Mid-Columbia
FISHERIES
ENHANCEMENT
GROUP

A Holistic Approach to Watershed Restoration through Beaver Relocation

Salmon, Trout & Beaver

Photo: Caleb Zurstadt

Fish Passage

Restoration Techniques	Ameliorate H2O temp increase	Ameliorate base flow decrease	Ameliorate peak flow increase	Increase salmon resilience
Remove barrier/culvert				●
Reconnection of floodplain features	●		●	●
Beaver Reintroduction	●	●	●	●
Reduce water withdrawls	●	●		
Grazing removal	●			
Addition of log structures	●			

1923-today

DISPATCHES

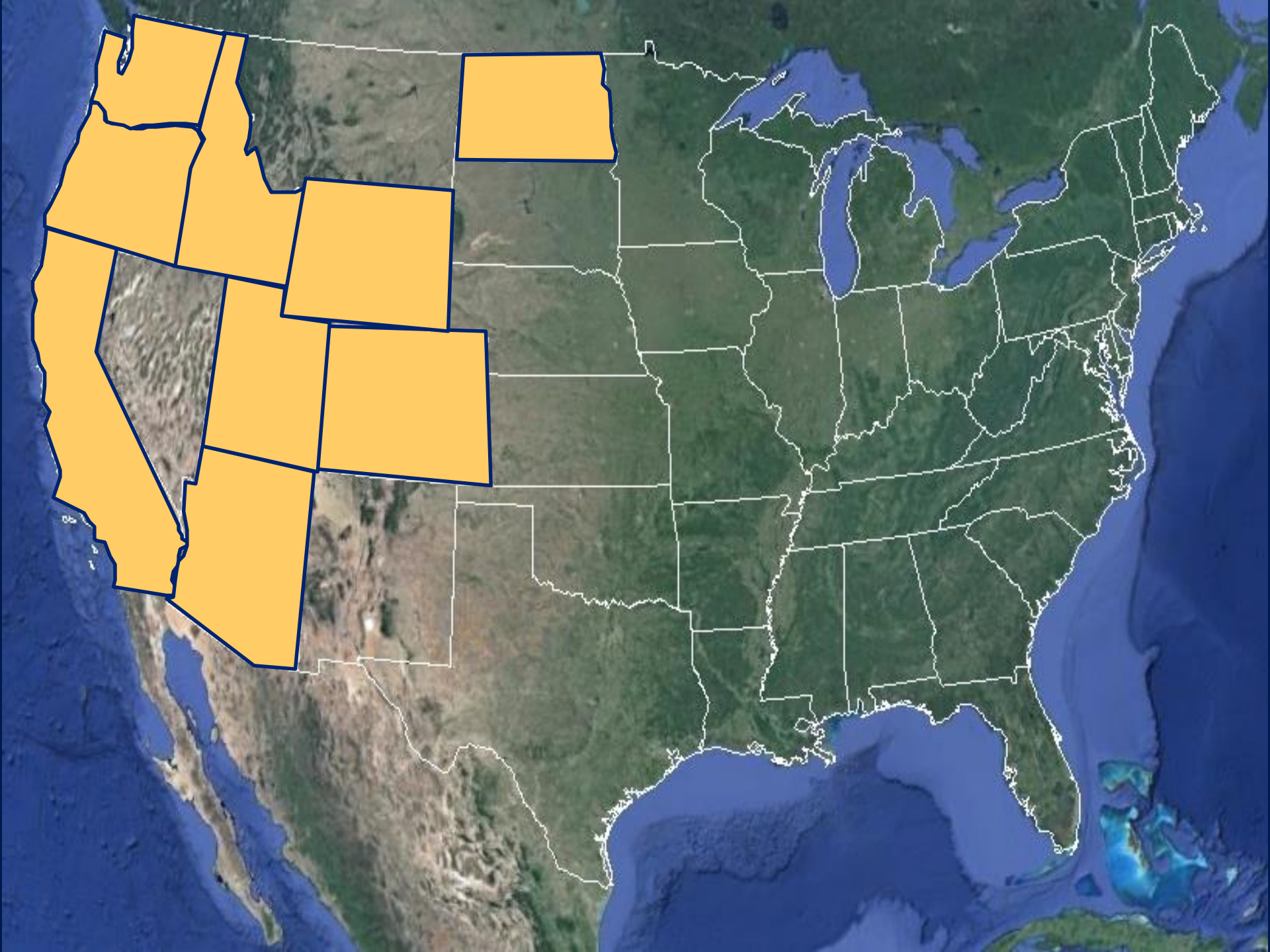
RODENTS

Leave It to Beavers

CAN THEY HELP US ADAPT TO CLIMATE CHANGE?

By David Ferry

community of "beaver believers" is reintroducing the animal to regional water systems throughout the American West in the hopes of reducing the incidence of floods and the damage from forest fires, alleviating drought, helping fish thrive, and conserving fresh water—in the process, helping to combat some of



