doesn't think it was because of the cold: the trees are next to the ocean, so temperatures stay fairly constant around 40 degrees. Snow also doesn't usually stick. And scientists don't think nutrition was a limiting factor either, because penguins regularly deliver fresh guano to the soil.

Instead, Holz said he thinks it's the constant wind that stops trees from grow-

ing further south.

Now that scientists have baseline information for these southernmost trees, they hope track the impact of climate change. Similar research in Alaska found that willow trees grew bigger in warmer temperatures. Their branches poked through the snow, which led to more grazing winter moose in the area.

Holz said studying a precise geographic location, like one tree in one spot, is expensive. But it gives scientists an objective window on nature and a baseline they can use to track change and rates of change.

The hope is to see whether the tree line is moving south, and if so, how quickly. One thought is that a bird might ferry the trees' seeds to Diego Ramirez Island, 65 miles below Hornos Island. Those seeds might take root, perhaps eventually taking the title of southernmost tree even further south.

Album: Trail graduated from pots and pans to real drums in middle school

Continued from Page B1

With the help of Nevada Sowle, one of his closest friends, and Olaf Ydstie, who runs the Good Bowl food truck in Astoria and performs in Brian Bovenizer and the New Old Stock, he recorded the album in Ydstie's house in Astoria and at the OK Theatre in Enterprise. Shortly after, the pandemic hit and the band was only able to perform a few shows before a long hiatus.

"I'm really excited about the feedback from our first record — that's the biggest thing so far. Tons of kind words from other musicians and people I love," he said. "I'd like to release one album a year for the foreseeable future. The second Desolation Horse record is almost done, so it should be out in 2021."

On the album, all eight songs feature Trail's soft-spoken vocals and instrumentation. Some tracks feature guests, such as Luke Ydstie (The Hackles, Blind Pilot), Aly Hanson and Jeremy James Meyer.

An aspiring drummer

Trail moved to Astoria with Sowle when he was 19 from Moscow, Idaho, his hometown. At that time, he had made a single EP and released it in 2012. Sowle and Trail have spent the last six years touring with Mize and other groups, writing music and getting familiar with other Oregon bands.

Trail has been learning about music, conventionally and unconventionally, since he was too young to form memories.

As a kid, he would set up pots and pans to mimic a drum set. He and his sister would record cassette recordings together, and later he joined her in taking piano lessons.

Trail said playing the piano was difficult to become accustomed to because he learned best by ear, rather than reading sheet music. "I hated it at the time but now I'm certainly thankful for that foundation," he said.

He graduated from pots and pans to a real drum set in middle school, when he took drum lessons, and began to play at church and in his high school pep band.

Trail's resourcefulness and connection to his younger self haven't gone anywhere as he's built his career as a drummer. He recorded one of his favorite released songs, "Crumarine Creek," through the microphone of his iPhone.

"It's one that most people don't really notice. It's special to me because it's about my family, in a way, and the deaths we have witnessed together," he said. "It also talks about some property on Moscow Mountain that I spent many weeks running around on as a kid. I still go up there often."

Looking forward

Recently, Trail decided to put touring and music on the back burner to go to

school in Idaho. He hopes to tour during the upcoming summers.

"Books are the only thing that can match the pull of music for me," he said.

"I haven't really done anything outside of recording, touring and writing for the past six years besides drink beer and sit on porches. But I've had a few folks tell me that's alright, don't worry about it," Trail said. "I really admire artists who have multiple outlets, or a way to support themselves besides their art. I haven't sorted that out for myself yet but I'm working on it."

With big and small goals in mind, Trail said he's looking forward to continuing to put out new music with Desolation Horse.

"I'm so lucky to have a pool of folks I've met through playing in other bands who want to help me realize this vision," he said.

After school, Trail said he plans to end up back in Astoria with his friends. Past that, he hopes to continue to produce meaningful music and enjoy life's simple pleasures.

"In 10 years, I hope I'm still writing songs," he said. "I hope I'm still friends with all the folks I love. I hope I'm able to pay my rent and eat vegetables."

Morgan Grindy is a contributor to *The Astorian* and *Coast Weekend*.

'I'M SO LUCKY TO HAVE A POOL OF FOLKS I'VE MET THROUGH PLAYING IN OTHER BANDS WHO WANT TO HELP ME REALIZE THIS VISION.'

Cooper Trail | musician

Going to the Dogs!



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