Beaver Restoration by Federal Agencies

Forest Service

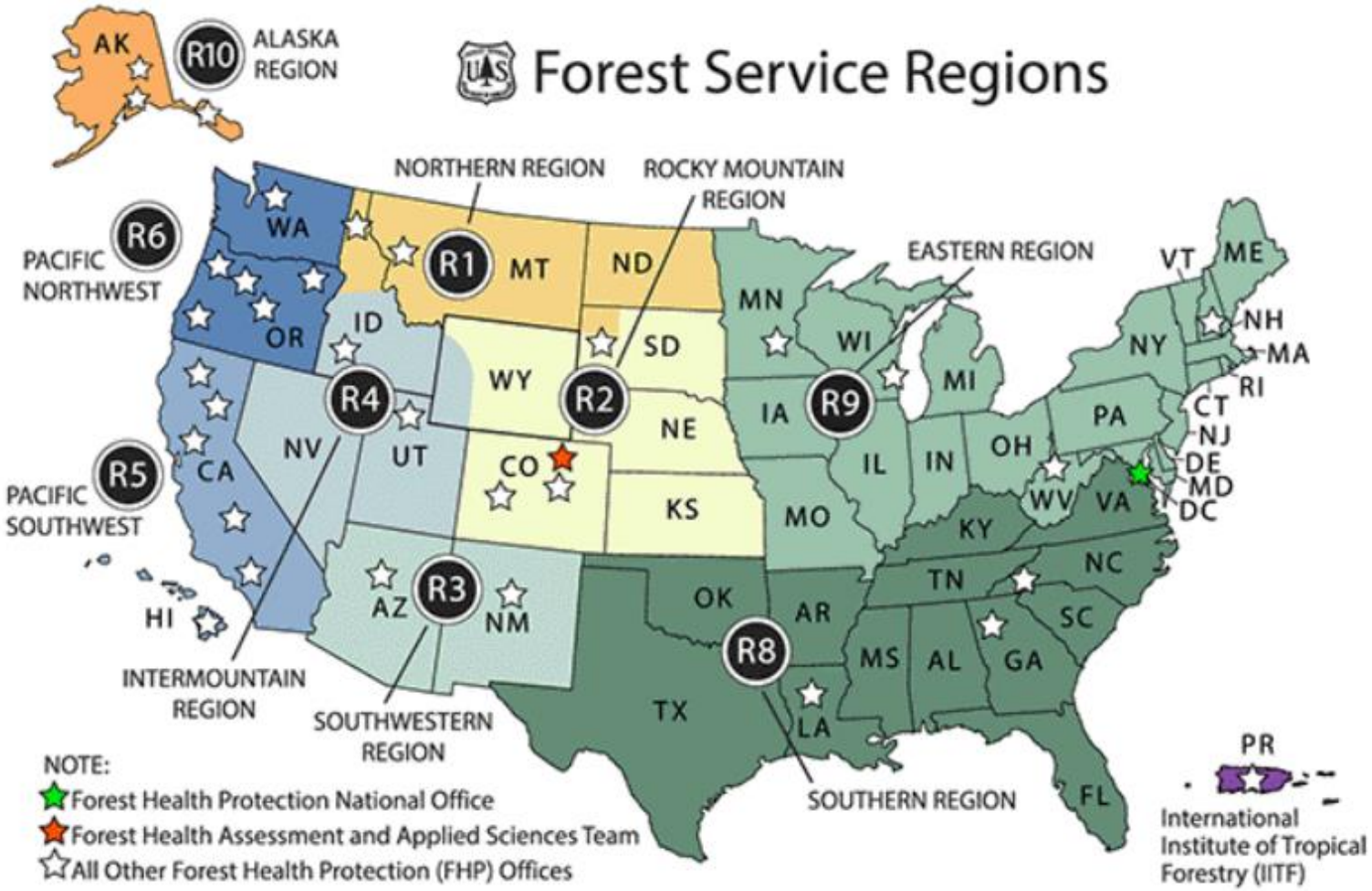
PRESENTED BY: ASHLEY HOM

NATIONAL PARTNERSHIP OFFICE, TRIBAL INTEGRATOR AND HYDROLOGIST

US Forest Service

- The mission of the Forest Service is to sustain the health, diversity, and productivity of the nation's forests and grasslands to meet the needs of present and future generations.

- The Forest Service motto, "Caring for the Land and Serving People,"



What's the Forest Service up to in all thing's beavers?

US Forest Service (.gov)
https://www.fs.usda.gov › fs-tags › beavers

beavers | US Forest Service

Being **beavers**. A group of people use shovels to dig within a stream. Meadow restoration experts and trainees from Trout Unlimited, Anabranch Solutions, and the ...