WA State Beaver Management

WA Beaver Working Group

Mid-Columbia FISHERIES ENHANCEMENT GROUP

CENTRAL WASHINGTON UNIVERSITY CWU 1891

TULALIP TRIBES

FOREST SERVICE US DEPARTMENT OF AGRICULTURE

WASHINGTON DEPARTMENT OF FISH AND WILDLIFE

METHOW BEAVER PROJECT

Storing water for the future-one beaver at a time

THE CONFEDERATED TRIBES OF THE COLVILLE RESERVATION 1872

THE LANDS COUNCIL

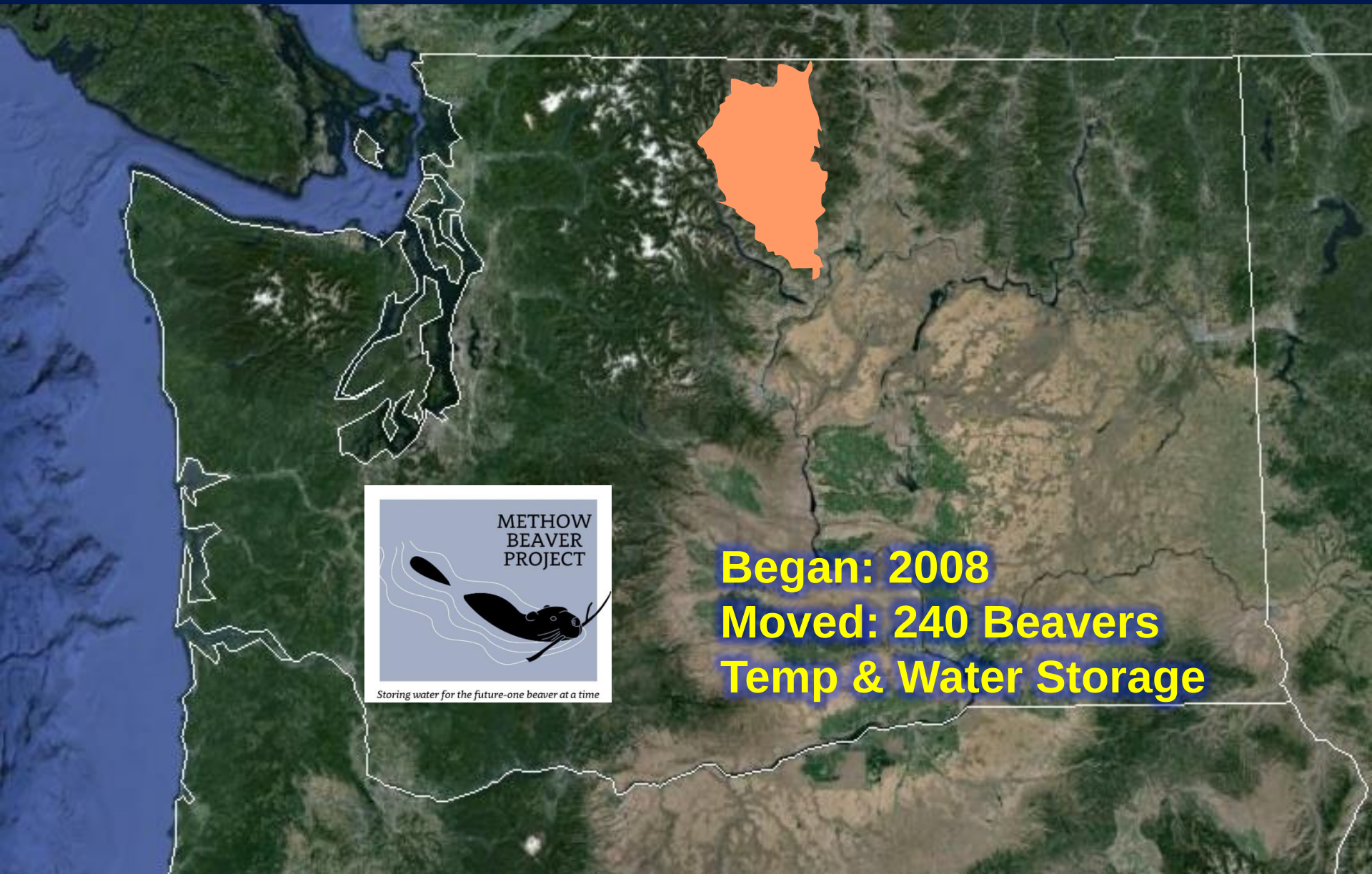
Snohomish County

Beavers Northwest

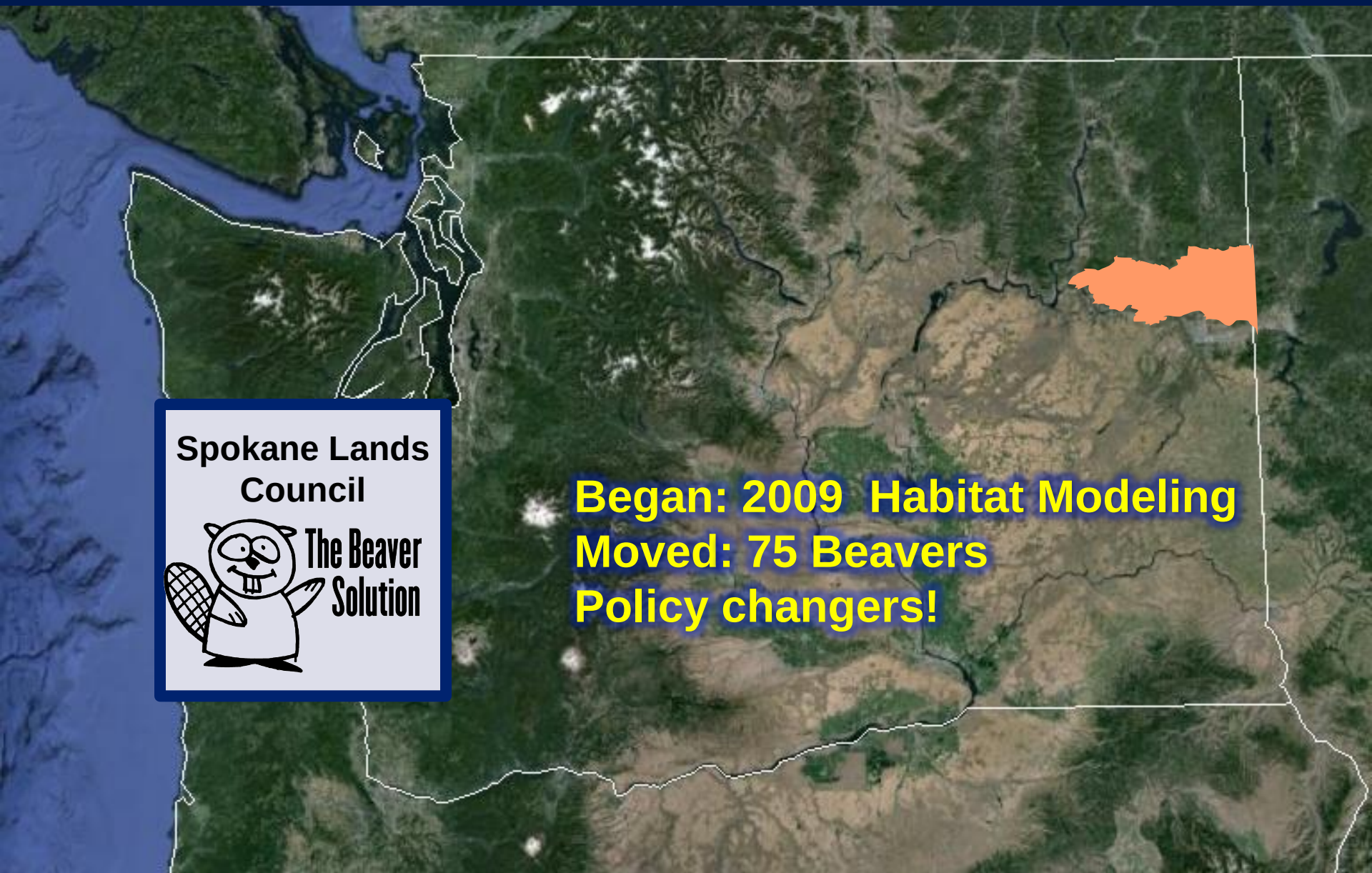
BEAVER CONSERVATION & EDUCATION

WA Beaver Working Group

WA Beaver Working Group



WA Beaver Working Group

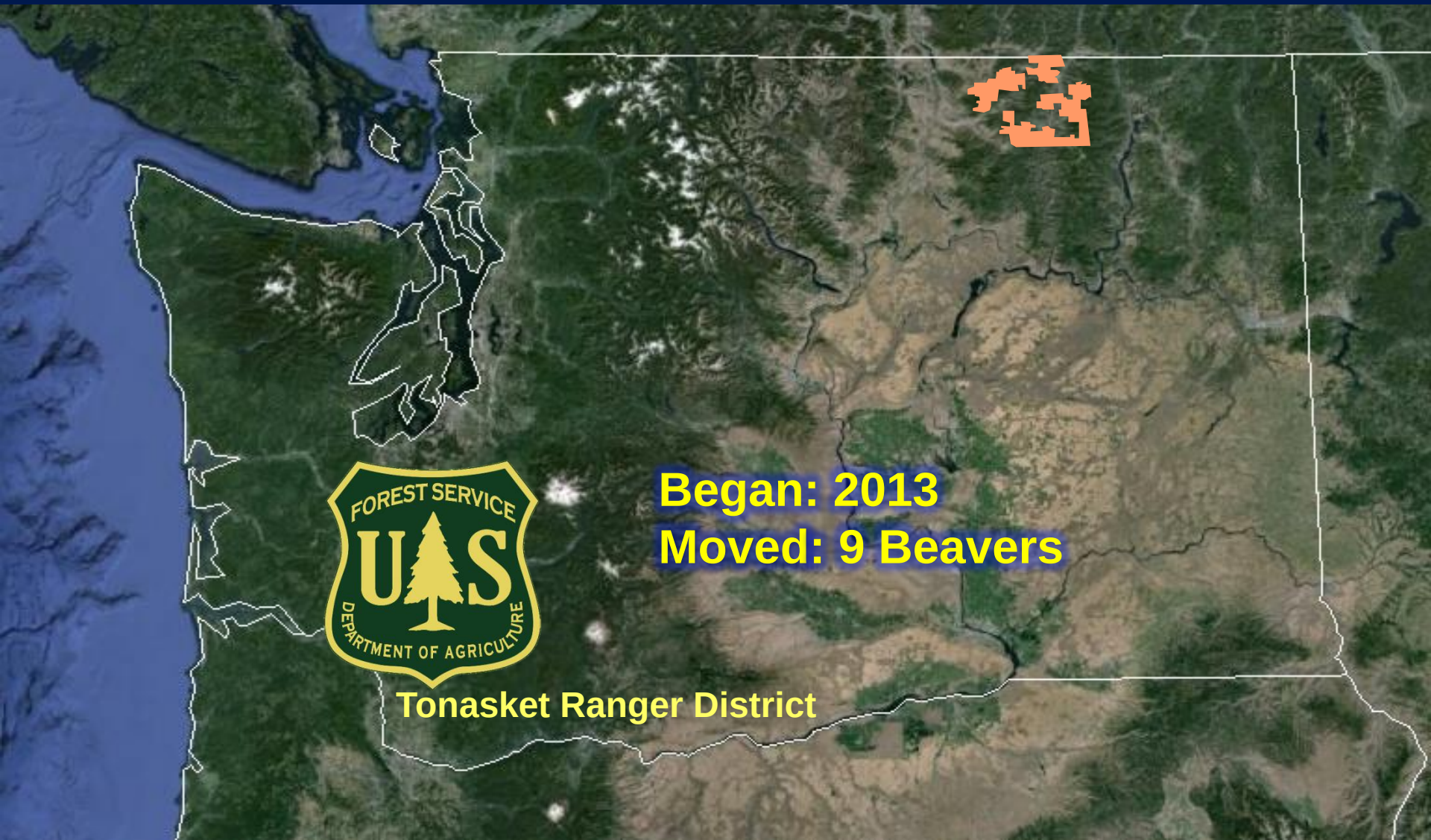


WA Beaver Working Group

Began: 2011
Moved: 130 Beavers
Mitigation: Deceivers & Levelers

Yakima Basin Beaver Project

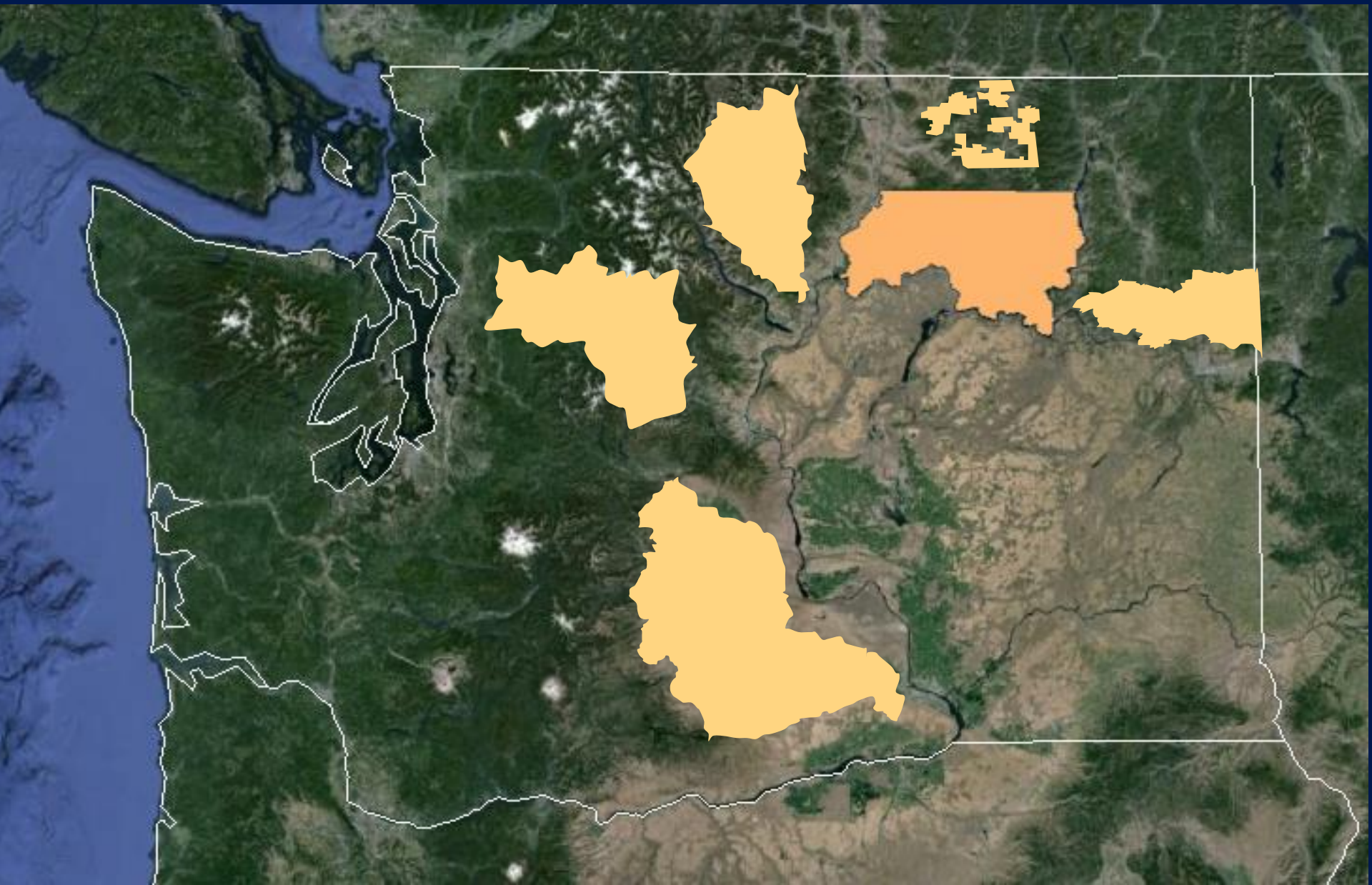
WA Beaver Working Group



WA Beaver Working Group

Began: 2014
Moved: 24 Beavers
Mitigation: Deceivers & Levelers

WA Beaver Working Group



Yakima Basin Beaver Reintroduction Project

Goal: Increase stream complexity and riparian system function through beaver reintroduction

Yakima Basin Watershed

* Outreach to over 28,000 residents
* 140+ landowners

*Media- NPR, CBS, Newspapers

Helpful homesteaders

Photos by SCOTT SANDSBERRY/Yakima Herald-Republic

Denise Stetson and Kevin Sutherland carry a beaver they've dubbed "Big Betty" to a Teanaway-area creek Aug. 29 in hopes that this beaver and its mate will help restore riparian habitat in the area.

Yakima Beaver Project moves nuisance rodents to areas where their dam-building behavior will improve habitat

BY SCOTT SANDSBERRY
YAKIMA HERALD-REPUBLIC

CLE ELUM — Until last month, Barnabas and Big Betty lived in a veritable mansion, an expansive log home quite literally right on the water. Barnabas has a cataract in his left eye and doesn't get around as well as he used to, but he still puts in those long night-shift hours on his construction job.

Recently, though, he was transferred — unexpectedly and involuntarily. But his new employers took the time to find just the right location for his new home in the mountains and had even built it right on the water.

Not that they'll stay in it very long. They'll almost certainly find another spot on the water, a few hundred feet from their temporary new home, and rebuild.

That's just what beavers do.

Simply by doing their job, Barnabas and Big Betty will bring a job-well-done satisfaction to the biologists behind the Yakima Beaver Project.

The innovative collaboration of state, federal, private and tribal interests captures beavers in the lowlands of Yakima and Kittitas counties and relocates them in the headwaters of upland streams, such as the upper Teanaway area in northwest Kittitas County, where their dam-building skills restore riparian areas and regulate creek flows.

