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#SustainingCOWatersheds2020

Welcome to Day One!



SUSTAINING COLORADO WATERSHEDS 2020 CONFERENCE

A VIRTUAL EXPERIENCE



Business as (Un)Usual
Oct. 6-8, 2020



THANK YOU to our 2020 conference sponsors!



Sustaining (Benefactor) Level

WALTON FAMILY
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Level

Headwaters (Presenting) Level



COLORADO
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River Level

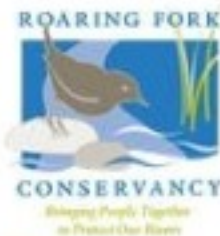


Northern Water



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Stream Level



Scholarship Level

American Rivers, Colorado River District, Saint Vrain and Left Hand Water Conservancy District,
San Luis Valley Water Conservancy District, Vranesh and Raisch



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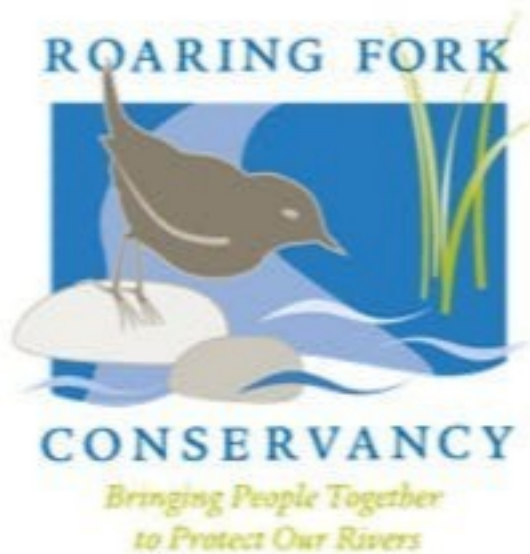
COLORADO
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Thank You River Sponsors!



Thank You Stream Sponsors!



Thank You Scholarship Sponsors!



American Rivers

Colorado River District

Saint Vrain and Left Hand Water Conservancy District

San Luis Valley Water Conservancy District

Vranesh and Raisch





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ROLL VIDEO





COLORADO
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ROLL VIDEO





Business as (Un)Usual

Oct. 6-8, 2020



Announcements

Connect with conference presenters...contact information for all speakers is available if you click on them in Expo.

We will be sharing the attendee list for the conference to help advance networking.

Attend today's Interactive Video Social at 3:45-4:30pm

- Learn along with friends and colleagues and make new connections
- For a preview, access the virtual video library at coloradowater.org/virtual-library
- Enter password: Library2020



Business as (Un)Usual

Oct. 6-8, 2020



Announcements

Field trips are THURSDAY...we're getting you outside!

- Field trips will follow social distancing etiquette
- Do not attend if you are experiencing any COVID-related symptoms or have been in contact with someone who has tested positive in the past 14 days
- Communicate with your field trip host if you are no longer able to attend

Visit the Virtual Expo Hall

- Support conference sponsors and vendors and learn about their services!
- Visit at any time...some booths will have live hosts waiting to interact with you on Zoom during the lunch break today from from 12-1pm and tomorrow at 9-10am and 12-12:30pm
- Visit EVERY booth, then complete the google form that comes to your email to enter for a chance to win a \$100 REI gift card, certificates to CO breweries, or a set of WEco's Citizen's Guides!



Business as (Un)Usual Oct. 6-8, 2020



Visit the Virtual Expo Hall!

Click on the "Exhibitors" tab to toward the top right of the home page or to the left of the event schedule in Expo



Business as (Un)Usual

A family-led foundation that tackles tough social and environmental problems with urgency and a long-term approach

Schedule

October 05, 2020 - October 12, 2020

VIEW: LIVE, My Schedule, **Event Schedule**, Exhibitors

Filter

Start Time	Title	Length	Speakers	Location	Type
Tuesday, October 06					
09:30 AM MST	Visit the Virtual Expo Hall	60 min		Virtual Expo Hall	Networking
10:30 AM MST	Day One Welcome and Plenary: The River Ethic	120 min	[Speaker Icons]	Virtual	Panel Discussion

LIVE My Schedule

October 6, 2020

03 04 05 06 07 08 09

9:00 AM MST Visit the Virtual Expo Hall

10:00 AM MST Day One Welcome and Plenary: The River Ethic [Julie Ash]

12:00 PM MST Day One Lunch and Networking - Visit the Virtual Expo Hall



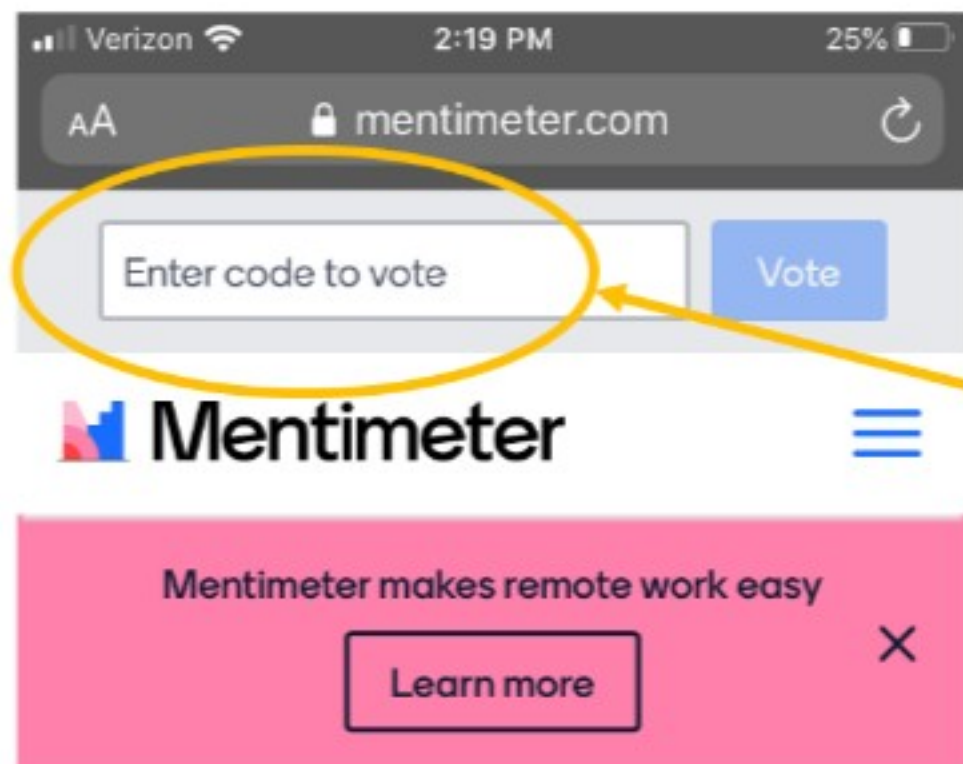
Business as (Un)Usual Oct. 6-8, 2020



Share about the conference on social media!

#sustainingCOwatersheds2020





Create interactive presentations & meetings, wherever you are

Get real-time input from remote teams and online students with live polls, quizzes, word clouds, Q&As and more



Using Mentimeter

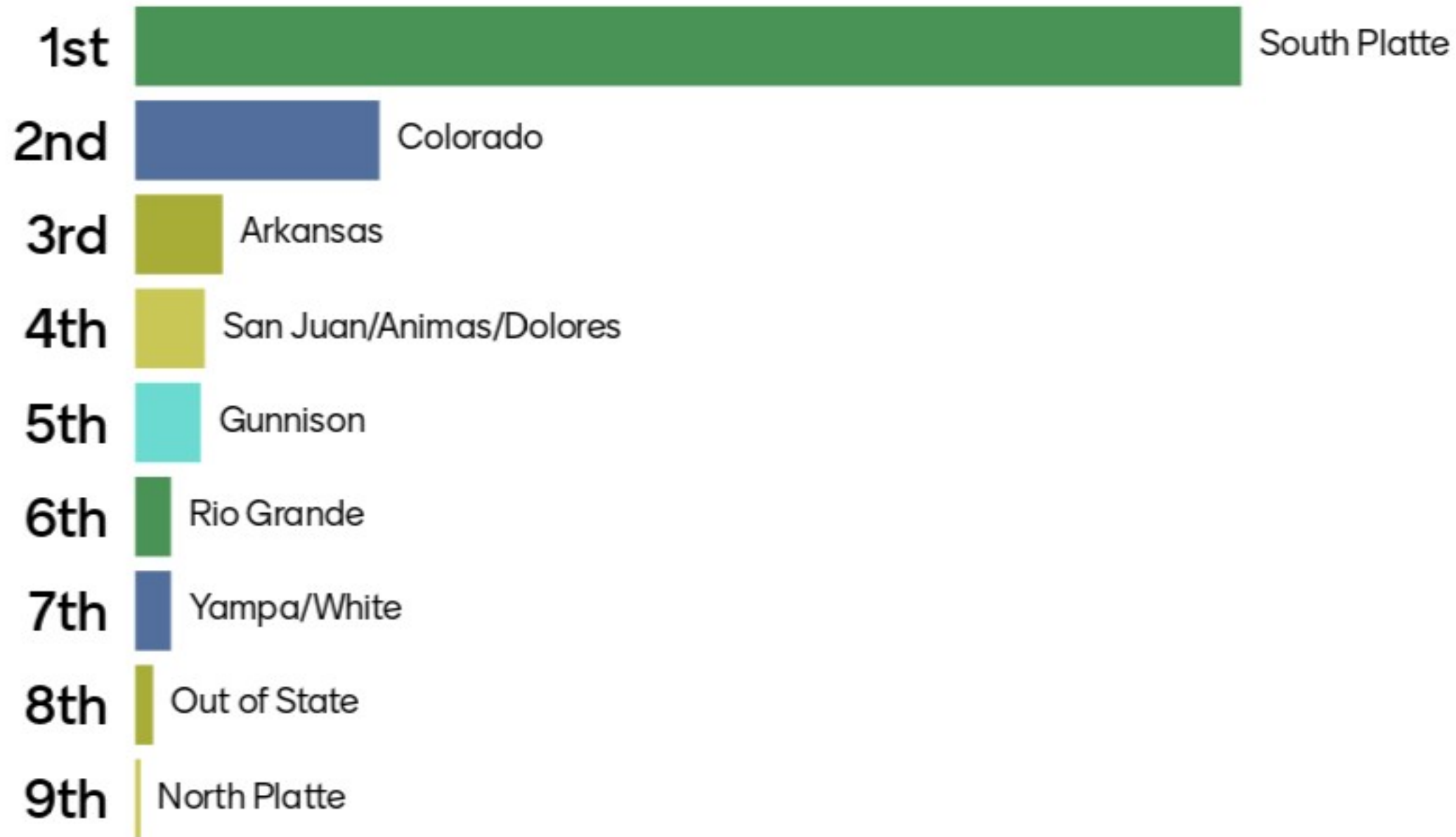
- Type Menti.com into your phone or computer's web browser
- Enter the code above into the code bar
- Follow along & participate in the webinar

Panel Discussions, Q&A, Polling

- Polling through Menti is anonymous. Please be respectful & professional.
- Please reserve GoToWebinar's 'Question' box for technical issues & 'Chat' box for resources.
- We have a fixed time for questions. Please contact individual presenters for unanswered questions. Speaker info can be found in Expo.



In which major river basin do you reside?



In one word please describe what Business as (Un)Usual means to you in 2020.



RIVER MUSIC

Hydrographs Play A Symphony

By Dave Merritt

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River Level



Northern Water



COCO
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Stream Level



Stillwater Sciences



UPPER YAMPA WATER
CONSERVANCY DISTRICT

Scholarship Level

American Rivers, Colorado River District, Saint Vrain and Left Hand Water Conservancy District,
San Luis Valley Water Conservancy District, Vranesh and Raisch



The River Ethic



*Shaping a river ethic to
improve societal understanding
of stream corridors*

THE RIVER ETHIC
*Shaping a river ethic to
improve societal
understanding of stream
corridors*

Panelists:

Dr. Ellen Wohl, CSU
Dr. LeRoy Poff, CSU
Dr. David Merritt, USFS
Kevin Houck, PE, CWCB

*Moderator: Julie Ash,
CRA/Stillwater Sciences
(and channeling
Matt Kondratieff, CPW)*

Get ready for solid science delivered inspirationally!

- ❖ The first River Ethic dialogue* was in February as part of CRA's Colorado Stream Restoration Network (CSRN) series of workshops
- ❖ Continued aim to bring the power of science to educate and raise awareness to support change
- ❖ Provide guidance that allows people to act effectively
- ❖ Still just in dialogue mode...



Icon associated with Wilderness

**hosted recently by CRA; we know we aren't the first with this idea*

The River Ethic

❖ Modeled after/sources:

- *Wilderness Act of 1964*
- *Leave No Trace*
- *A Sand County Almanac; The Land Ethic (Aldo Leopold's writings)*
- *NPS Wilderness Ethic*

*Icon associated with
Wilderness*



*Matt Kondratieff,
CPW*



Gore Canyon, Colorado River

The River Ethic

- ❖ Parallels to Wilderness Ethic
 - *Special places*
 - *Dangers exist*
 - *We know to go prepared*
- ❖ Personal observations
- ❖ Professional observations
- ❖ Avoid “us vs them” messaging – all are needed
- ❖ Wilderness – not adversarial - “it just is this way”



Words not needed



Icon for River Ethic?



