



## The Rusting of *Wild and Scenic* Rivers in the Alaskan Arctic

by Jon O'Donnell

The Arctic is warming rapidly with many consequences for stream and river ecosystems. One unforeseen impact of climate change in the Arctic is the recent “rusting” of rivers, or the abrupt shift from pristine clear water to impaired orange conditions. Scientists from the National Park Service (NPS), U.S. Geological Survey (USGS), and the University of California Davis are working to understand the causes and consequences of this new disturbance to Arctic rivers. To date, scientists have compiled observations of more than 75 streams and rivers that have recently changed from clear to orange across nearly 1,000 km of remote wilderness areas in northern Alaska. Designated Wild & Scenic Rivers have been affected by this phenomenon, including the Salmon River in Kobuk Valley National Park and the Alatna and Koyukuk Rivers in Gates of the Arctic National Park.

*Aerial image of the orange Kutuk River draining in the Alatna Wild & Scenic River in Gates of the Arctic National Park. Photo: Ken Hill / NPS*

Why are streams and rivers in the Arctic undergoing rapid color change? The rusting of rivers primarily reflects additions of iron particles from the surrounding watershed to surface waters. Initial observations of water quality indicate that impaired, orange streams have higher acidity, turbidity, iron and sulfate concentrations, and toxic trace metal concentrations compared to unimpaired, clearwater streams. Together, these observations indicate weathering of sulfide minerals, such as pyrite, are contributing to degradation of water quality. The chemistry of orange streams is like areas impacted by acid mine drainage, except in this case, there are no mines, and most rivers are draining protected federal lands and wilderness areas. Researchers hypothesize that recently climate change and permafrost thaw, or perennially frozen ground, may be

*(continued, page 5)*



**River Management Society**

**Main Office**

Risa Shimoda, Executive Director  
PO Box 5750, Takoma Park, MD 20913-5750  
(301) 585-4677 / cell (301) 502-6548  
executivedirector@river-management.org

**River Training Center**

**River Studies and Leadership Certificate**  
Angie Fuhrmann, Coordinator  
(480) 818-3649 / angie@river-management.org

**National Rivers Project**

James Major, Coordinator  
(540) 717-3595 / james@river-management.org

**Communications**

Bekah Price, Coordinator  
(423) 943-2000 / bekah@river-management.org

**Professional Purchase**

Rick Waldrup, Lead  
(406) 925-1554 / riverguy@bresnan.net

**Assistant**

Anja Wadman, Assistant  
(801) 388-2214 / awadman@blm.gov

**RMS Store / Merchandise**

Judy Culver  
(928) 443-8070 / jculver@blm.gov

**RMS Journal**

Caroline Kurz, Editor / Design  
(406) 549-0514 / caroline@river-management.org

**National Officers**

Judy Culver, President, Taos, NM  
(928) 443-8070 / jculver@blm.gov

Shannon Bassista, Vice President, Boise, ID  
(208) 373-3845 / sbassista@blm.gov

Helen Clough, Secretary, Juneau, AK  
(907) 790-4189 / hcloughak@gmail.com

Rob White, Treasurer, Salida, CO  
(719) 221-8494 / rob.whiteco@gmail.com

Emma Lord, Chapter Liaison, Loudon, NH  
(518) 728-4029 / emma\_lord@nps.gov

**Ex-Officio Advisors**

Bob Randall, Kaplan, Kirsch & Rockwell LLP  
(303) 825-7000 / brandall@kaplankirsch.com

Nate Hunt, Kaplan Kirsch & Rockwell LLP  
(303) 825-7000 / nhunt@kaplankirsch.com

Steve Chesterton, US Forest Service  
(202) 205-1398 / stephen.chesterton@usda.gov

**Editorial Policy**

Articles are not edited for content and may not reflect the position, endorsement, or mission of RMS. The purpose of this policy is to encourage the free exchange of ideas concerning river management issues in an open forum of communication among the RMS membership. Unless indicated, points of view are solely those of the author.

## Executive Director's Eddy

### River Recreation

My connection to rivers resulted from a co-worker who introduced me to the world of whitewater paddling as a pastime, a hobby, an outdoor endeavor, and eventually as a competitive sport. Loving the fun and challenge of learning to steer a canoe on the Little Miami River, then logging a seemingly endless sequence of adventures with friends, co-workers, and customers in nearly every state and a dozen or so countries has provided unmatched experiences that run the gamut from silly to exciting to life-altering. Running Class V and teaching an exuberant ten-year-old how to roll have contributed to a lifetime of experiences sought and appreciated.

Then, there are the experiences of (millions of) peoples for whom relationships with rivers are simply an integrated component of life as is waking up each day. Consider a selection from an [article](#) posted by the National Endowment of the Humanities:

*For centuries ... the Tennessee River was so closely associated with them that English, Spanish, and French settlers often referred to the waterway simply as the "Cherokee River." It stood not just at the political and economic center of much of the Cherokee world, but also at the spiritual center. The translation of the Cherokee word for river, "Long Man," or, more literally, "person, long, he," evokes something of the sacred essence of those bodies of water, which the Cherokee saw as living entities, endowed with their own unique personalities and attributes. For tribal communities rivers have represented food, community, commerce, and sometimes as a delineation between friendly, or not-so-friendly neighbors.*

The realization that 'doing right' for our rivers is inextricably linked to learning more and partnering with those who really know rivers has been humbling. As the Klamath Dam removal became a centerpiece for both a Pacific Chapter trip (here's the trip [video](#)) and the backdrop for the 2025 Symposium, we 'traditional' river managers (define this however you'd



Risa Shimoda, RMS Executive Director

like) are learning ever more about not only the difference in paradigms between being one with the river and "using" it or "managing its use."