Barnabas and Big Betty were captured a week apart at Yakima Sportsman State Park, and biologists Denise Stetson and Ben Carroll of the state Department of Fish and Wildlife took the calculated risk that the beavers were a couple. Or, at least, that they could become one, to produce future generations of beavers to work restorative wonders in whatever high-country creek into which they would be relocated.

"We are definitely matchmakers. We're Realtors, too," Carroll said. "We have to find good real estate for them, and we have to find matches for them."

Carroll felt "actually bummed out" after capturing the aging male beaver that project officials dubbed Barnabas, "because he can pretty much see out of only one eye and his tail's pretty beat up. Beavers mate for life, and (upon being removed from the park pond) he looked really sad."

State wildlife biologist Ben Carroll and Central Washington University intern Jackie Sharp check their beaver traps next to a large beaver lodge at Yakima Sportsman Park Aug. 28.

A week later, though, Carroll and Central Washington University intern Kevin Sutherland captured an adult female from the same pond. They took her to Ellensburg and put her into the project's temporary holding facility, hoping for the very thing that happened next.

Big Betty and Barnabas immediately nestled next to one another, together once again.

Being a beaver isn't an easy gig.

Out of water, a beaver is slow and ungainly, and even a 50-pound adult can be an easy target for predators. In water, though, beavers are fast and elusive swimmers capable of eluding danger, and can stay underwater for 15 minutes or more.

That's why they dam up waterways: to create their safest possible environment, a pond deep enough not to freeze solid in winter. That way, they can swim to their next meal — deciduous trees such as aspen, willow, cottonwood and alder, from which they eat the carbohydrate-rich cambium layer behind the

SEE **BEAVERS** PAGE 6A

White House aide admits to lack of proof in Syria attack

Chief of staff says it's 'common sense' Syrian leader is behind chemical weapons. Congress may want evidence before vote

BY PHILIP ELLIOTT
THE ASSOCIATED PRESS

WASHINGTON — The White House asserted Sunday that a "common-sense test" dictates the Syrian government is responsible for a chemical weapons attack that President Barack Obama says demands a U.S. military response. But Obama's top aide says the administration lacks "irrefutable, beyond-a-reasonable-doubt evidence" that skeptical Americans, including lawmakers who will start voting on military action this week, are seeking.