Two project settings I've worked on recently – room for the river – and less so

The River Ethic

The River Ethic can bring scientific understanding to inform three primary groups:

- ❖ The general public

tread more lightly and safely

- ❖ Recreationalists

same +Sentinel Rivers protection

- ❖ Professionals working to manage or improve our resources

decision-makers can capitalize on opportunities

practitioners can apply most appropriate approaches within constraints



*Mascot for
River Ethic?*

The River Ethic

- ❖ Today's panelists bring their eloquence, passion, and deep wealth of knowledge
- ❖ Share latest scientific knowledge and ideas for bringing science to the public and decision-makers in ways that help them act

“A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise.”

-Aldo Leopold



*Icon for
River Ethic?*

The River Ethic

- ❖ More research will always further understanding, however...
- ❖ We submit that **“the science is already there”**
- ❖ We don't need to wait on more research to take action
- ❖ **We need to bridge gaps in communication with larger groups**



*Icon for
River Ethic?*

Toward a River Ethic: The Importance of Being Messy



Ellen Wohl
Geosciences
CSU

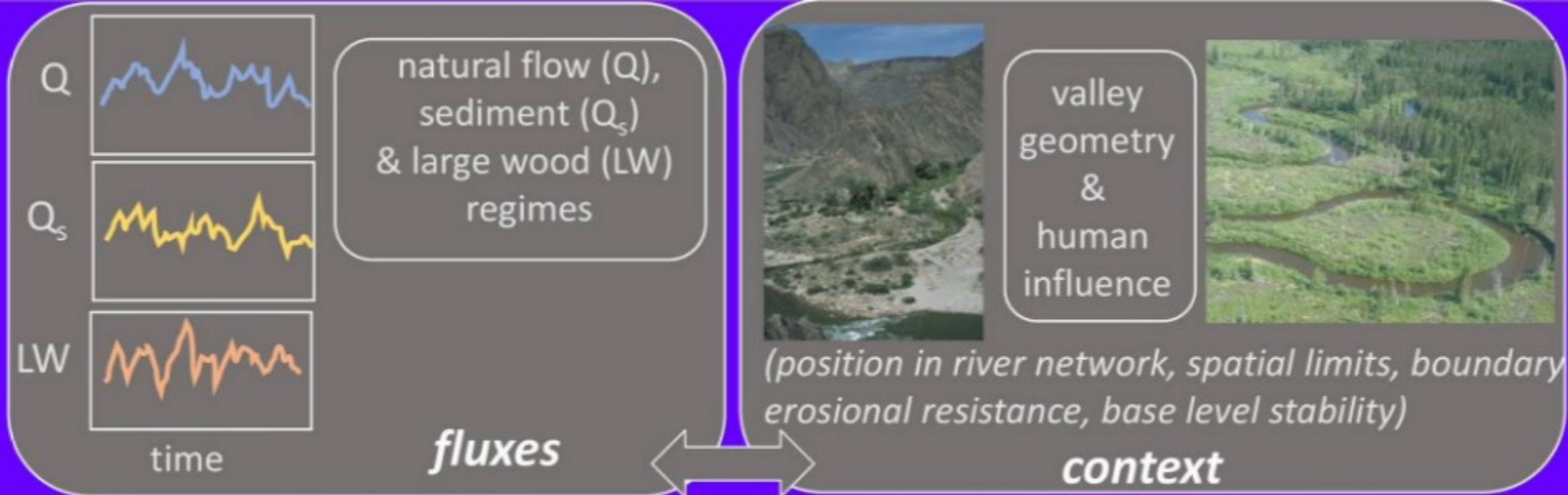
Key points

Natural rivers are spatially heterogeneous

Varying inputs & the ability to adjust
create & maintain spatial heterogeneity

A river ethic starts with geomorphic integrity





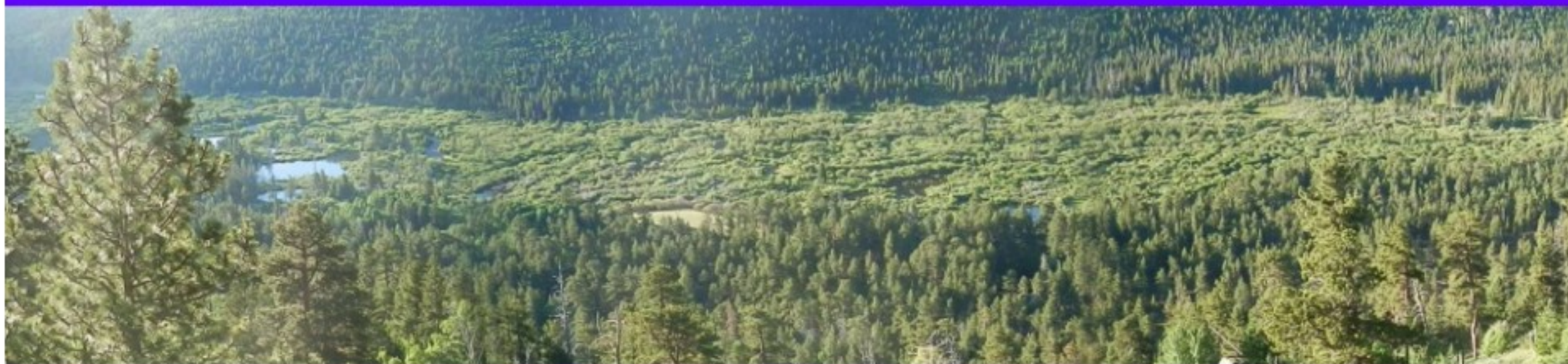
spatial heterogeneity, connectivity, resilience, geomorphic & ecological integrity

gradient	planform	flood inundation	high water table	biodiversity	carbon stock
					

RIVER CORRIDOR

Spatial heterogeneity fosters river 'health':
3D connectivity, retention, nutrient uptake, habitat,
biota, resilience ... ecosystem services

Ability to adjust spatial & temporal variations in
inputs have been significantly altered –
spatial heterogeneity & associated ecosystem
services have significantly declined



End the knee-jerk response to large wood & bank erosion



Bank Erosion as a Desirable Attribute of Rivers

JOAN L. FLORSHEIM, JEFFREY F. MOUNT, AND ANNE CHIN

BioScience, 2008

MANAGEMENT OF LARGE WOOD IN STREAMS: AN OVERVIEW AND PROPOSED FRAMEWORK FOR HAZARD EVALUATION¹

Ellen Wohl, Brian P. Bledsoe, Kurt D. Fausch, Natalie Kramer, Kevin R. Bestgen, and Michael N. Gooseff²

J Am Water Resources Association, 2016

Wood Jam Dynamics Database and Assessment Model (WooDDAM): A framework to measure and understand wood jam characteristics and dynamics

Daniel N. Scott¹  | Ellen Wohl²  | Steven E. Yochum³

*River Research &
Applications, 2019*

Managing for Large Wood and Beaver Dams in Stream Corridors

Ellen Wohl, Daniel N. Scott and Steven E. Yochum

*USDA Forest Service General
Technical Report RMRS-GTR-404*

National Large Wood Manual

Assessment, Planning, Design, and Maintenance of Large Wood in Fluvial Ecosystems: Restoring Process, Function, and Structure

January 2016



U.S. Department of the Interior
Bureau of Reclamation



US Army Corps
of Engineers®
Engineer Research and
Development Center

The Beaver Restoration Guidebook

Working with Beaver to Restore Streams, Wetlands, and Floodplains

Version 1.0, June 30, 2015

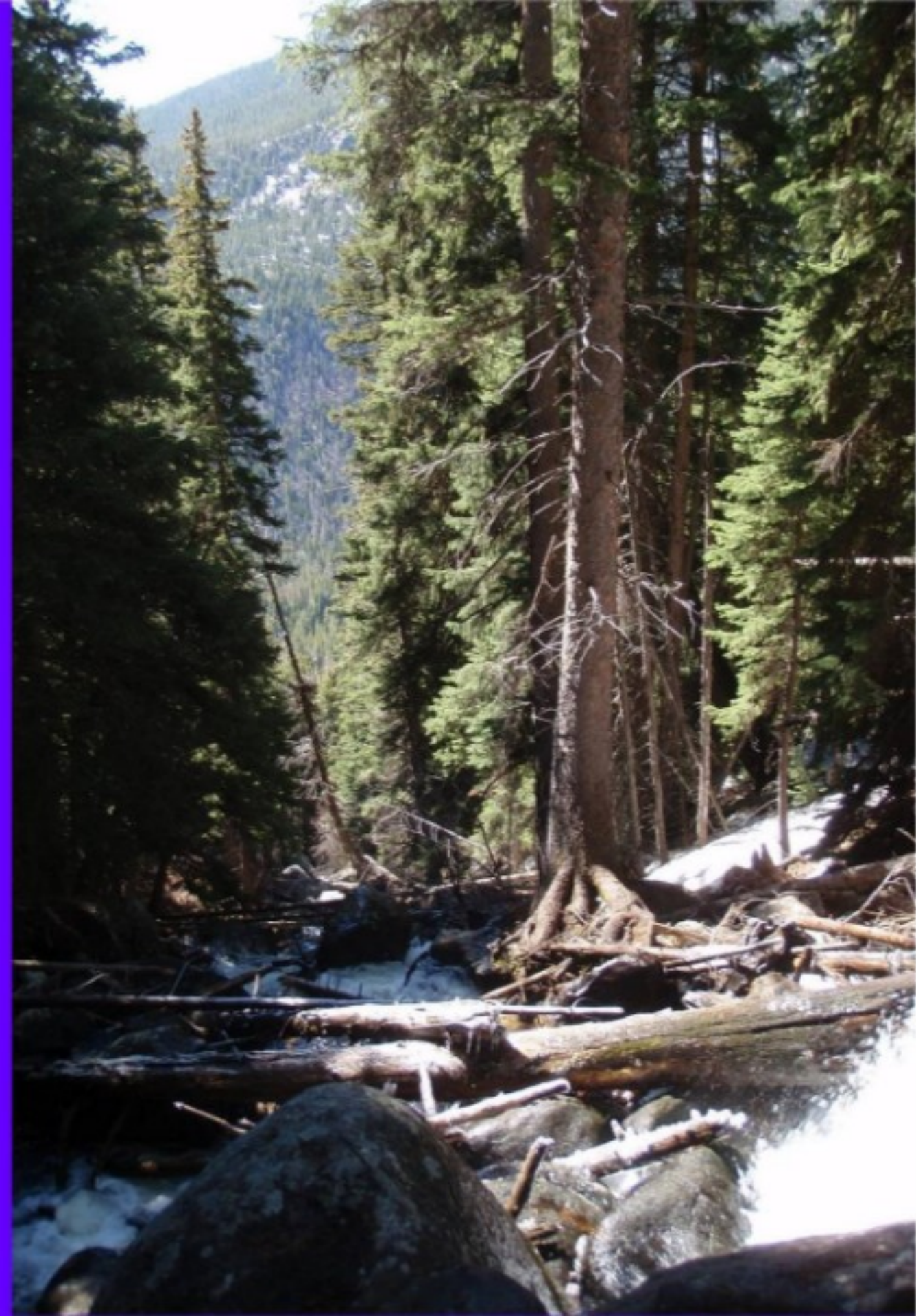
Prepared by

US Fish and Wildlife Service
National Oceanic and Atmospheric Administration
Portland State University
US Forest Service



Put the river back in its place ...
oh, wait – we're in its place

Clean up the river ...
if you're referring to sediment
& large wood, it's not dirty