Being beavers

Meadow restoration experts and trainees from Trout Unlimited, Anabranch Solutions, and the Tübatulabal Tribe work to create a beaver dam analog in Troy Meadow on the Sequoia National Forest, July 2023. (USDA Forest Service photo by Jamie Hinrichs) Listen to the Story It appears that your...

wetlands, beavers

Firefighting beavers

A Beaver eating a willow branch. (USDA Forest Service Photo) When you think of beavers, what comes to mind? Busy engineers, pesky rodents, or how about firefighters?You may already know that beavers are a keystone species, meaning many other species of animals, plants and people in the...

Alaska Beavers Entertain Web Cam Viewers Around the World

[[{"fid":"41644","view_mode":"fs_width_0424px","fields":
{"format":"fs_width_0424px","field_fs_image_alt_text[und][0][value]":"A photo of A busy beaver gathers a tree sprig to help build his lodge on Steep Creek on Alaska's Tongass National Forest","field_fs_image_title_text[und][0][value]":"","field_fs_image_caption[und][0][value]":"A busy beaver gathers a tree sprig to help build his lodge on...

alaska, beaver cam, beavers, forestry, FS, mendenhall glacier visitors center, Steep Creek, Tongass National Forest

Working with Beavers to Restore Watersheds

[[{"fid":"39239","view_mode":"fs_wysiwyg_width_360px","fields":
{"format":"image_360px","field_file_image_alt_text[und][0][value]":"Kent Woodruff, U.S. Forest Service biologist, introduces a local resident named David to a soon-to-be-new-resident beaver as part of one of the project\u2019s education programs. (USFS Photo)","field_media_image_caption[und][0][value]":"Kent Woodruff, U.S. Forest...

beavers, forest health, forestry, FS, Okanogan-Wenatchee National Forest, restoration, U.S. Fish and Wildlife Service, washington state, watersheds

Being beavers

Within the forests of the Sierra Nevada mountains of California, meadows are in need of help. Fortunately, some eager beaver hands are up to the task.

Jamie Hinrichs
Pacific Southwest Regional Office of Communication
February 7, 2024

Meadow restoration experts and trainees from Trout Unlimited, Anabranch Solutions, and the Tübatulabal Tribe work to create a beaver dam analog in Troy Meadow on the Sequoia National Forest, July 2023. (USDA Forest Service photo by Jamie Hinrichs)

Firefighting beavers

Fighting fires, one beaver dam at a time

Julie Cleveland
National Forest System, Biological and Physical Resources
October 2, 2023

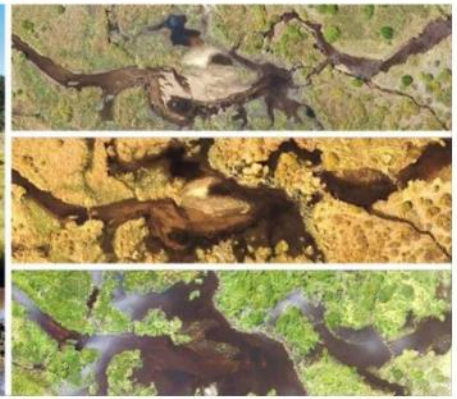
A Beaver eating a willow branch. (*USDA Forest Service Photo*)

The Tulalip Beaver Project in Washington relocates beavers to restore local watersheds. (*Photos courtesy of Tulalip Tribes*)

When you think of beavers, what comes to mind? Busy engineers, pesky rodents, or how about firefighters?

You may already know that beavers are a keystone species, meaning many other species of animals, plants and people in the environment depend on them and the habitat they build. But do you know that they also might be the key to helping reduce our wildfire crisis?

The landscape of the west used to have millions more beavers than it does today. The fur trade in the 1800s and early 1900s drastically reduced their population.



Left: Forest Service employees, volunteers, and partners install a BDAs in Trail Creek, Colorado. Right: Satellite imagery showing Trail Creek in Colorado. Top: before, August 2021. Middle: after one month, September 2021. Bottom: after one year, September 2022. (*USDA Forest Service photo by Ashley Hom*)

Ashley Hom with the Forest Service co-leads Colorado's largest beaver-based restoration project along with many partners. In just two years, this team built 316 beaver mimicry structures, about half of which were BDAs, and many of which were constructed by volunteers. They also restored historic canals, which are used by beavers as travel corridors and connect streams to floodplains and wetlands. This project re-wetted 45 acres of historic wetlands and improved 1.4 miles of riverscape.

Beaver-based restoration is an effective and natural way to reduce

Wildfire stopped at the edge of this beaver-created wetland in Idaho. (*Photo courtesy of Joe Wheaton*).