McDonough

"This is not a court of law. And intelligence does not work that way," White House chief of staff Denis McDonough said during his five-network public relations blitz Sunday to build support for limited strikes against Syrian President Bashar Assad.

"The common-sense test says he is responsible for this. He should be held to account," McDonough said of the Syrian leader who for two years has resisted

SEE **SYRIA** PAGE 6A

More parents opting kids out of state tests

Some say process not a good barometer of student ability

BY KATIE ZEZIMA
THE ASSOCIATED PRESS

DELAWARE TOWNSHIP, N.J. — While his eighth-grade classmates took state standardized tests this spring, Tucker Richardson woke up late and played basketball in his Delaware Township driveway.

Tucker's parents, Wendy and Will, are part of a small but growing number of parents nationwide who are ensuring their children do not participate in standardized testing. They are opposed to the practice for myriad reasons, including the stress they believe it brings on young students, discomfort with tests being used to gauge teacher performance, fear that corporate influence is overriding education and concern that test prep is narrowing curricula down to the minimum needed to pass an exam.

"I'm just opposed to the way high-stakes testing is being used to evaluate teachers, the way it's being used to define what's happening in classrooms," said Will Richardson, an educational consultant and former teacher. "These tests are not meant to evaluate teachers. They're meant to find out what kids know."

The opt-out movement, as it is called, is small but growing. It has been

SEE **TESTING** PAGE 2A

AT WORK

D Section

Beavers enlisted as engineers

'Nuisance beavers' a welcome addition

by Katie Brinkerhoff
katie@nkctribune.com

KITTITAS COUNTY – Beavers identified as problematic are being taken from urban and agricultural areas in the Yakima Basin, where they are currently being lethally removed, and relocated in upper Yakima River tributaries with the intent of improving fish habitat, water quality and hydrograph function, as well as restoring riparian areas.

Beavers used to be very plentiful in watersheds east of the Cascade Mountains, but with their removal through trapping, tributary watersheds have been dramatically altered over the years. Releasing beaver in carefully selected areas is being done to help reverse negative trends.

The project, called the Yakima Beaver Project, is now in it's second year after being initiated by the Washington State Dept. of Fish and Wildlife (DFW) and the Yakama Nation, and funded by Washington's Salmon Recovery Funding Board and the National Fish and Wildlife Foundation.

Successful predecessor

The Yakima Beaver Project is modeled after a project in the Methow Valley that has successfully relocated beavers over the past several years. The Methow Beaver Project took nuisance beavers from private land, placing them in various tributaries in the Methow River Watershed, a sub-basin of the Upper Columbia River System.

The beavers, collected in family units, were temporarily housed in un-used fish raceways at the Winthrop National Fish Hatchery.

Release sites were selected based on a number of things, including historic presence of beavers, available food supply and potential for habitat benefit.

Preparation of the sites included material brought in for shelter and food for the beavers.

Benefits of the project, according to the Methow Conservancy, include maintenance and development of riparian shade, downstream habitat improvements through the creation of channel complexity, and riparian and wetland habitat expansion through dam and pond creation.

Species listed as benefiting from the project include spring Chinook, summer steelhead, bull trout, summer Chinook and Coho salmon, Redband trout, neotropical migratory songbirds, and "pretty much any riparian and/or wetland centric species," according to the Methow Conservancy.

"It is so fun to be a part of a project that is successful in providing water for people who need it, and providing better habitat for salmon," said Wildlife Biologist Kent Woodruff with the USFS Methow Valley Ranger District. "It's hard to place a value on the immense eco-services we get from beaver. It is certainly in the thousands of dollars per beaver colony that we humans get, in terms of water purification, sediment storage, and late season water delivery when we need it the most."

The project has established about 20 sites where "we are seeing all those benefits," according to Woodruff.

Yakima Beaver Project

The Yakima Beaver Project began in March 2011 with the Yakima Basin Fish and Wildlife Recovery Board acting as the lead entity.

A beaver holding facility was set up on property owned by the Yakama Nation near Ellensburg, where beavers are kept in salmon raceways until a pre-selected relocation site is ready, ideally within 10 days of the beaver being captured.

Target watersheds for releasing beavers include Teanaway River and tributaries, Swauk Creek and tributaries, Manastash Creek and tributaries, Taneum Creek and tributaries, the Keechelus wetland and the Swamp Lake area.

Benefits to fish from beavers include improving habitat for salmonids and other native fish species, improving channel structure and complexity, and improving hydrology and lengthening the hydrograph by storing water in ponds and underground.

Ecological benefits of beavers include modulating stream temperatures, reconnecting disconnected floodplains, creating wetlands and improving biodiversity and overall system function.

Trouble between humans and beavers is usually the result of the animals causing damage to trees, often near dwellings; blocking culverts, causing flooding, or damming up irrigation ditches.

Private land placement

Placement of one of the beavers from the Yakima Beaver Project was requested by a landowner on a tributary of Swauk Creek who has seen the creek grow lower over the last four or five years and is now incising into his driveway.

Yakama Nation Habitat Biologist Scott Nicolai, who was thinning the forest on a nearby hillside, placed some logs in the stream to make it more turbulent, "rather than a straight stream where the energy is all running in one direction.

"We add wood for complexity and habitat," said Nicolai. "Like rebar holds concrete together, wood holds the stream together."

"The wood, water and gravel will interact to bring the stream back up," said William Meyer, Habitat Biologist and Project Contact with the DFW.

"Bringing up the water table helps prevent drought, watering the grassy areas naturally and distributing the water evenly and year-round," said the landowner, "but back in the 1970's, loggers had to get all the wood out of the creek." "And now we spend all this money putting the wood back in," said Darcy Batura, Lead Entity Program Coordinator with the Yakima Basin Fish and Wildlife Recovery Board, adding, "Beavers are free engineers. They are working all the time for free."

At that point, a beaver named Tula-Marie was carried into the creek, and released to swim into a pool under a large cottonwood. Melissa Babik, Project Manager with Mid-Columbia Fisheries Enhancement Group placed some fresh-cut willow in the area so the beaver wouldn't have to leave home to find feed.

"We like to bring a food stash to give them a head start," Babik said.

Richard Visser II, who works for the DFW and originally captured Tula-Marie in the area she was considered to be a nuisance, set a camera in place so the beaver could be monitored without being disturbed.

As we turned to leave, the owner pointed out a spot in the creek where he had recently seen a steelhead spawning just upstream of Tula-Marie.

"I have been coming out here for 25 years, and I never saw anything like that," said the owner. "The steelhead was right under one of the new logs."

"If you build it they will come," said Nicolai.

Family planning

Another beaver was taken to a spot in Hurley Creek, a tributary of Swauk Creek, where a male beaver named Barkley had been placed a week earlier.

Once released, the beaver named Ginger quickly disappeared from site.

"She went right in, so it's likely he was hanging out there," said Babik.

A family can be made up of six to eight beavers if they are located in good habitat.

Experience breeds collaboration

"We are so thrilled with our success, and hope to go another five years," said Woodruff of the Methow Beaver Project, adding that collaboration between his project and the Yakima Beaver Project has benefited both. "We are thrilled that William Meyers is so successful with his project there, and we have gained from many of the things William is doing. This is definitely a collaborative success."