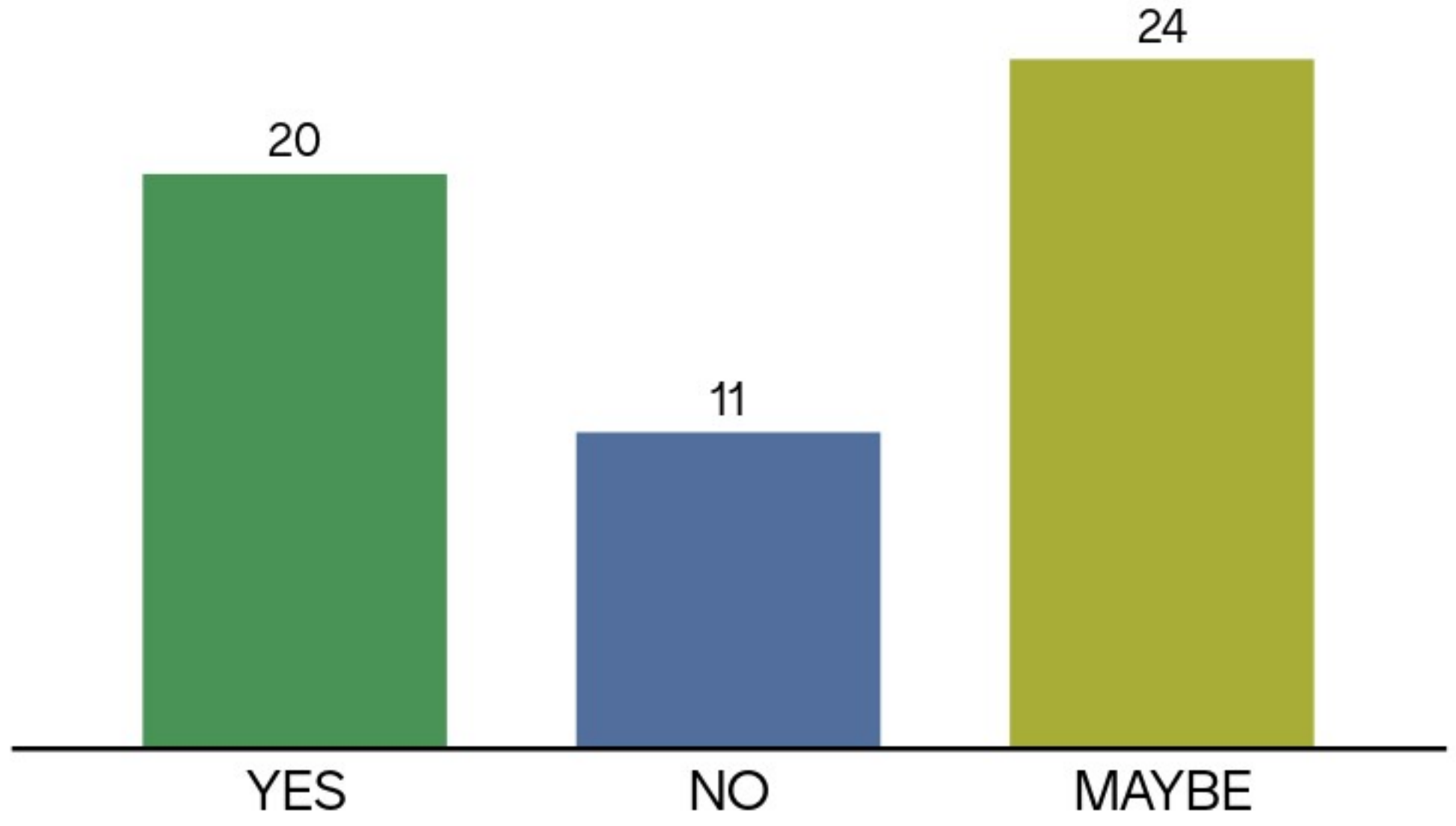
River restoration: First, do no harm



ROLL VIDEO - ELLEN'S PERSONAL FISH TANK



Would you be willing to record and send CRA a 10 second video clip on what a River Ethic means to you?



A River Ethic for the Anthropocene

N LeRoy Poff

Colorado State University

Rivers as dynamic, heterogeneous, connected, biodiverse hydro-ecosystems



Temporal Variability



Spatial Heterogeneity



Landscape Connectivity



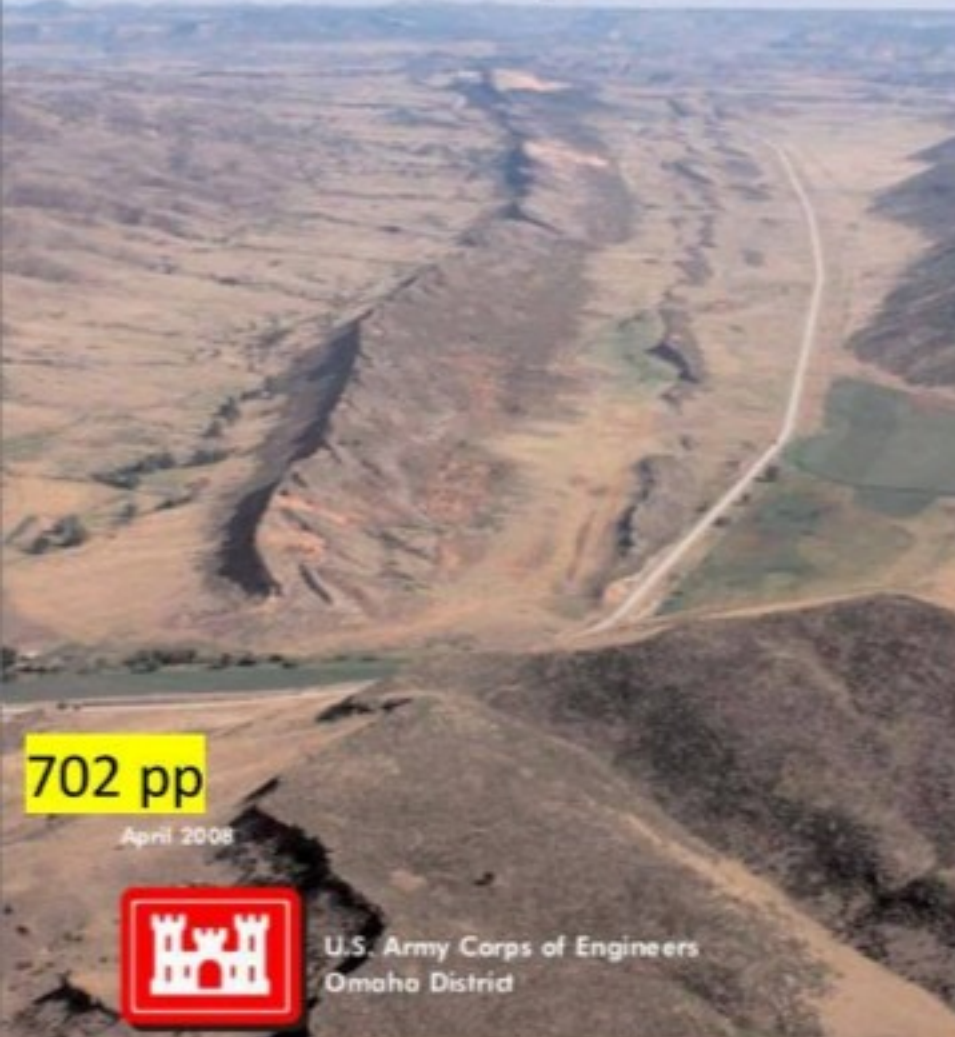


Most rivers are
modified ... and
more is on the way!

NORTHERN INTEGRATED SUPPLY PROJECT

Applicant: Northern Colorado Water Conservancy District

Draft Environmental Impact Statement



702 pp

April 2008



U.S. Army Corps of Engineers
Omaha District



FINAL REPORT

Northern Integrated Supply Project Supplemental Draft Environmental Impact Statement Water Resources Technical Report



Prepared for:



US Army Corps of Engineers
Omaha District
Denver Regulatory Office

Prepared by:



September 2014

522 pages

Volume 1 of 4

FINAL ENVIRONMENTAL IMPACT STATEMENT

NORTHERN INTEGRATED SUPPLY PROJECT

July 2018



Volume 1

Summary

Chapter 1.
Purpose and Need

Chapter 2.
Alternatives

Chapter 3.
Affected Environment

>2100 pages!

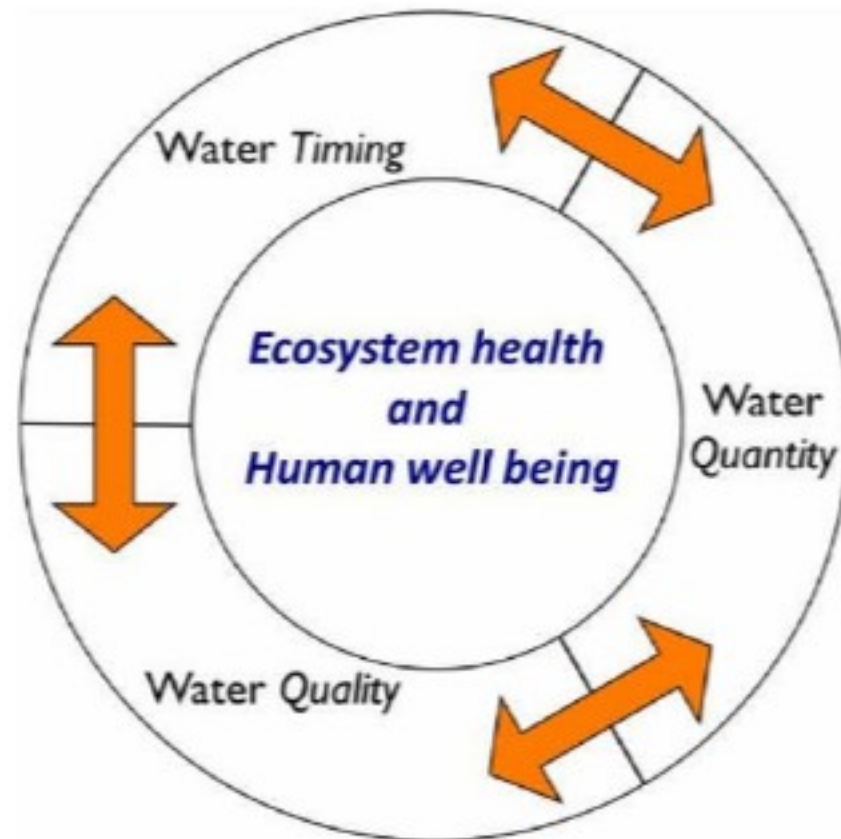


US Army Corps of Engineers | OMAHA DISTRICT
1515 CAPITOL AVE., STE 9000 • OMAHA, NE 68102

Brisbane Declaration (2007)

“the quantity, timing, and quality of water flows required to sustain freshwater and estuarine ecosystems and the human livelihoods and well-being that depend on these ecosystems”

<http://www.watercentre.org/news/declaration>



frontiers
in Environmental Science

POLICY AND PRACTICE REVIEWS
published: 02 July 2018
doi: 10.3389/fenvs.2018.00045



The Brisbane Declaration and Global Action Agenda on Environmental Flows (2018)

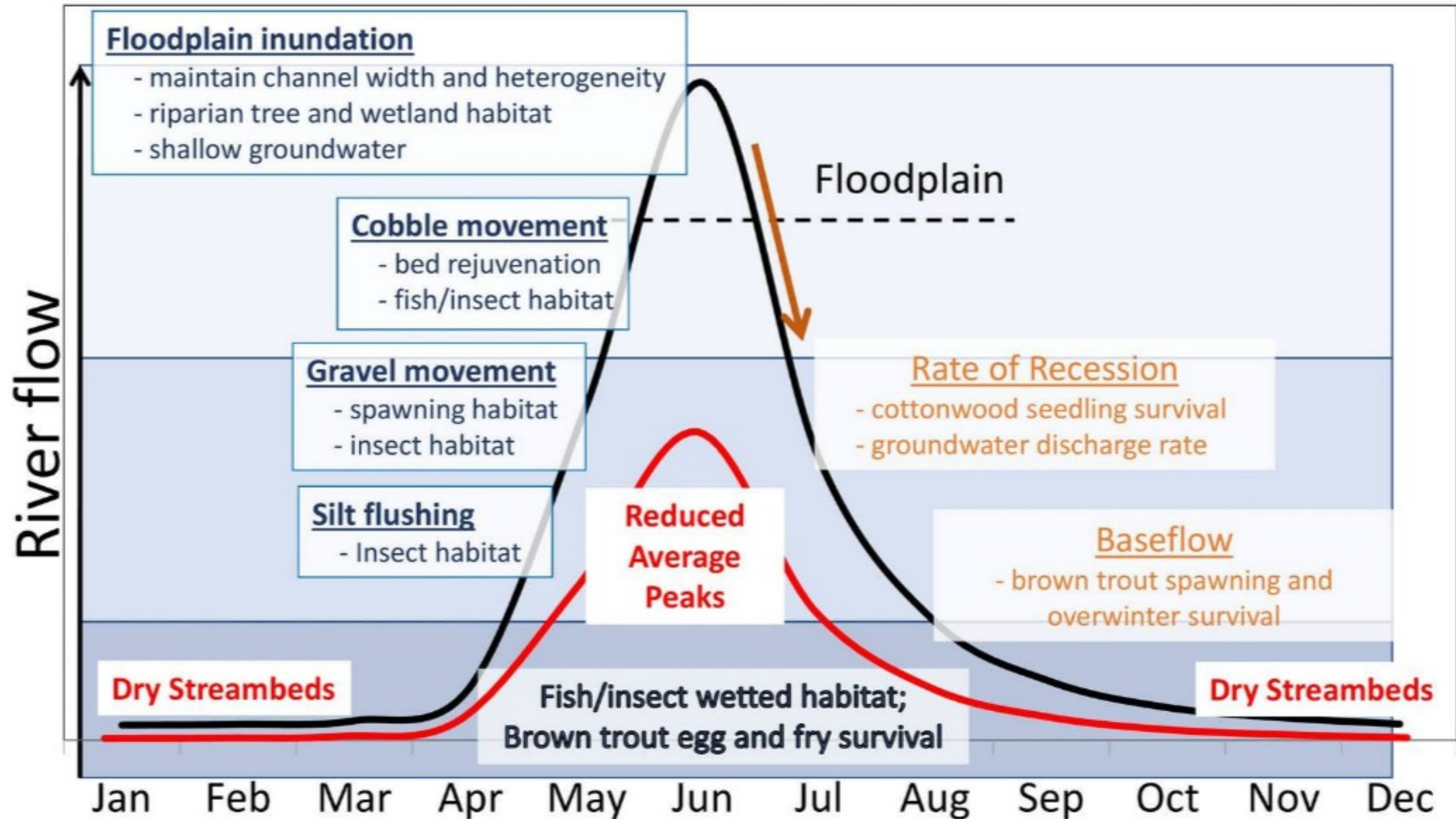
Angela H. Arthington^{1*}, Anik Bhaduri², Stuart E. Bunn¹, Sue E. Jackson¹, Rebecca E. Tharme^{1,2,3}, Dave Tickner⁴, Bill Young⁵, Mike Acreman⁶, Natalie Baker⁷, Samantha Capon¹, Avril C. Horne⁸, Eloise Kendy⁹, Michael E. McClain^{10,11}, N. LeRoy Poff^{12,13}, Brian D. Richter¹⁴ and Selina Ward¹⁵

¹ Australian Rivers Institute, Griffith University, Nathan, QLD, Australia, ² Sustainable Water Future Programme, Griffith University, Nathan, QLD, Australia, ³ Riverfutures Ltd, Derbyshire, United Kingdom, ⁴ World Wildlife Fund, Woking, United Kingdom, ⁵ World Bank, Washington, DC, United States, ⁶ Centre for Ecology and Hydrology, Wallingford, United Kingdom, ⁷ International River Foundation, Brisbane, QLD, Australia, ⁸ Department of Infrastructure Engineering, The University of Melbourne, Melbourne, VIC, Australia, ⁹ The Nature Conservancy, Arlington, VA, United States, ¹⁰ IHE Delft Institute for Water Education, Delft, Netherlands, ¹¹ Department of Water Management, Delft University of Technology, Delft, Netherlands, ¹² Department of Biology, Colorado State University, Fort Collins, CO, United States, ¹³ Institute of Applied Ecology, University of Canberra, Canberra, ACT, Australia, ¹⁴ Sustainable Waters, Crozet, VA, United States, ¹⁵ School of Biological Sciences, University of Queensland, Brisbane, QLD, Australia

OPEN ACCESS

Poudre River Hydrograph:

Functional Flows that Sustain Ecosystem Functions



Spreading a River Ethic from the Bottom-Up?