USDA Forest Service
U.S. DEPARTMENT OF AGRICULTURE

Pacific Northwest Research Station | Issue 259 | July 2023

Science FINDINGS

INSIDE

"Science affects the way we think together"
Lewis Thomas

Are You a Beaver Believer?
Reasonable Expectations for Beaver-Related Restoration

A work party builds a beaver dam analog in Bridge Creek, Oregon, a tributary of the John Day River. Beaver-related restoration tactics are being used to restore riparian areas, expand wildlife habitat, and improve forage for livestock. USDA Forest Service photo.

IN SUMMARY

Recruiting beavers—or building structures that mimic beaver dams—is an increasingly popular method for restoring streams and floodplains in the American West. Doing so can boost the growth of vegetation for cattle forage and improve habitat for fish and wildlife.

But with a nature-based solution for stream restoration, anything can happen.

Gordon Grant and Susan Charnley, scientists with the USDA Forest Service Pacific Northwest Research Station, studied beaver-related restoration projects throughout the U.S. West. This research revealed uncertainties and unintended consequences involved with beaver projects, providing a reality check for anyone wanting to invest in this type of restoration. With their colleague, Caroline Nash and others, Grant and Charnley devised a framework that identifies the processes that must occur to achieve commonly desired outcomes.

The framework is a useful communication tool, and the resulting conversations are helping landowners, land

- Recruiting beavers—or building structures that mimic beaver dams—is an increasingly popular method for restoring streams and floodplains
- Doing so can boost the growth of vegetation for cattle forage and improve habitat for fish and wildlife.
- Gordon Grant and Susan Charnley, scientists with the USDA Forest Service Pacific Northwest Research Station, studied beaver-related restoration projects throughout the U.S. West, with colleagues they devised a framework that identifies the processes that must occur to achieve commonly desired outcomes

USDA
United States Department of Agriculture

Pacific Northwest Region
Aquatic Restoration Project

Environmental Assessment

Forest Service Pacific Northwest Region Portland, Oregon June 2019

R6 Programmatic EA

Vertical Alignment: Riparian Restoration and the Wildfire Crisis Strategy

By Johan Hogervorst, Hydrologist, and Alison Kammer, Program Manager

For much of their careers, aquatic restoration professionals in the Enterprise Program have been evaluating how riparian restoration techniques (floodplain reconnection, beaver habitat enhancement, improved road crossing fish passage) protect greenspace and provide refuge during and after wildfires. Those implementing watershed improvement projects through the Watershed Condition Framework (WCF) launched in 2010 and still going strong, are now seeing an extension of that vision in the context of wildfire resiliency and recovery in alignment with Wildfire Crisis Strategy (WCS) goals and objectives.

Over the past decade, we have seen intact beaver wetlands that remain green and lush during and after wildfires. We have observed refugia for native plant, fish, and wildlife species in restored and unburned wetlands that serve as repositories for future recovery. We are working alongside local municipalities to reconnect and recover wetlands after wildfires as a mechanism to create habitat and filter sediment and nutrients post-fire. These projects are reducing threats to downstream landowners, bolstering carbon sequestration and aiding recovery of first foods important to our tribal partners. These projects can also be linked into potential operational delineations (PODs) for future wildfire preparedness.