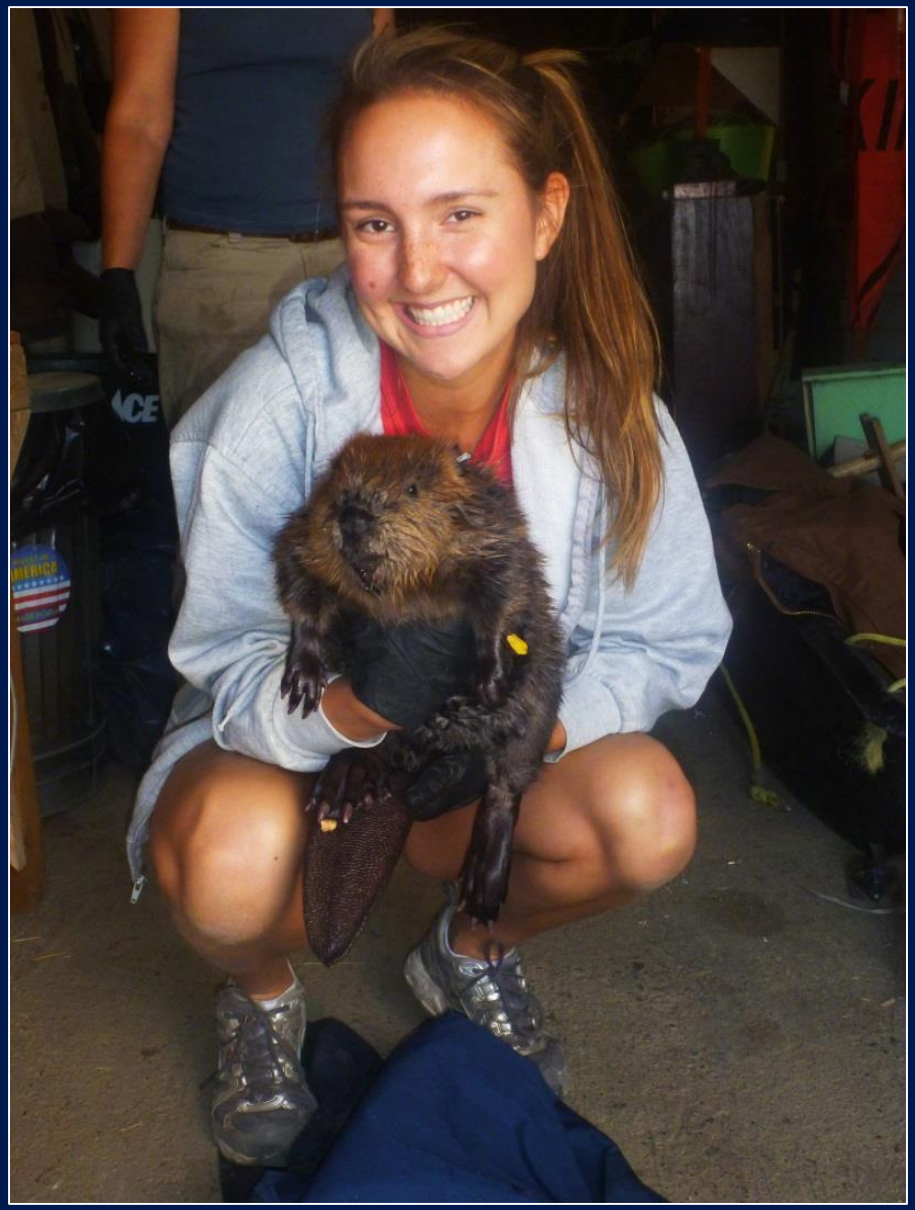
THIS IS THE PLACE Sue Reffler points out the spot prepared for a beaver, carried by Melissa Babik and William Meyer, to be released. Also pictured is Richard Visser II, who captured the beaver. View more images related to this story at our online gallery, www.NKCTribune.com.
N.K.C. TRIBUNE/Katie Brinkerhoff photo - 2012

WHAZ UP? A beaver looks out of his cage curiously before being transported to a new home on a Swauk Creek tributary.
N.K.C. TRIBUNE/Katie Brinkerhoff photo - 2012

TAIL ID Melissa Babik photographs a beaver's tail before being released. The markings on the tail are used for identification like a fingerprint. Richard Visser II captured the beaver in an area it wasn't welcome.
N.K.C. TRIBUNE/Katie Brinkerhoff photo - 2012