Unacceptable ecological options?
Unacceptable engineering options?

What management options to achieve acceptable ecological outcomes?



- Identify your values
- Share your values with others
- Understand what sustains these values
 - Hydrogeomorphic, Water Quality
 - Social, Economic, Cultural
- Promote action that sustains rivers as dynamic, heterogeneous, connected, biodiverse hydro-ecosystems

How can we better communicate the importance and beneficial aspects of large wood and bank erosion to stakeholders and regulators?



How can we enhance or restore resilience to channels & floodplains in a time of conflicting demands (warming climate and increasing human population)?



beavers

Easements

Beavers

Channel Migration Easements

vegetation

Beavers

Beavers

Parks and open space

take Ellen's class



How can we enhance or restore resilience to channels & floodplains in a time of conflicting demands (warming climate and increasing human population)?

Beaver

Incentives

stakeholder engagement

improve efficiency

Beavers are important

Communication

Collaboration

Set some aside

Vegetation

How can we enhance or restore resilience to channels & floodplains in a time of conflicting demands (warming climate and increasing human population)?

more space

Beavers

Open space

local regulation

Provide access that encourages human engagement and understandnig.

buffers

land use decisions

Incentives

Set ourselves up for success! Long-term thinking. Uncomfortable now to avoid stress later

How can we enhance or restore resilience to channels & floodplains in a time of conflicting demands (warming climate and increasing human population)?

Multi-functional projects

better water management and new water laws

I am in Ellen's class this semester. Give the streams room to move.

Administrative controls/room for river

naturalization of channels in urban settings

recognition of equal value

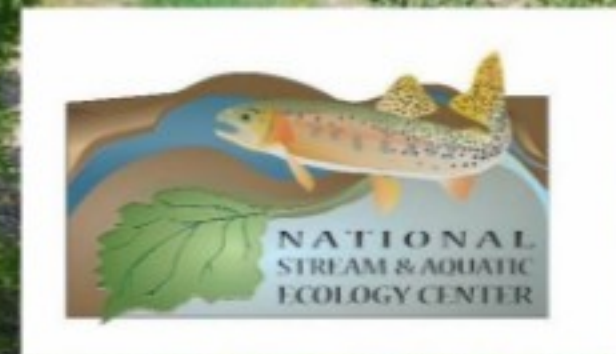
Demonstrate that healthy rivers cost less and provide more benefits.

Allow biological services (beavers) to manage river landscapes

Beavers!

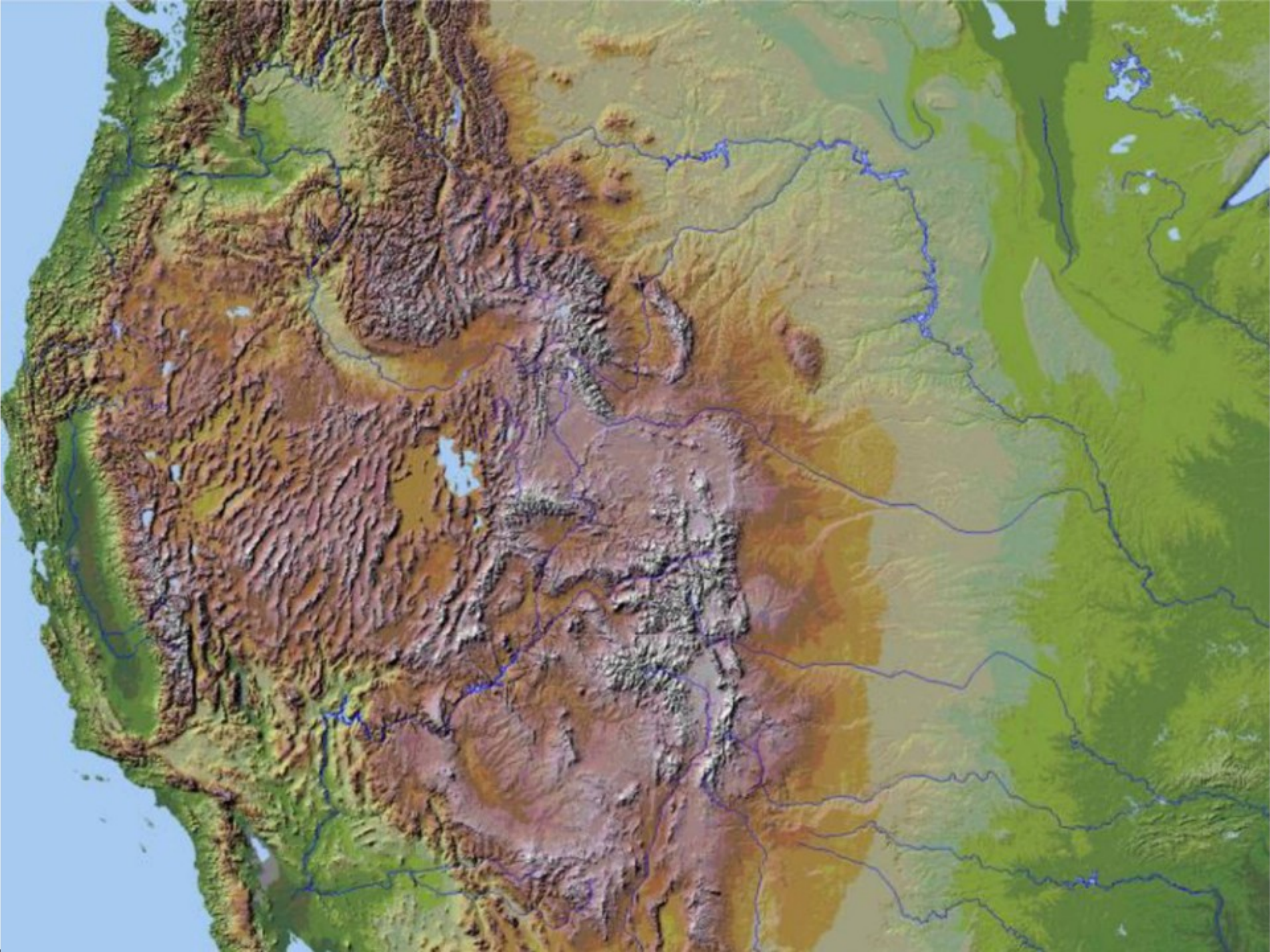
River ethic: Is there a limit?

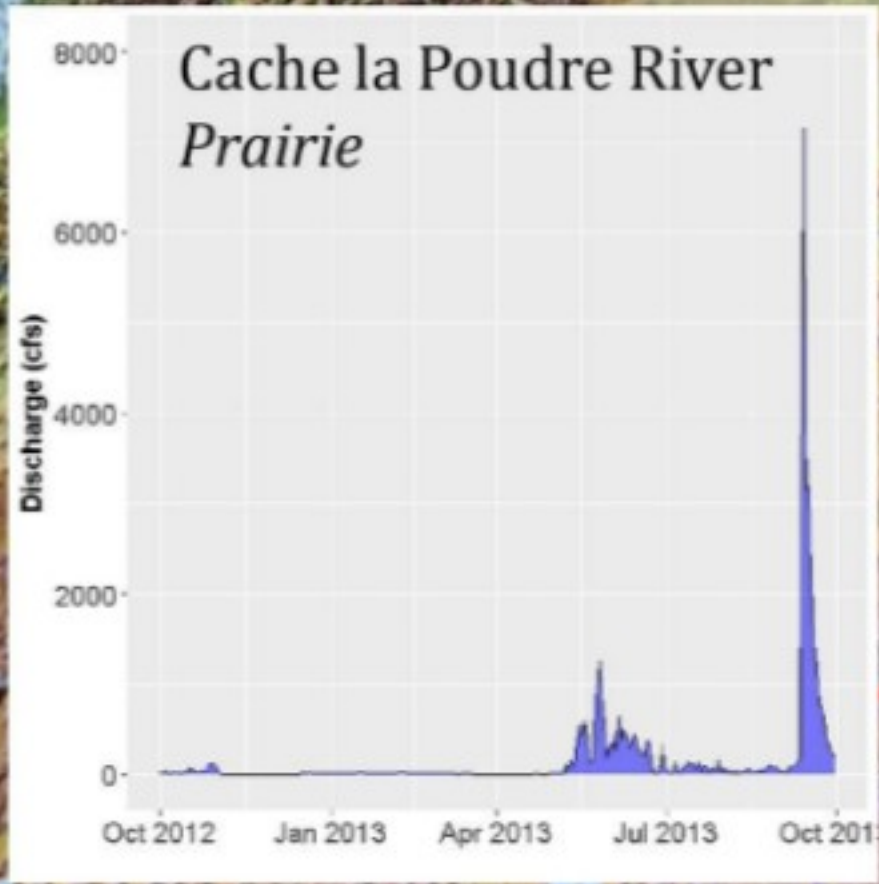
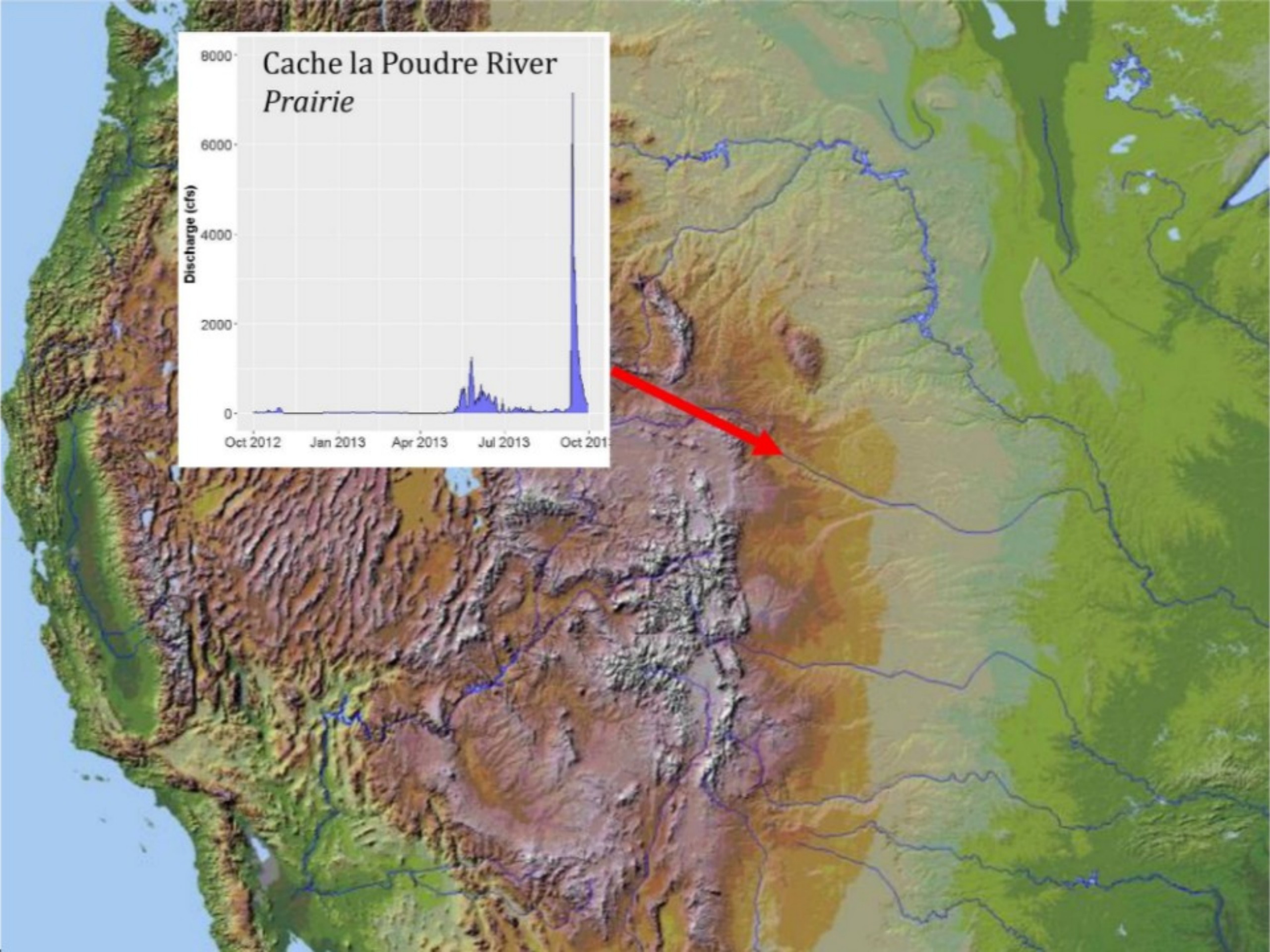
David M. Merritt
USDA Forest Service
National Stream and Aquatic Ecology Center