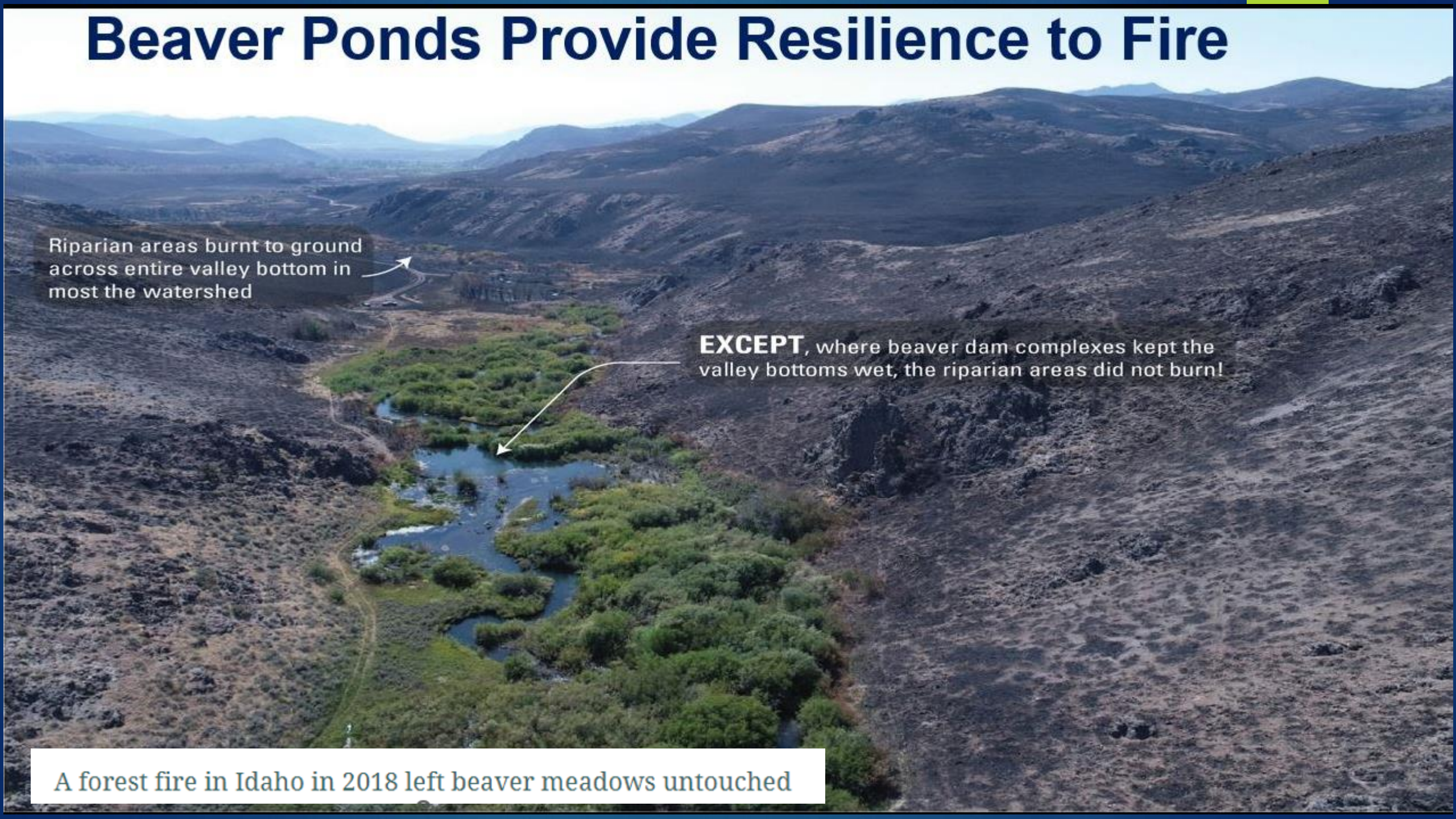
Klamath River Basin map showing dam removals in Oregon and California in 2024. Photo by Alan Kanaga of Capital Press.

As an example of WCS alignment with the Enterprise Program's restoration work, we have recently signed a charter to offer technical assistance for aquatic restoration to the Fremont-Winema National Forest and its partners in the Upper Klamath River Basin of Oregon. The entire 10-million-acre basin is the largest of the 21 WCS priority landscapes. Simultaneously, through the tireless work of First Nations, western states, federal agencies, irrigators, and conservationists, four large dams are being removed from the Klamath River in both Oregon and California in 2024, restoring volitional passage for Pacific salmon to the upper basin for the first time in several decades. The opportunity to work at scale to restore function to both upland and aquatic resources aims to create the most impact in intended outcomes of the WCS, WCF, Inflation Reduction Act, Bipartisan Infrastructure Law, and the Equity Action Plan. Enterprise Program's support through charters like this ensure the Forest Service is poised to maximize uplift for First Nations, local communities, endangered species, and ecological resiliency.

Beaver Complex on Dixon Creek that fared well after the 2021 Bootleg Fire. Photo by Charlie Erdman.

South Fork McKenzie River Floodplain Reconnection, 5 years post-restoration and 3 years post-Holiday Farm Fire. Photo by Kate Meyer.

Beaver Ponds Provide Resilience to Fire



A forest fire in Idaho in 2018 left beaver meadows untouched

Emily Fairfax Research

The Geological Society of America
Special Paper 562

GOLD OPEN ACCESS

Impacts of beaver dams on riverscape burn severity during megafires in the Rocky Mountain region, western United States

Emily Fairfax
Department of Geography, Environment, and Society, University of Minnesota Twin Cities, 267 S 19th Avenue, Minneapolis, Minnesota 55455, USA

Alexa Whipple
Methow Beaver Project, 50 Twisp River Road, Twisp, Washington 98856, USA