*Community Involvement

3,987 hours



NF Teanaway

MF Teanaway

Swauk

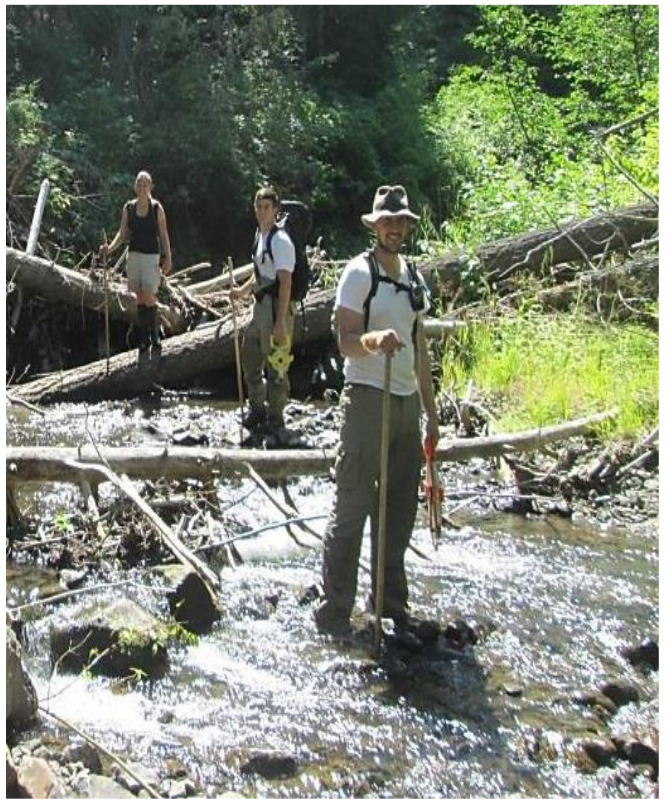
WF Teanaway

90

Cle Elum

Kittitas

49 stream miles surveyed



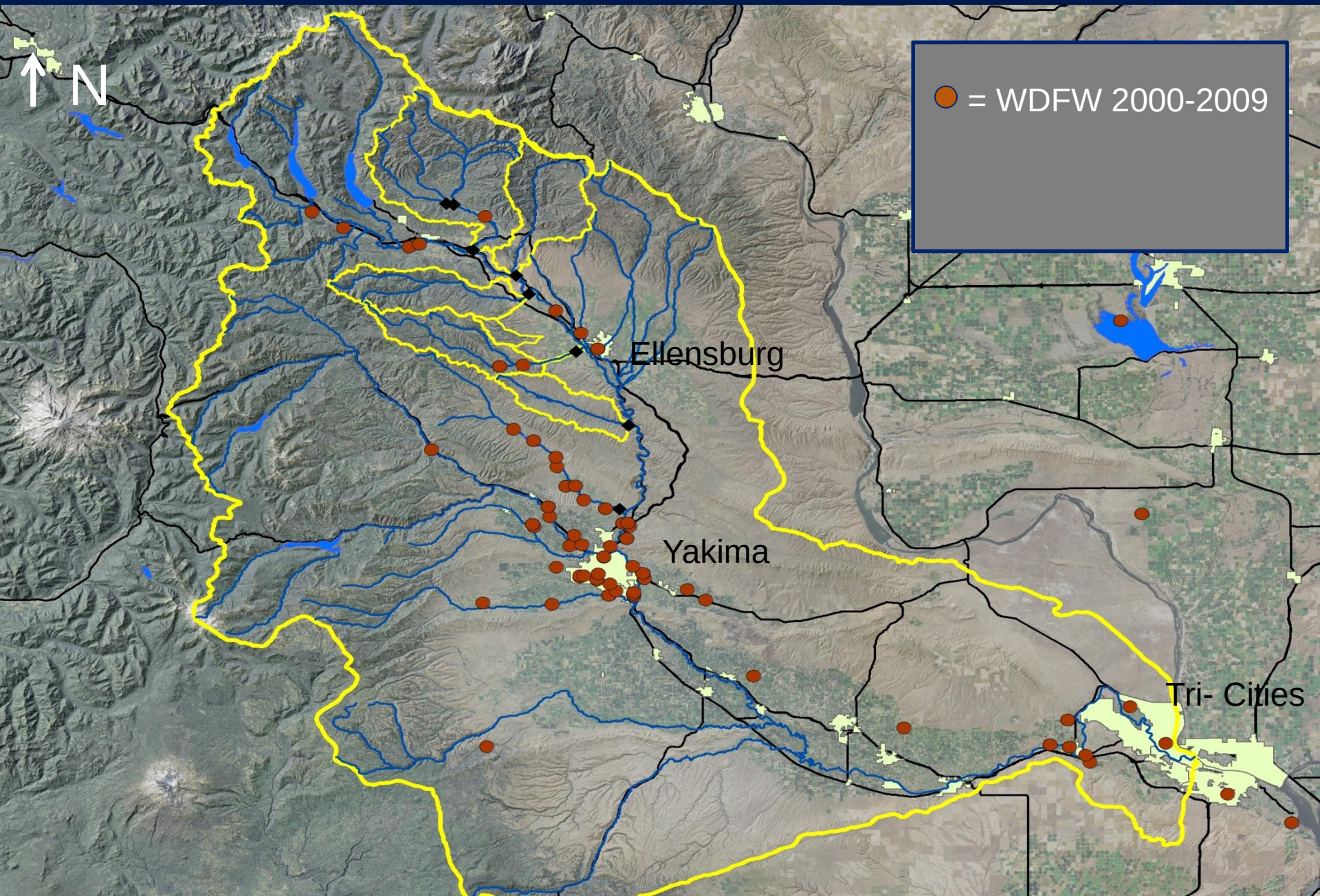
NF Manastash

SF Manastash

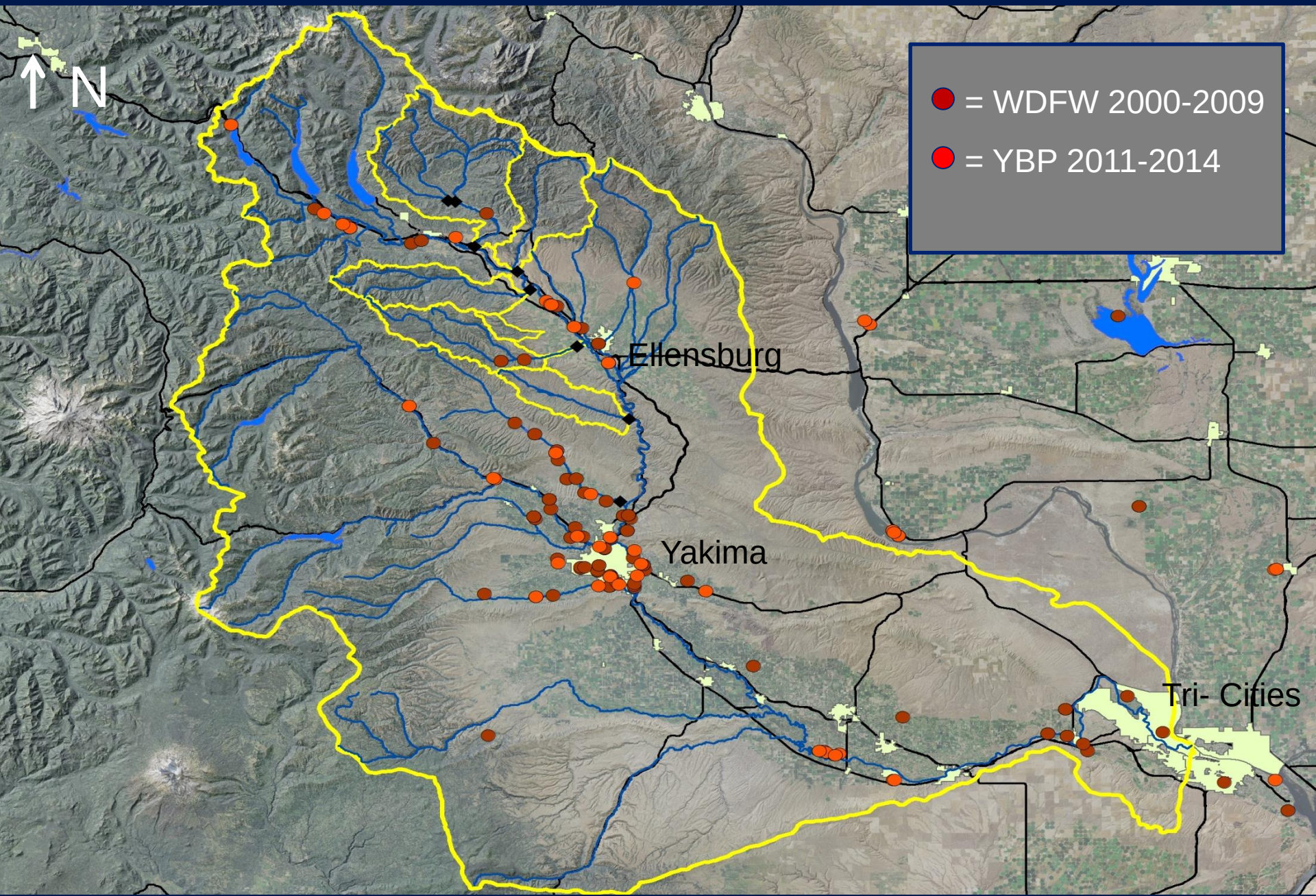
7.20 mi

Relocated 130 Nuisance Beavers

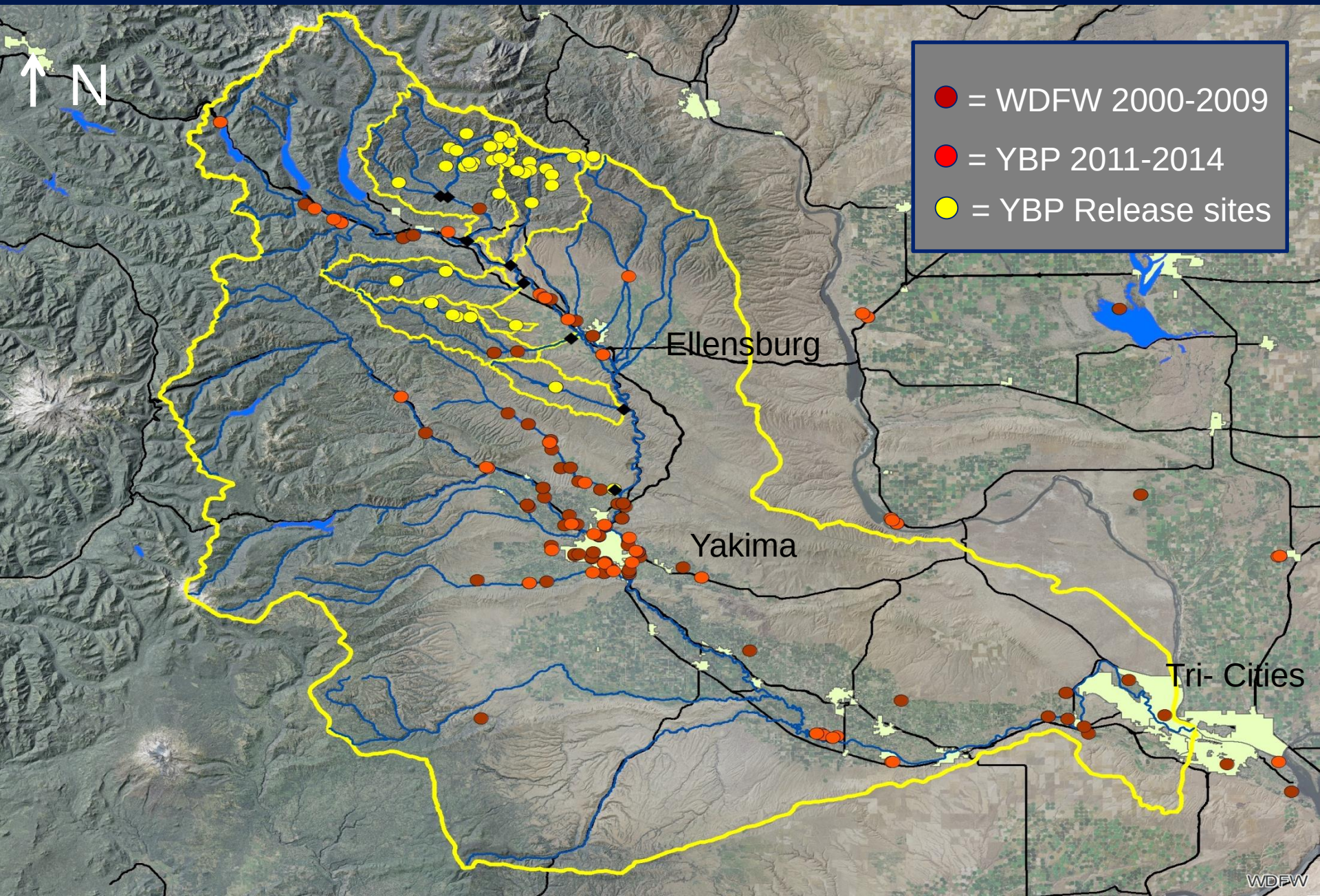
WDFW Nuisance Beaver



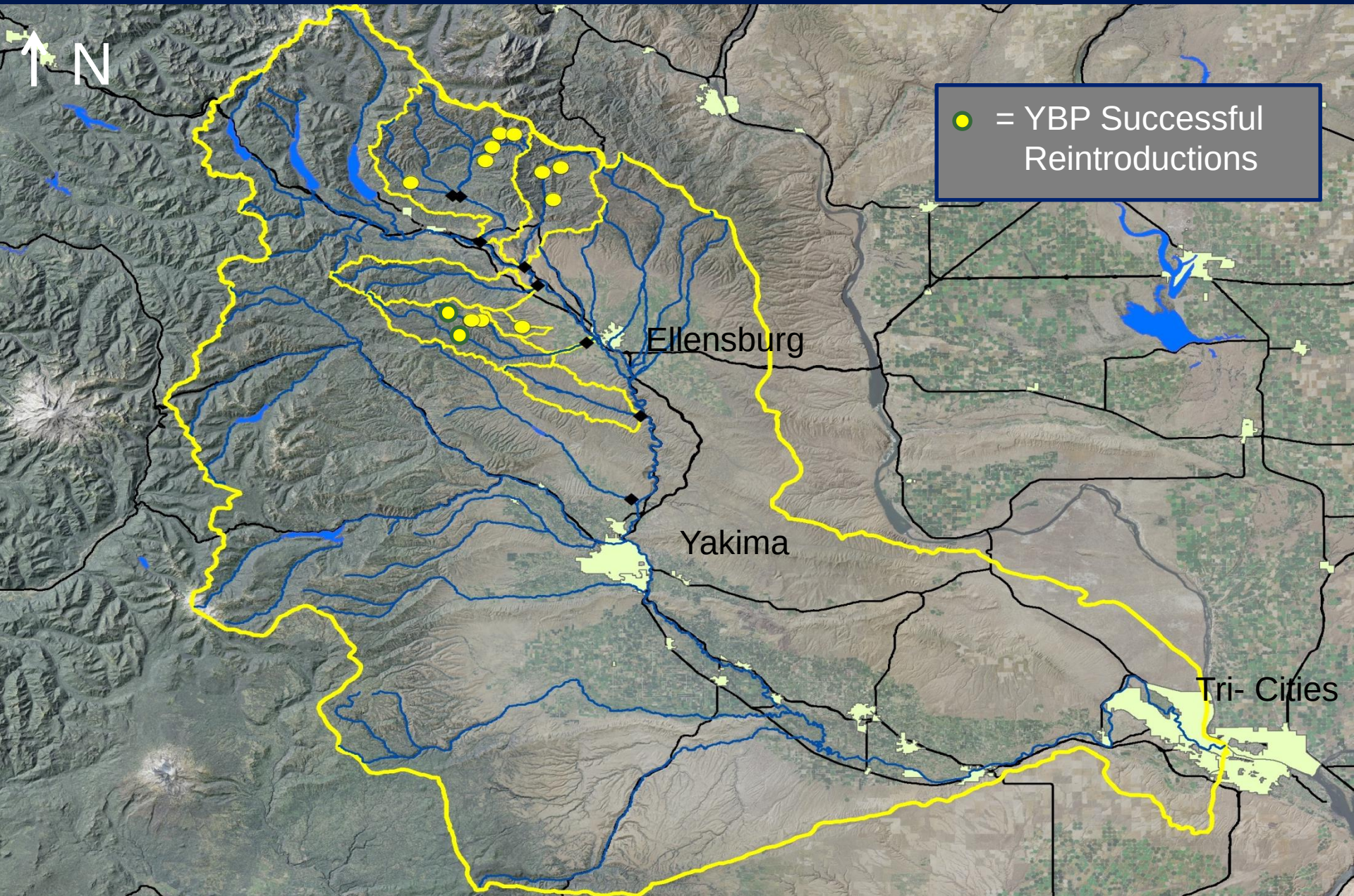
WDFW and YBP Nuisance Beaver



Beaver Relocations



Beaver Successful Establishments