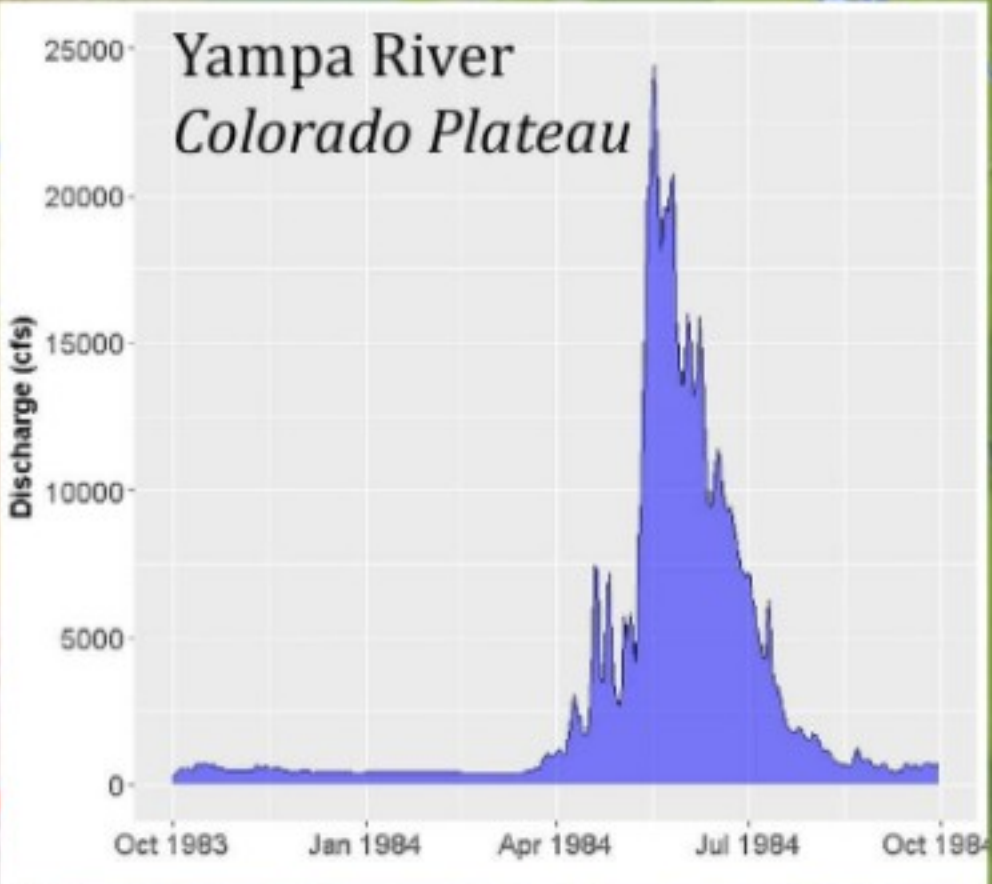
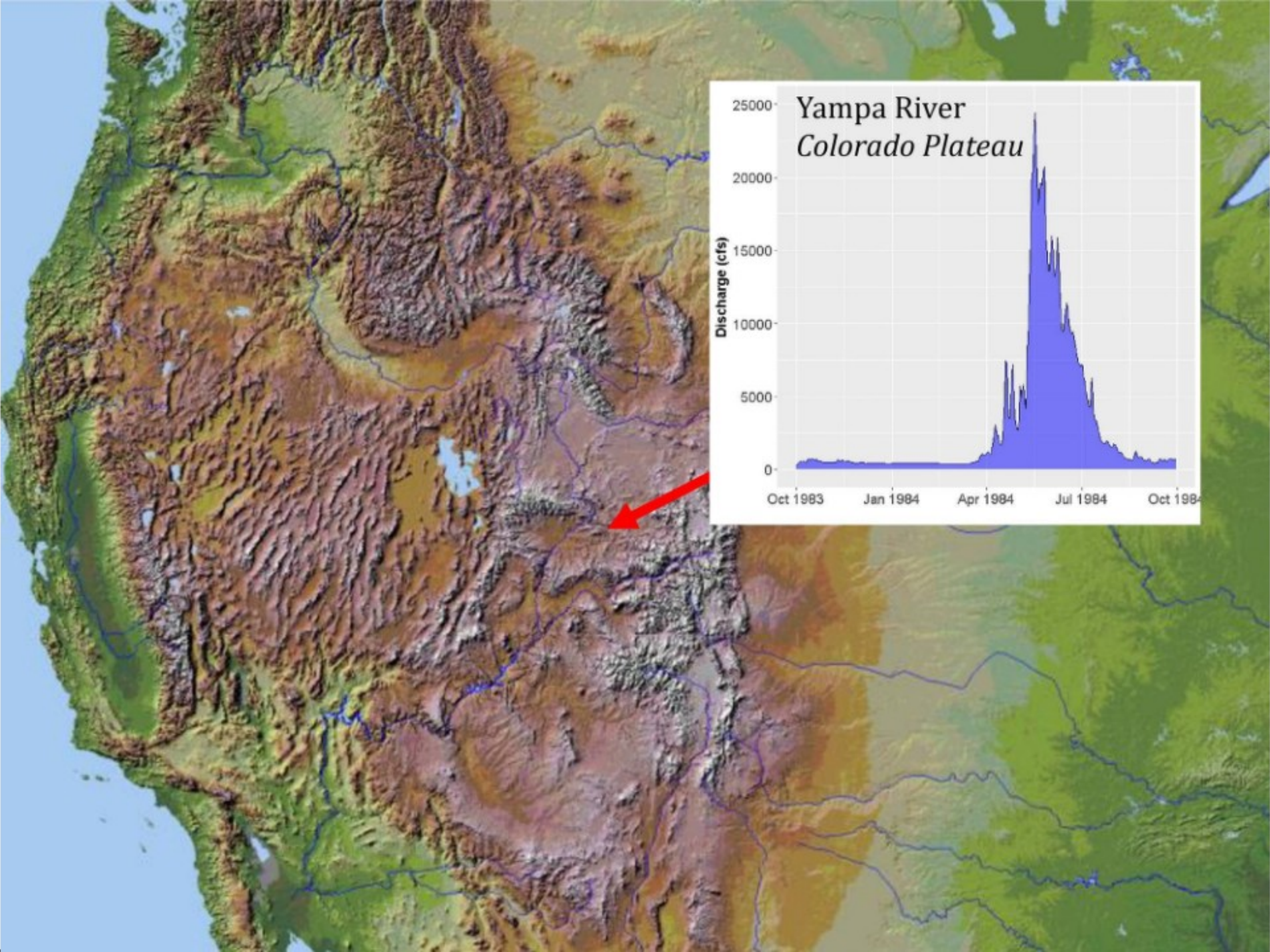