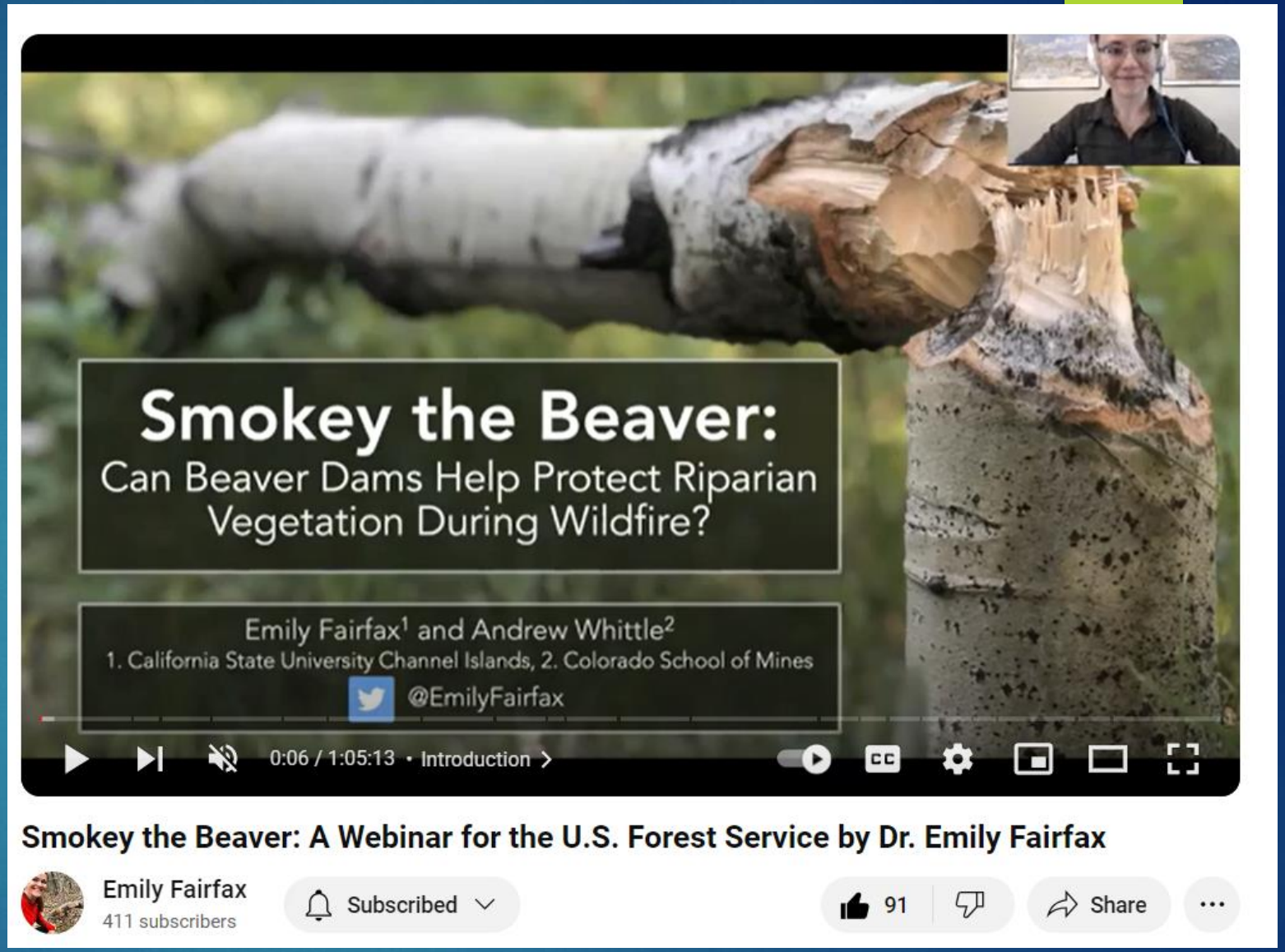
Joe M. Wheaton
Department of Watershed Sciences, Utah State University, 0160 Old Main Hill, Logan, Utah 84322-0160, USA

Brandon Osorio
Joe Miller
Keitreice Kirksey
Natalie Perez
Department of Environmental Science and Resource Management, California State University Channel Islands, 1 University Drive, Camarillo, California 93012, USA

Jordan T. Gilbert
Department of Watershed Sciences, Utah State University, 0160 Old Main Hill, Logan, Utah 84322-0160, USA

Chris E. Jordan
National Oceanic and Atmospheric Administration, National Marine Fisheries Service,

Smokey Beaver



Publication: Fairfax, E. and Whittle, A. (2020), Smokey the Beaver: beaver-dammed riparian corridors stay green during wildfire throughout the western USA. Ecol Appl. Accepted Author Manuscript. doi:10.1002/eap.2225