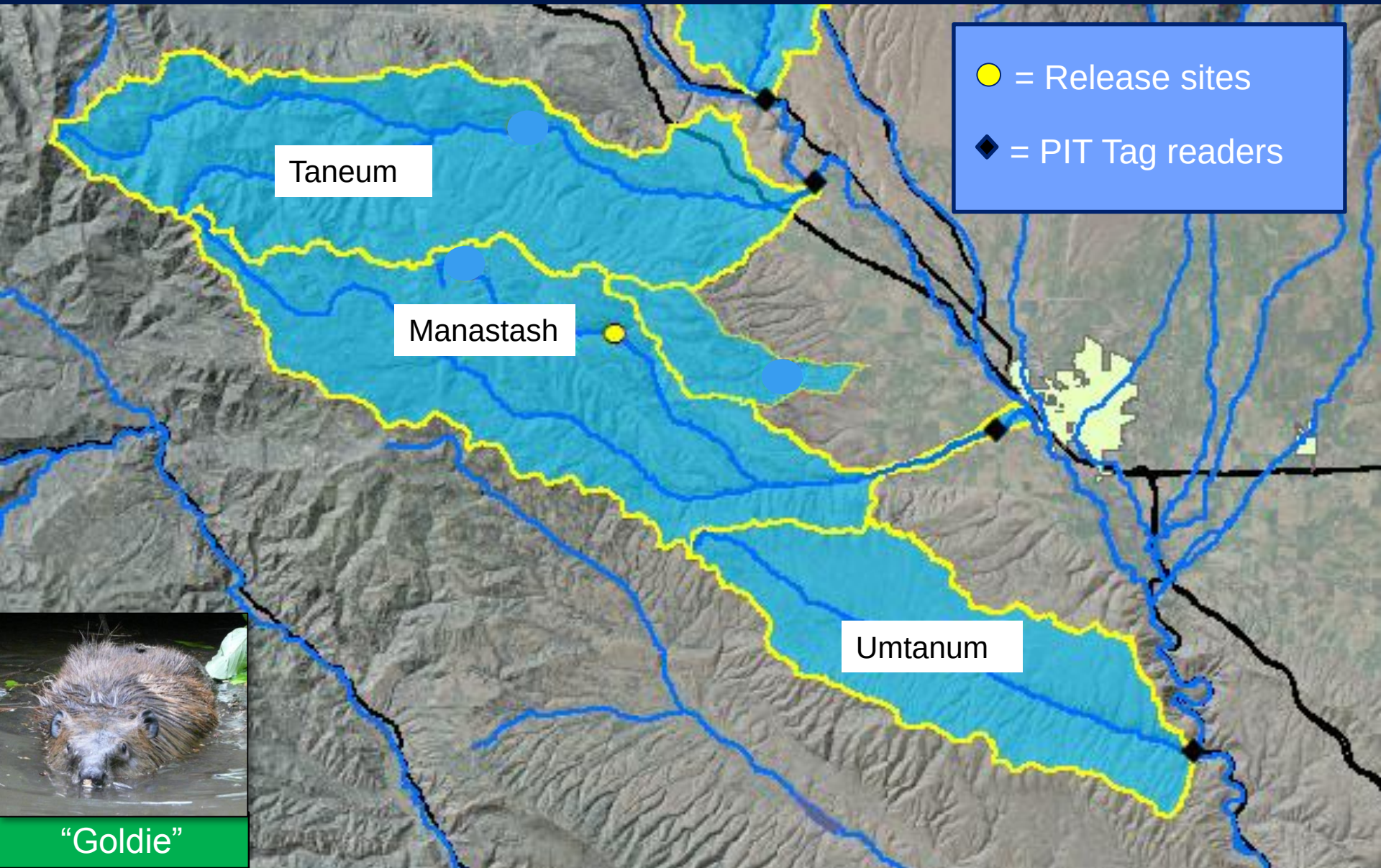


Monitoring

14 colonies successful

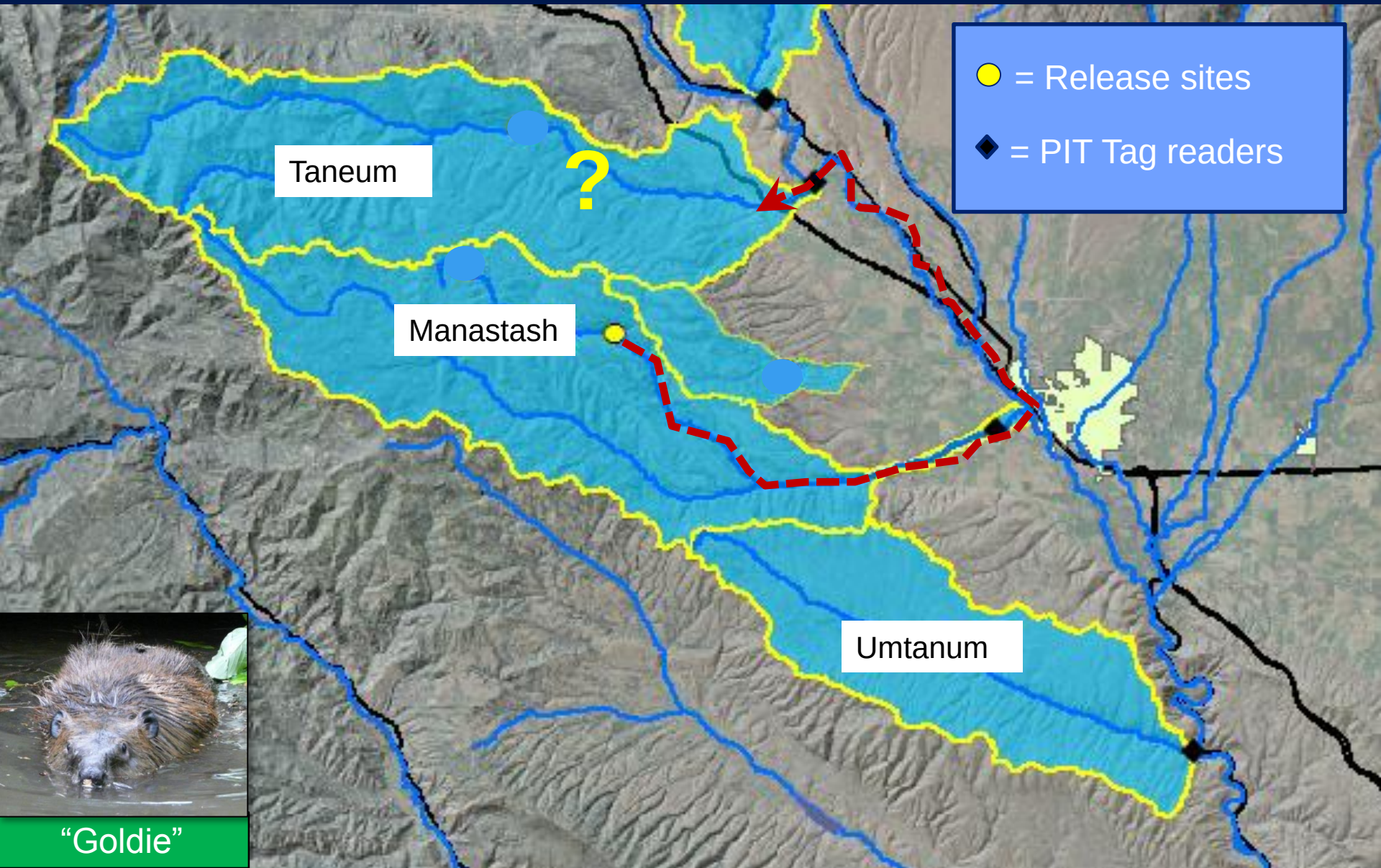
Water Storage

Beaver Movement

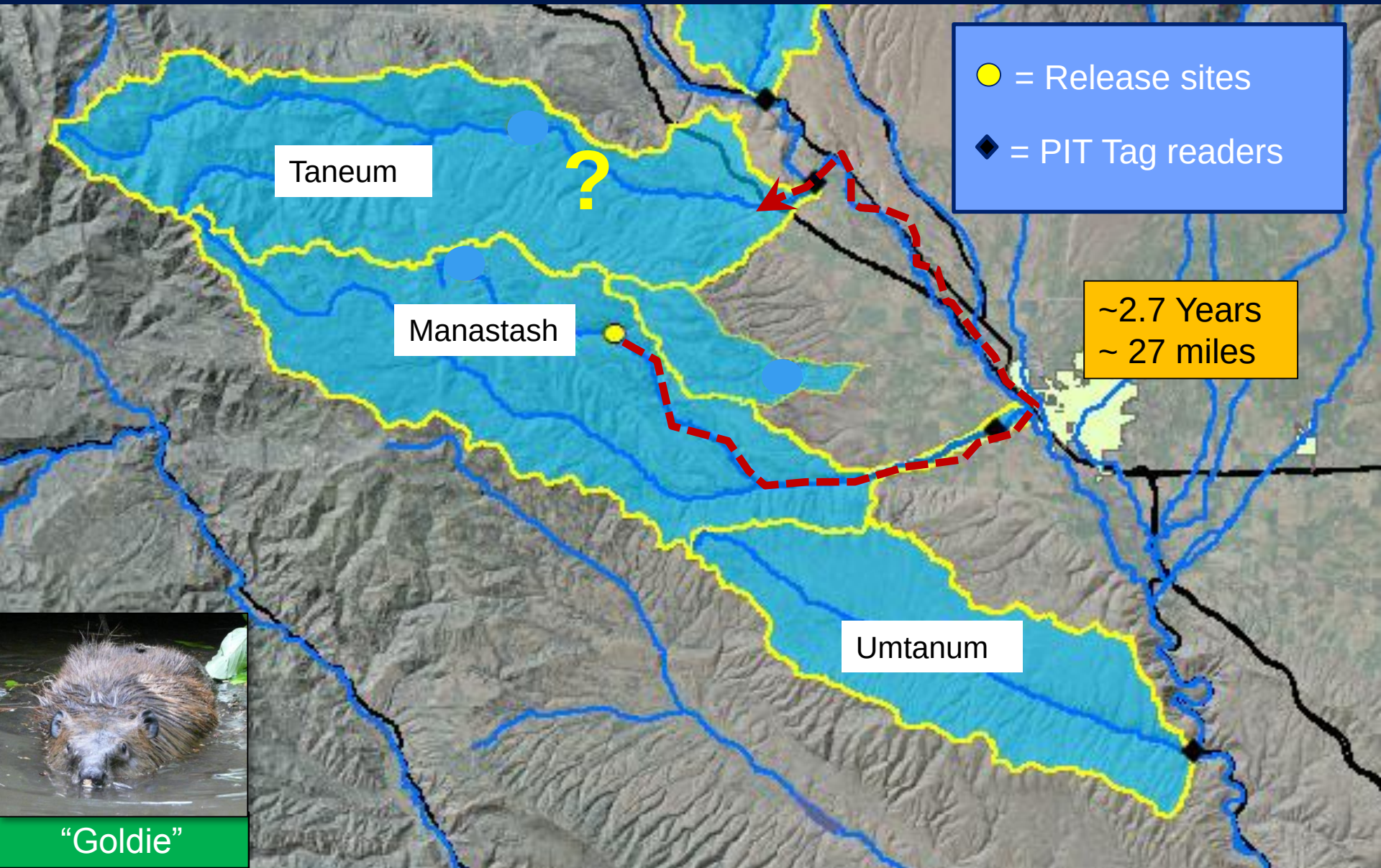


"Goldie"

Beaver Movement



Beaver Movement



Challenges/ Lessons Learned

- PIT tag detection
- Ear Tag retention
- Family bonds

- Beavers Move!

Results 2 months

Cool Clean Complex Connected

Results 2 years

Thank You!

Pollock 2003 calculation

- Number of successful sites * Average pond surface area per site (m^2/site) * infiltration rate (m/s)* number of days of infiltration * conversion factor = volume of groundwater storage (m^3/yr)

- 12 * 170.5 m^2 * 0.0000004 *365 * 86,400 = 25,809 m^3/yr = 25 million liters/yr = 6.6 million gallons/ yr
- *Where:*
- Number successful sites 2011-2014 = 12 sites
- Average pond surface area/successful site = 170.5 m^2/site
- Infiltration rate = 0.0000004 m/sec (Pollock et al., 2003)
- Number of days of infiltration = 365 days (ponds are observed to have water year-round)
- Conversion factor = 86,400 (converting from per seconds to days)