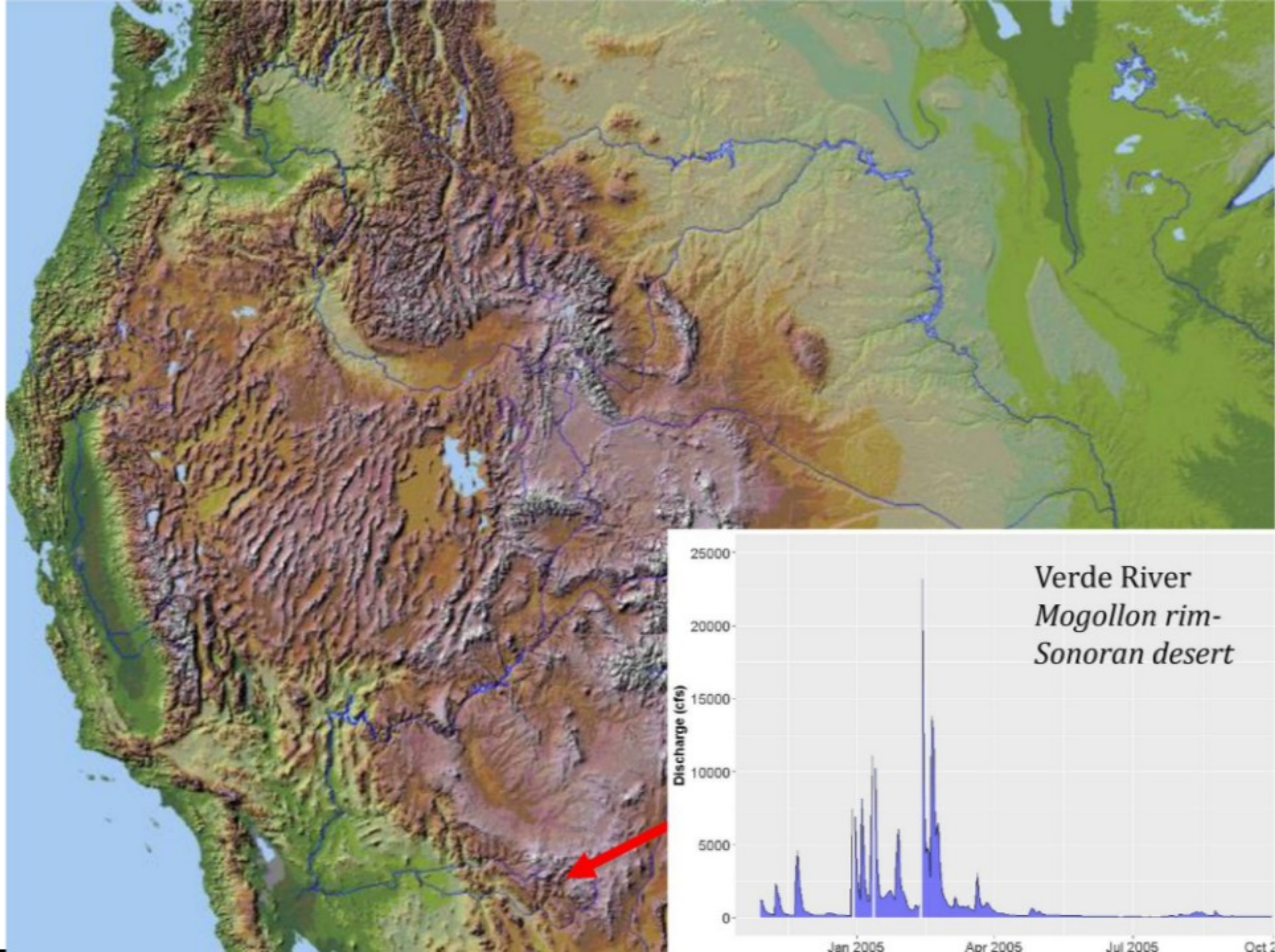


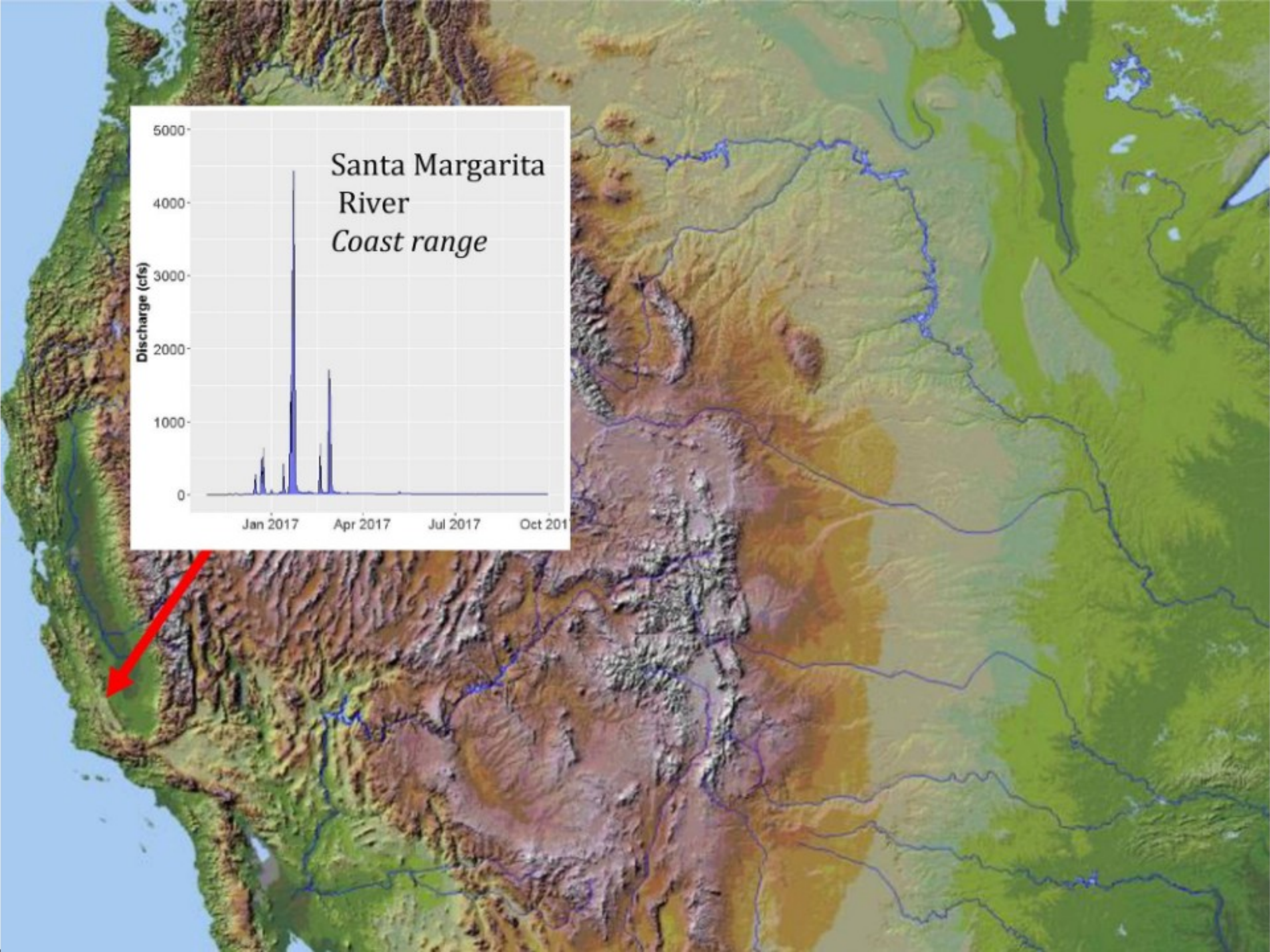


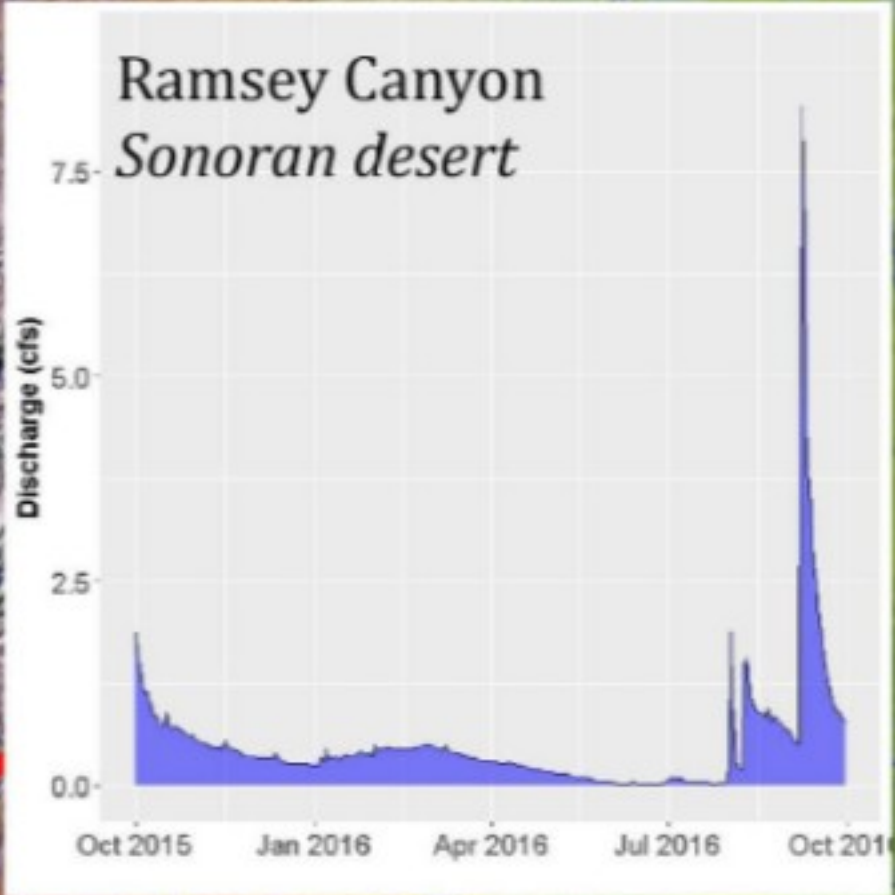
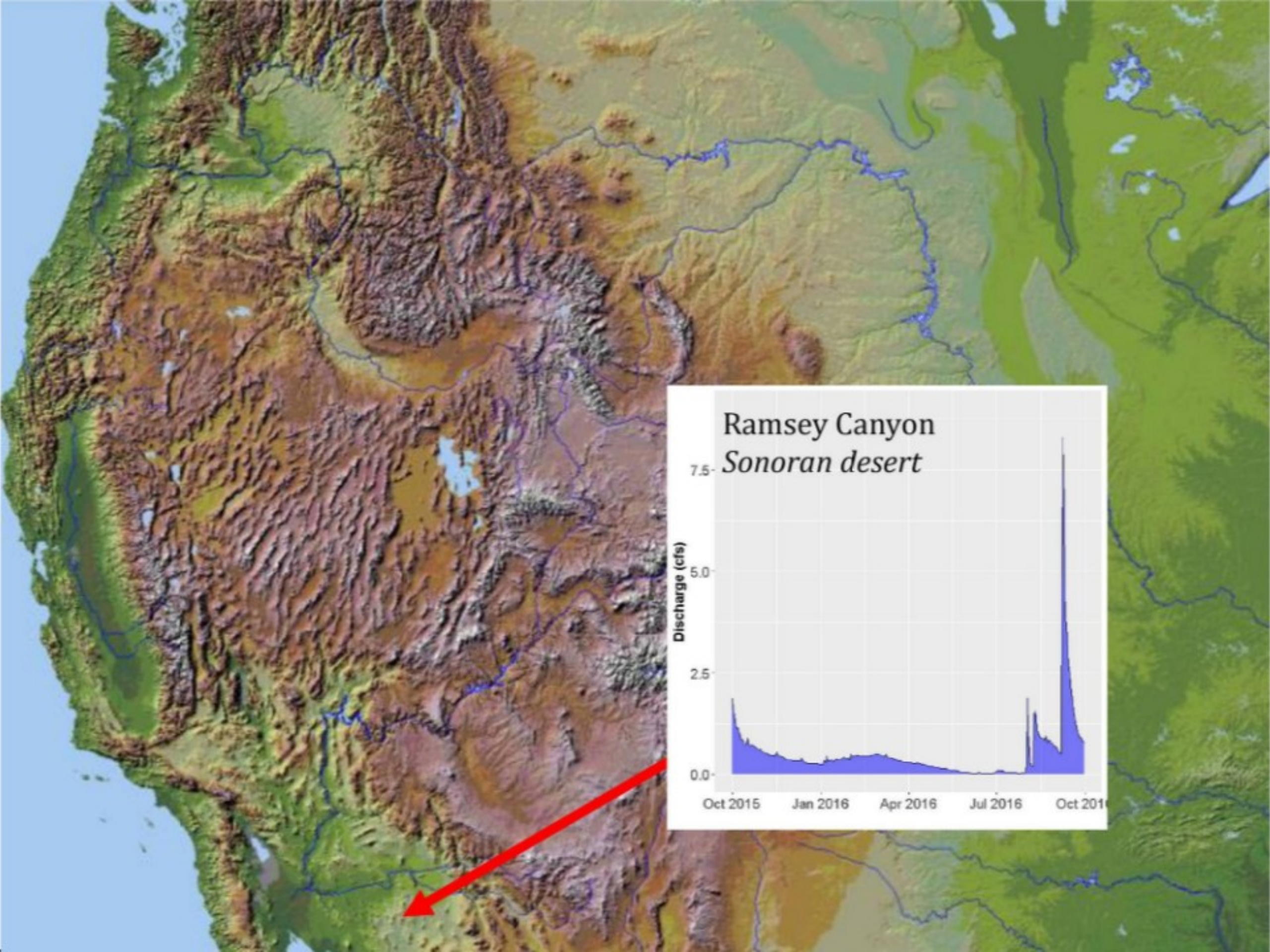