Colorado Beaver Summit: Emily Fairfax

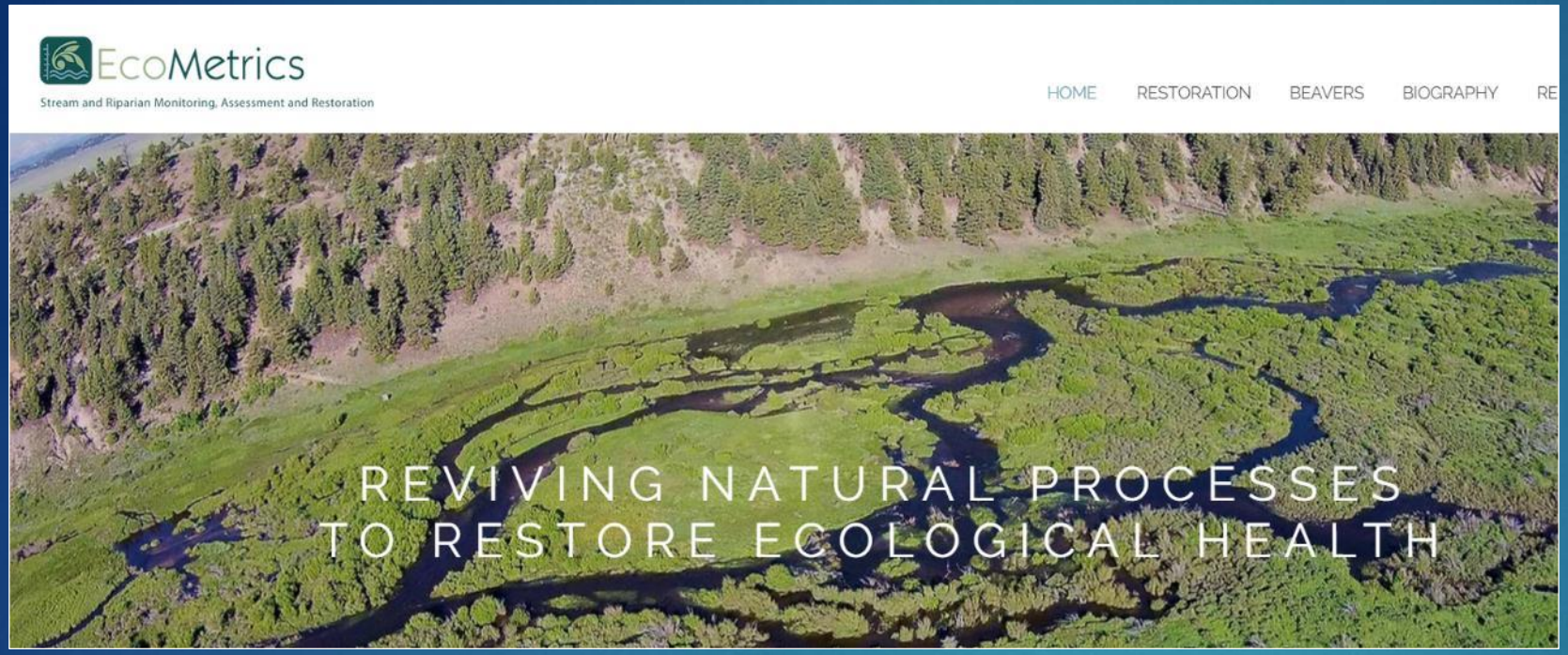
Colorado Headwaters
15 subscribers

Subscribed

12

Share

Trail Creek 2021-2022



National Forest Foundation

RangeWorks

ARABLE EARTH
ASSISTING THE RECOVERY OF DAMAGED & DEGRADED SYSTEMS

WESTERN
COLORADO UNIVERSITY





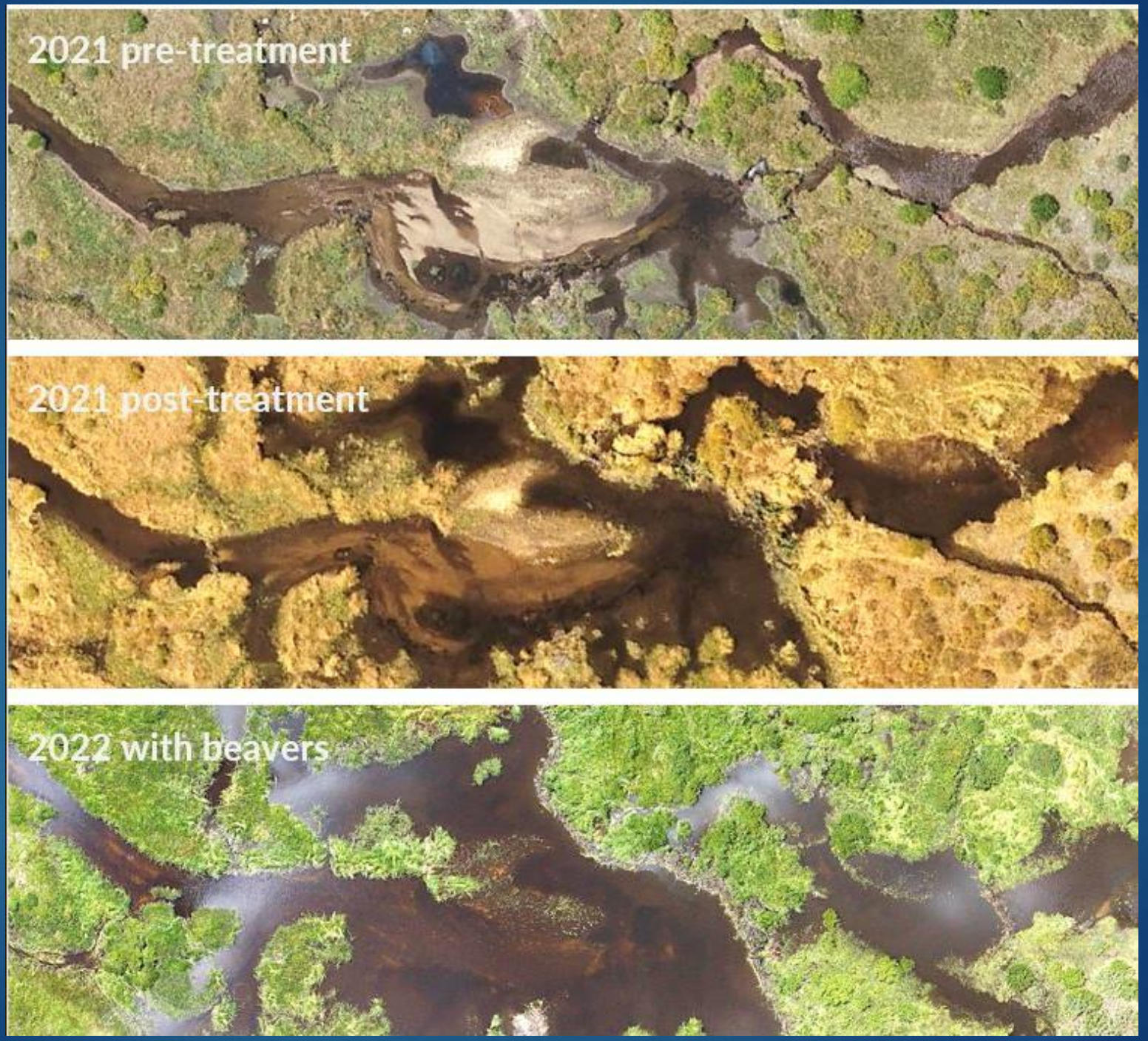

Abandon lodge, overgrown

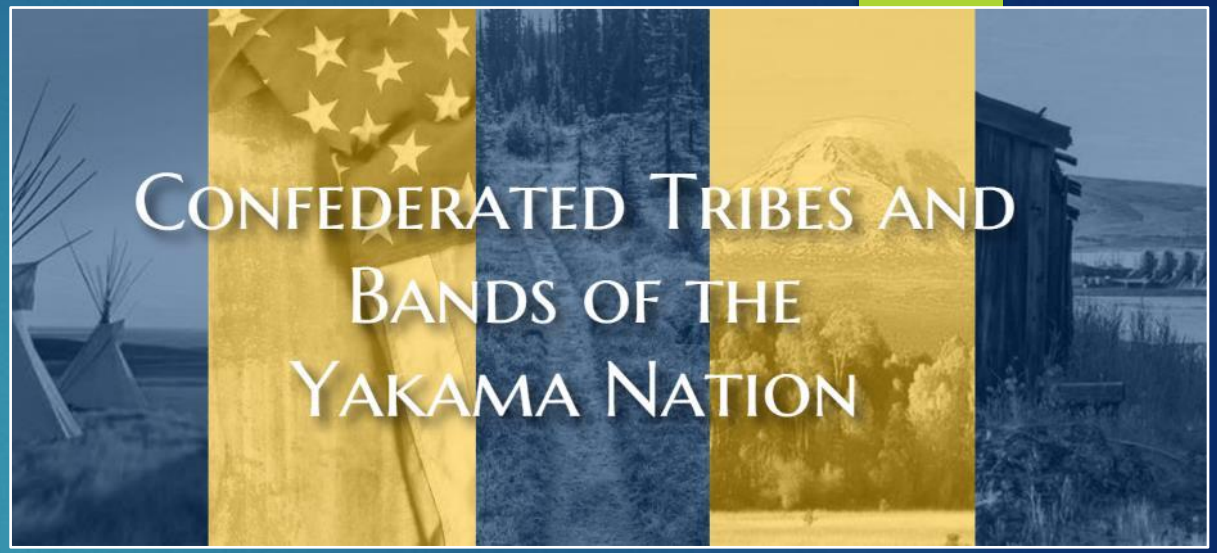
Abandon lodge, tiny

Beavers naturally came back and built upon the old lodge

↑ Before-after sequence of a typical analog structure constructed in 2021 ↑

↑ A beaver-built structure on the same location in 2022


2021 pre-treatment
2021 post-treatment
2022 with beavers



Cayuse – Umatilla – Walla Walla
Confederated Tribes of the Umatilla Indian Reservation

Southern Ute Tribe

EcoMetrics

Stream and Riparian Monitoring, Assessment and Restoration


tamanatü
SPRING
If the songs are not sung and the stori
our Mother Earth will die.