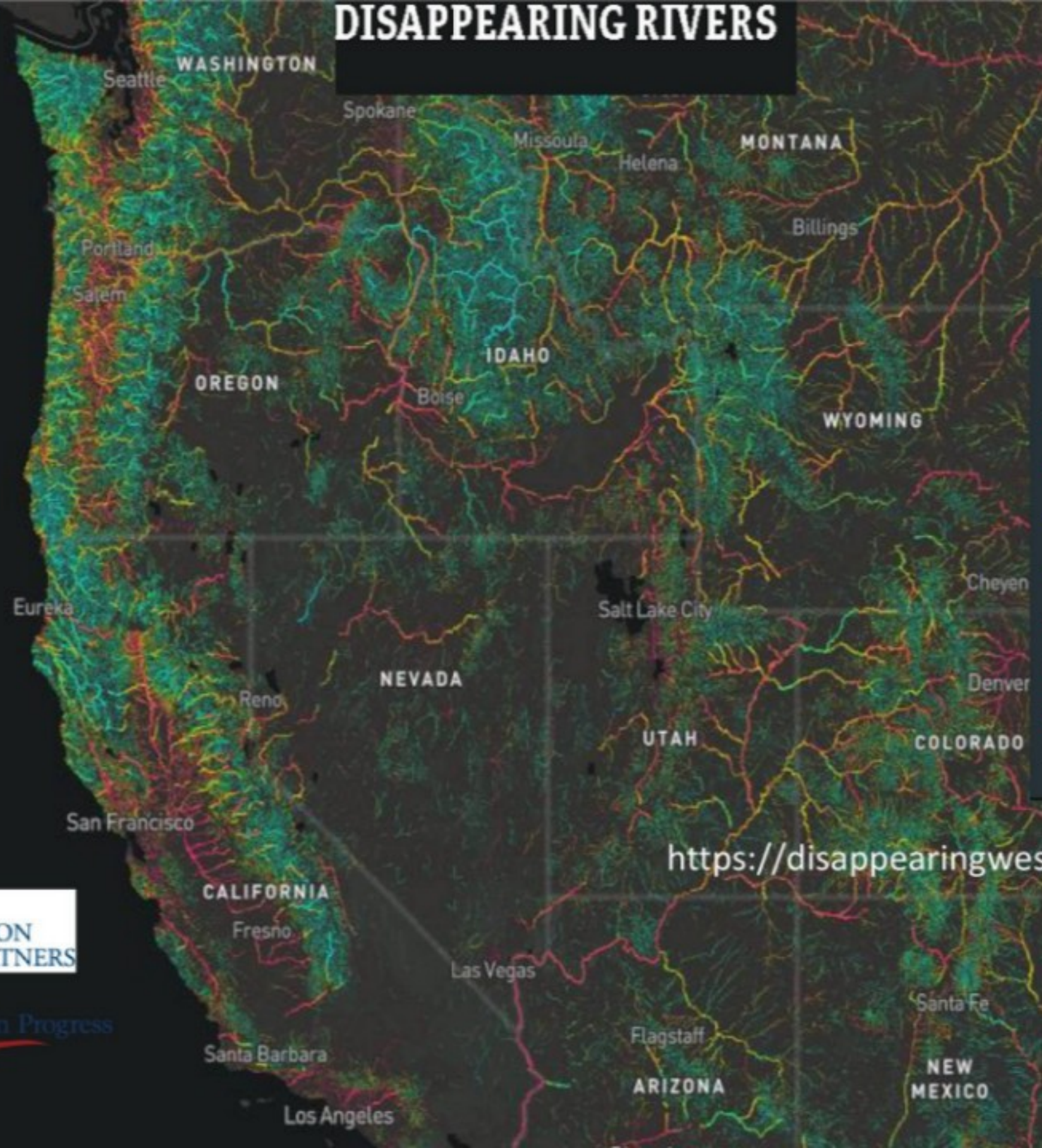








DISAPPEARING RIVERS



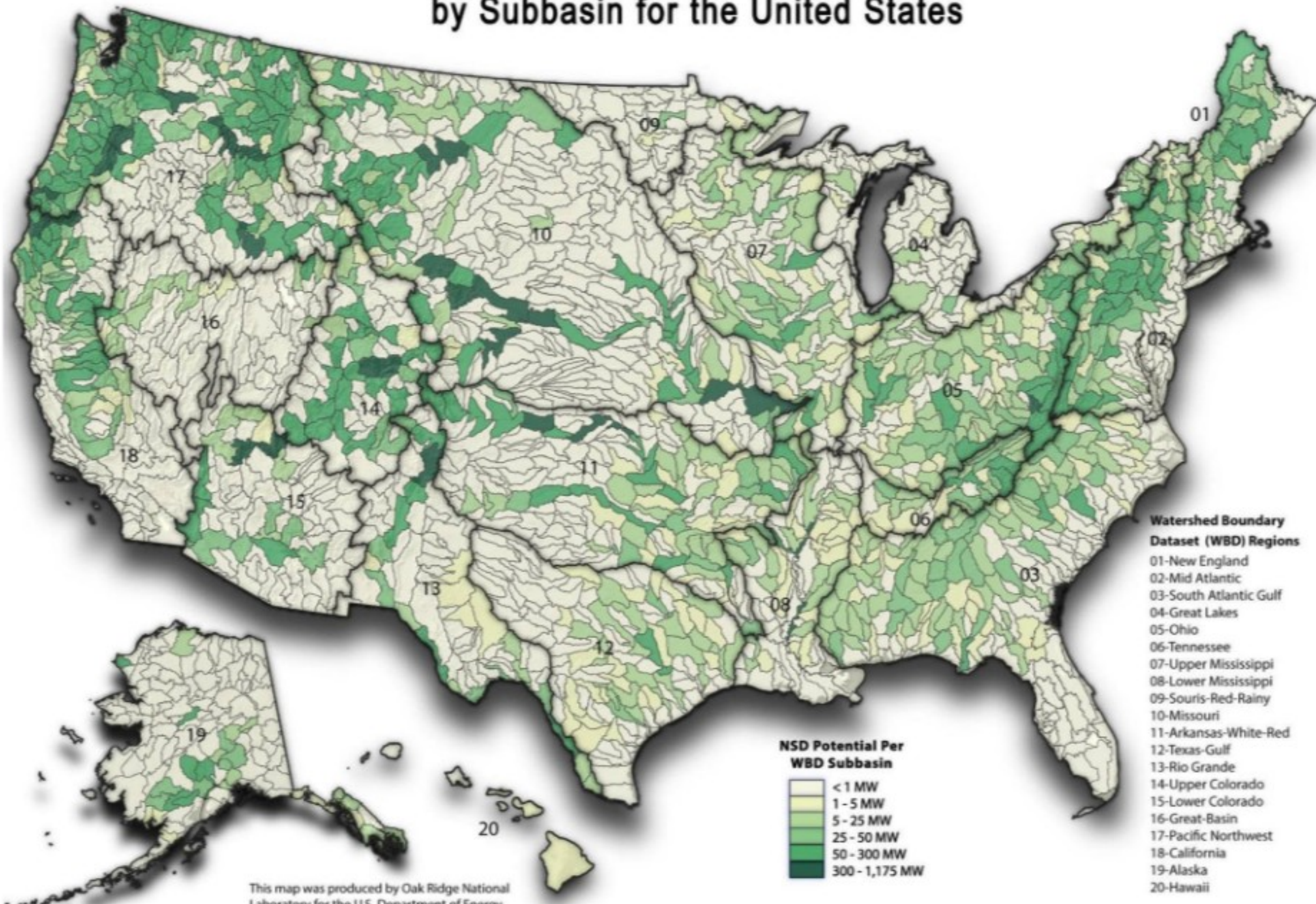
<https://disappearingwest.org/rivers/>



Save the Poudre
Store it in Glade



New Stream-reach Development (NSD) Potential by Subbasin for the United States

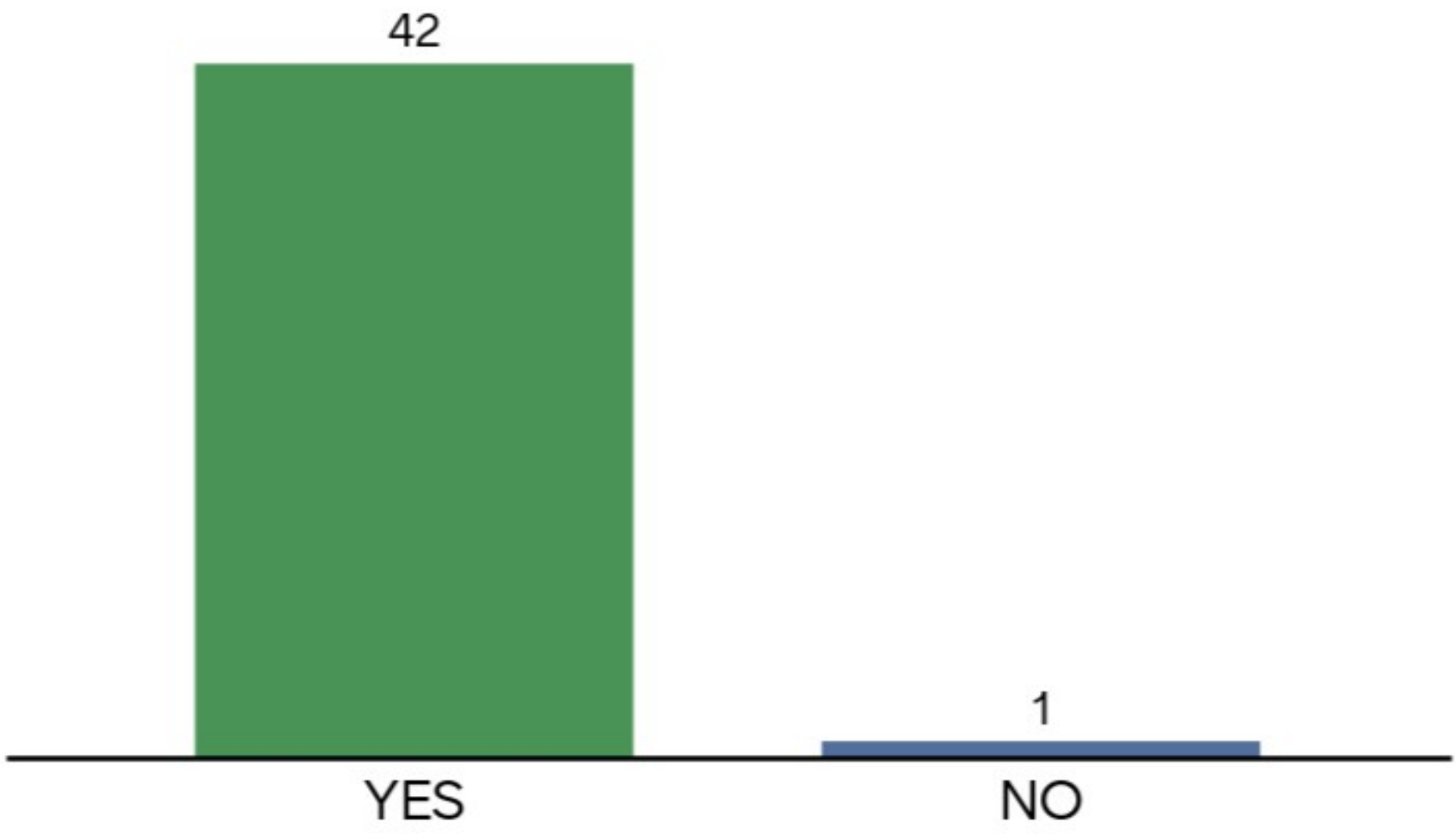


This map was produced by Oak Ridge National Laboratory for the U.S. Department of Energy.

Protective measures for rivers

- Wilderness or National Park
- Wild and Scenic River – outstandingly remarkable values
- State Instream Flow programs and protections
- Federal Reserve Water Rights
- Endangered Species Act
- UNESCO World Biosphere Reserves
- Legislation
- Constitutional amendment
-
- *'Sentinel Rivers Network' to preserve natural river heritage*

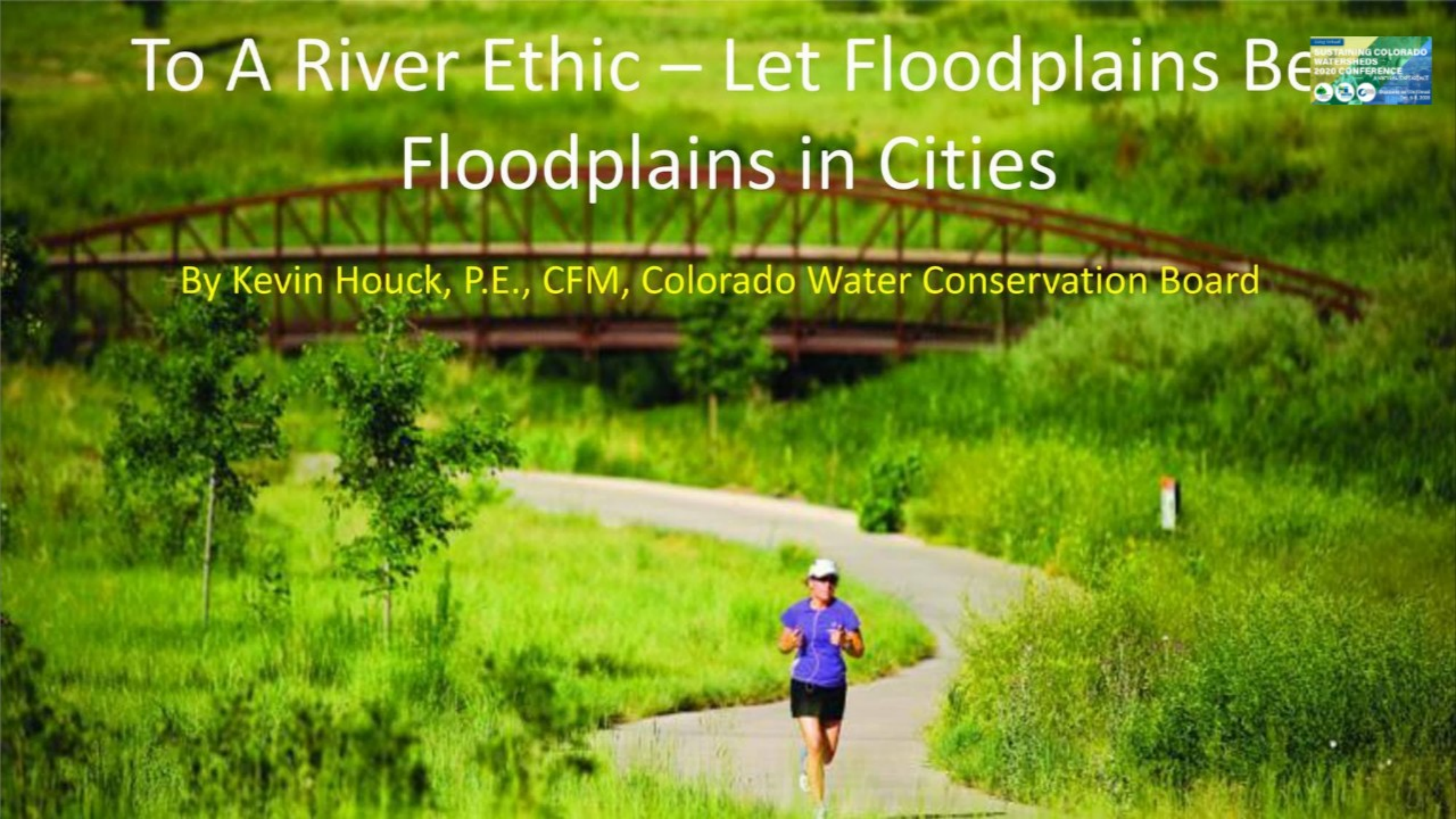
Do you believe it's critical to preserve sentinel river systems?



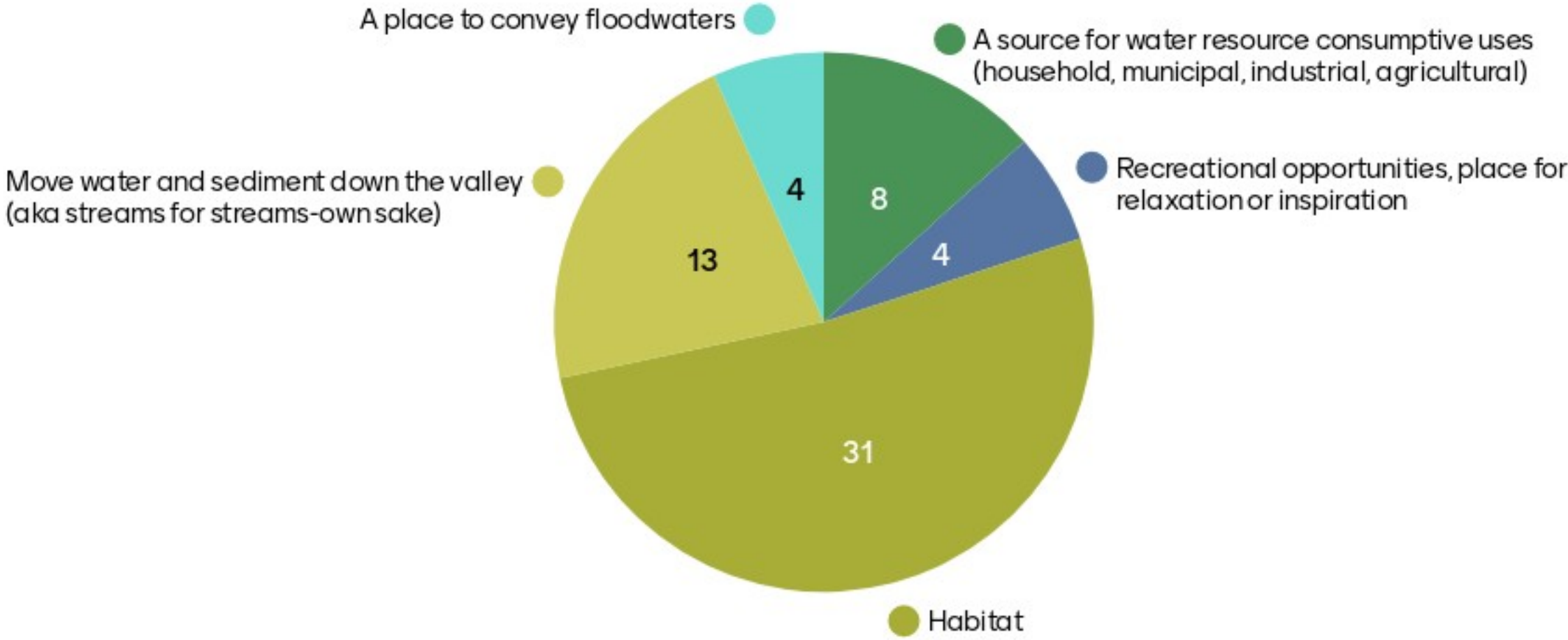


To A River Ethic – Let Floodplains Be Floodplains in Cities

By Kevin Houck, P.E., CFM, Colorado Water Conservation Board



What do you view as the most important function/value that streams provide?



Harvard Gulch – Denver



Hoffman Drainageway - Thornton



Estes Park



“Improvements” may lead to urban streambank erosion



When altering streams for project purposes, what is the most important factor to consider?



Creating Developable Lands



Protecting Public Safety



Protecting Infrastructure



Maximizing Recreational and Environmental Benefits



Preserving Stream Stability (Geomorphology)

Cherry Creek Trail - Denver



Bluff Lake Nature Center



Greenway Park, Denver



Confluence Park, Denver



Grange Hall Creek Floodplain - Thornton



Floodplains Are For Floods (and hopefully a few other things)



- Encroachments might create problems with future flooding or geomorphological changes
- Look for multiple benefits to be provided by floodplains
- Parks, open spaces, golf courses, and other recreational facilities
- Water quality filters
- Floodplain regulations make it harder to develop floodplains for a reason
- Make floodplains a community amenity

The River Ethic



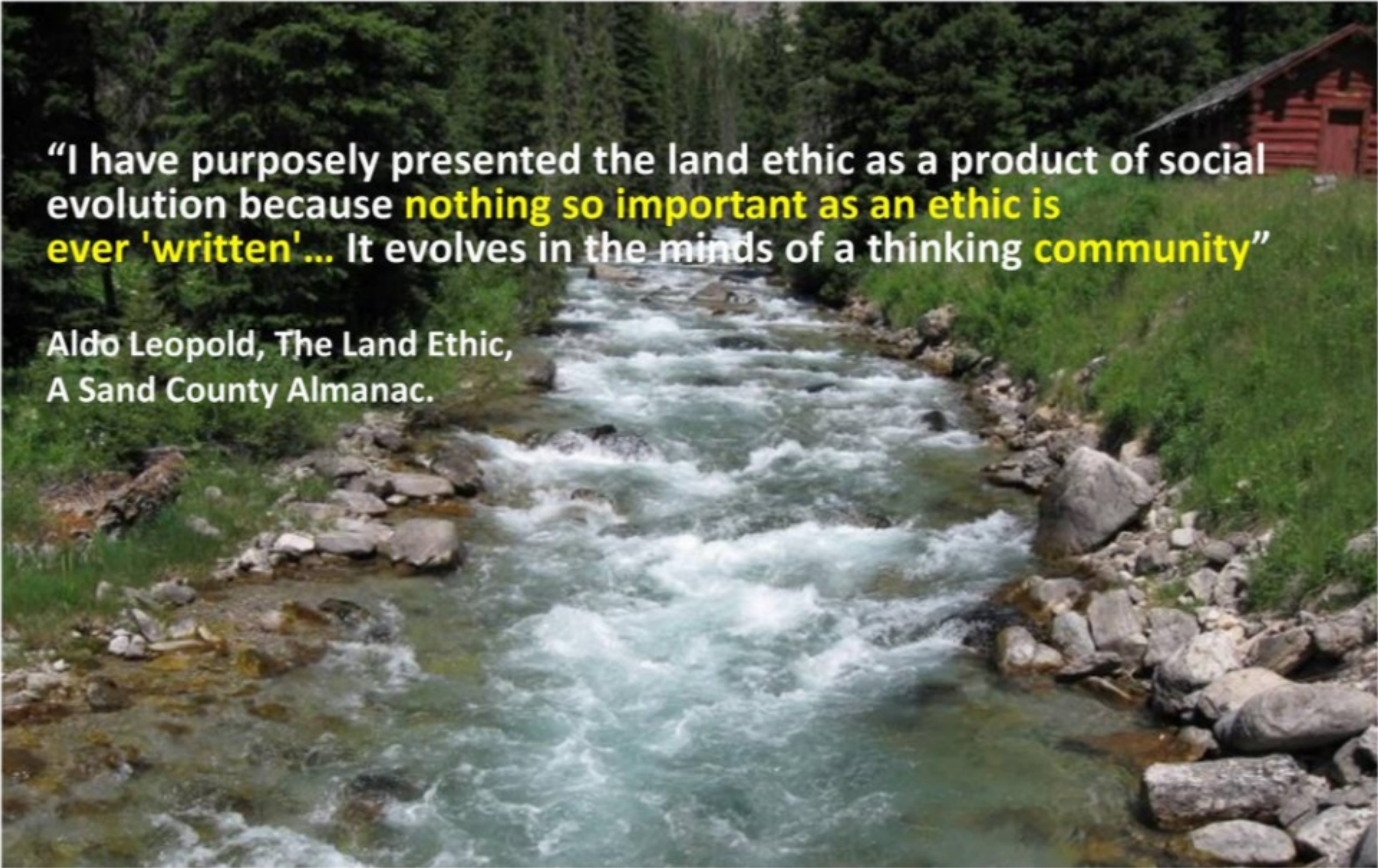
*Shaping a river ethic to
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THE RIVER ETHIC
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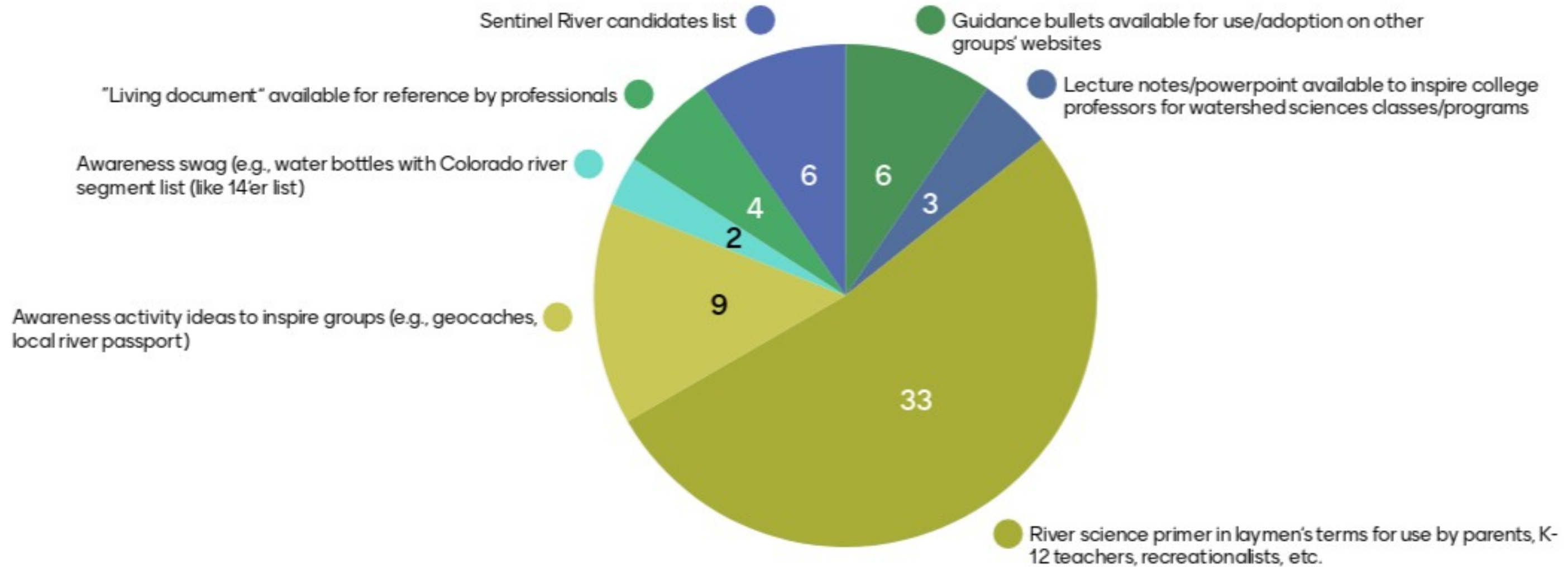
***Moderator: Julie Ash,
CRA/Stillwater Sciences
(and channeling
Matt Kondratieff, CPW)***




“I have purposely presented the land ethic as a product of social evolution because **nothing so important as an ethic is ever 'written'...** It evolves in the minds of a thinking **community**”

Aldo Leopold, *The Land Ethic*,
A Sand County Almanac.

Which potential “products” of a River Ethic do you think would be most useful?





“In the end, we will conserve only what we love;
we will love only what we understand;
and we will understand only what we are taught.”

Baba Dioum, Senegalese Environmentalist



More inspiration for the road:

“Never underestimate the power of a small group of committed people to change the world. In fact, it is the only thing that ever has.” –*Margaret Mead*

“Consciousness-raising is always the first step toward change.” –*Author M. Gigi Durham, PhD*

The River Ethic

Q&A: Enter your questions for our presenters!



lunch

How important are semantics in river science?

Are you familiar with 'dendritic design'?

Thanks everyone!

What is a primordial river?

Should we push for federal or state constitutional protections of rivers or nature?

you are all awesome

DR. Wohl: your comments about "not rushing to stabilize" - is that true in urban streams, that are now perennial streams due to urbanization?

Can easements provide opportunities for passive restoration?



Q&A: Enter your questions for our presenters!



Thanks to the panel members. Excellent perspectives.

Thanks. I'm on Buzzard's Bay in Massachusetts. My view is water, your talks are on water. Powerful.

What are the implications of the new WOTUS regime to the mitigation market effort?

What should the top priorities be for developing a river ethic that is likely to be widely embraced in the US (and elsewhere)?

Lunch is on Kevin

Thanks Peter, so what have mitigation markets gotten right?

What about the water quality impacts of lawn areas in flood plains? I'm thinking of fertilizer, herbicide, and pet waste. Any thoughts on this?

Dog Parks seem like the one below Chatfield dam, are popular and seem like a great use of open space, but when there's a creek or a river running through it, the runoff has got to be abhorrent. Has anyone studied this?

Can you give examples of the process domains that you said Oregon is using?



Q&A: Enter your questions for our presenters!



What are the best opportunities to move the needle in the limitations you're speaking to?

What have mitigation markets gotten right?

What ecological, political, and legal differences between eastern and western states do you attribute to differences in stream banking?

Not updating.

what are the corporate funder investors getting for return on investment?





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- Enter password: Library2020



Business as (Un)Usual

Oct. 6-8, 2020



Announcements

Attend the fitness session tomorrow morning at 9-10am

- Dance class led by Mallory Hiss of the Colorado Watershed Assembly
- Tune up your body to set the tone for a day of virtual conferencing!

Visit the Virtual Expo Hall

- Support conference sponsors and vendors and learn about their services!
- Visit at any time...some booths will have live hosts waiting to interact with you on Zoom during the lunch break today from from 12-1pm and tomorrow at 9-10am and 12-12:30pm
- Visit EVERY booth, then complete the google form that comes to your email to enter for a chance to win a \$100 REI gift card, certificates to CO breweries, or a set of WEco's Citizen's Guides!



Business as (Un)Usual Oct. 6-8, 2020



Visit the Virtual Expo Hall!

Click on the “Exhibitors” tab to toward the top right of the home page or to the left of the event schedule in Expo



2020 Sustaining Colorado Watersheds Conference - Business as (Un)Usual

Schedule

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October 06, 2020 - October 12, 2020

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Start Time	Title	Length	Speakers	Location	Type
Tuesday, October 06, 2020					
09:00 AM MST	Visit the Virtual Expo Hall	80 min		Virtual Expo Hall	Networking
10:00 AM MST	Day One Welcome and Plenary: The River Ethic	120 min	[Speaker Icons]	Virtual	Panel Discussion

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Exhibitors Event Schedule

October 6, 2020

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 09

9:00 AM MST	Visit the Virtual Expo Hall	>
10:00 AM MST	Day One Welcome and Plenary: The River Ethic	[Speaker Icon] Julia Ash >
12:00 PM MST	Day One Lunch and Networking - Visit the Virtual Expo Hall!	>



Business as (Un)Usual

Oct. 6-8, 2020



Share about the conference on social media!

#sustainingCOwatersheds2020





Business as (Un)Usual
Oct. 6-8, 2020



THANK YOU!

Our next session begins right after the lunch/networking break at 1:00pm!
Mitigating Impacts on Streams-Technical and Policy Perspectives

To get there....

Close out of this Webinar session, return to EXPO, and navigate to Session 1 on Oct. 6

Then open that session and click "Join" to enter the next Webinar session