Ute Mountain Ute

Infrastructure Protection

The Beaver INSTITUTE™

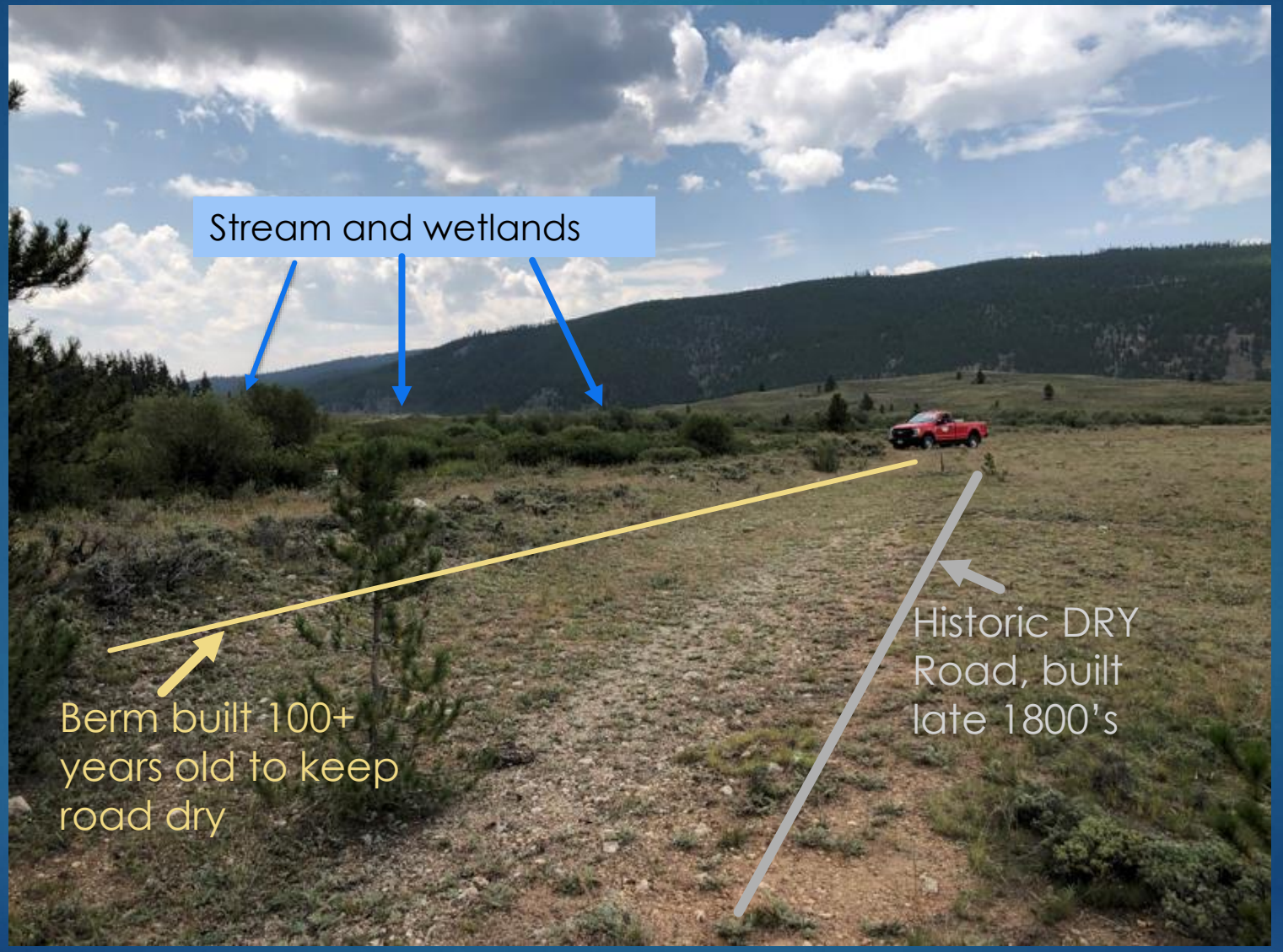
ARABLE EARTH
ASSISTING THE RECOVERY OF DAMAGED & DEGRADED SYSTEMS

RangeWorks

Infrastructure Protection

TRAIL CREEK STARTER DAM- PROTECTING SEVERAL CULVERTS

Infrastructure Protection



BERMS!

Ashley.hom@usda.gov