We were scolded on that 2022 chapter trip for what we thought was a respectful question to a Tribal speaker. We asked him for his title so that we could introduce him properly. In his mind, this smacked of our interest to characterize him narrowly, when in fact he serves multiple roles for and on behalf of his Tribe. Hmm. Does "playing" on a river insult Tribal sensibilities or standards? Should an outfitter or livery on their busiest day of the week alter a trip route after discovering that they regularly run right through the location of a Tribe's morning ritual? As we seek to expand opportunities to "support professionals who study, protect, and manage North America's rivers" — and also seek to understand those who were here first — we should, it seems, square our European sense of river 'use' with its role as their provider.

There are 574 [federally recognized tribes](#) and 200 [non-recognized tribes](#). We are taking one day at a time to learn what can help us dig ourselves out of the trench of silence, assumption, and hidden not-great historical facts. During the past couple of years, we have hosted 'workplace culture' conversations during River Management Roundtables to encourage us to shine a light on topics outside of our work plans. We learned about the 'users' side of the Klamath story

## President's Corner

### Here Bear... Yo Bear... !

A few weeks ago, I was asked by my staff if I would be interested in being the fourth person on the weekly fish counting field trip that extends for approximately six weeks. I paused, as a fourth person seemed pretty excessive for Newson Creek that is generally no wider than one or two adults laying down head to toe. Taking into account that the stream is located in the Greater Yellowstone Ecosystem — home of over 1,000 grizzly bears — and the creek is known for grizzlies chowing down on migrating cutthroat trout, I was even more curious to head into the field with my staff for the day.

As the truck was approaching the turn-off to the campground, the wildlife biologist casually mentioned a bear attack in the Grand Tetons the day before. The timing of this information could have spooked a new member of the team but having lived in Alaska with frequent grizzly encounters, my healthy respect for these bears did not progress to fear or apprehension of the coming trip.

Exiting the truck on a frigid May morning, each of us pulled on our hats and jackets, strapped on hip waders, boots, backpacks, and finally bear spray while listening to the detailed safety talk. We would walk upstream from the confluence with the Shoshone River, under a bridge, through tall thick stands of willows and return by a road to the truck.

A few hundred feet in we crossed fresh bear tracks and scat as we approached the creek. Acting as the look-out and singing out "here bear" every few minutes, I scanned the trees and open spaces, glancing back to witness water samples and water temperatures being taken — I also noticed a big boar crossing the creek where we were standing a little more than an hour ago.

Continuing with the survey, the team spotted cutthroat tucked under cut banks and stacked up at water features and waterfalls, some as high as three feet. Occasionally, free-floating fish eggs would pass by after being released by other fish using the same patch of gravel to spawn. We waded upstream when we couldn't hike the shoreline, trying not to step on any fish hiding in the mini whitewater foam... all the while hollering *here bear... yo bear!* and various other phrases as the brush became so thick in some areas that we had to shoulder through it.

Each camera location captured photos of bears including one who decided the camera made a good scratching post. Every hundred feet or so, bear tracks or bear scat were located. At the end of the day, I appreciated the necessity of needing four people on these adventures and the challenges and importance of maintaining the fishery beside the burgeoning grizzly bear population.

One might ask how wildlife and fisheries biologists tie in with the River Management Society. By finding a creative way to combine fisheries studies and game cameras (that record the frequency and time bears use the same resource) with the effective dissemination of information to educate campers and the boating community, we can hopefully discourage curious visitors from walking the streambed when bears are present. This technique has decreased human-bear interactions on the creek, thus saving bears and humans from negative interactions while still permitting safe recreation access to the Shoshone River and its tributaries. ❖



Judy Culver, RMS President

shared in [A Final Step Looms for the Largest-Ever Dam Removal](#) (March 2022) by natural resources policy consultant Craig Tucker, who represented Tribes to the hydropower industry and FERC. River Management Roundtables have also discussed [Land Acknowledgements](#) and [Fostering Respect through Acknowledgement and Reciprocity in Action](#).

Thanks to an introduction made by member and RMS Board Advisor Steve Chesterton, Angie Fuhrmann and I have met with Amy Bowers Cordalis, featured in [Undammed](#) (here is its 30-second [trailer](#)). Amy is a lawyer and member of the Yurok people, who [lost 90% of their land](#) during the California Gold Rush and whose reservation includes [44 miles of the Klamath](#). Amy founded [Ridges to Riffles](#), a conservation organization whose mission is "to help Indigenous Peoples protect and restore the natural and cultural resources they rely on to maintain their identity and sovereignty."

Personally, I will continue to love rivers as a paddler for fun, fitness, the place where I find friendship, inspiration, and gratification as an instructor. I will also be ever more mindful of the river as a home, shrine, and source of life. ❖

Risa Shimoda  
Executive Director

Judy Culver, RMS President

# Support the 2025 River Management Training Symposium!



Every RMS member, friend, and ally (you, too!) can contribute!

April 8-10, 2025 | Ashland, Oregon

by Bekah Price, Kristina Rylands, and Risa Shimoda

Join us for a week of technical training and peer learning in the immediate aftermath of the largest dam removal in US history at our *Restoring Rivers for a Resilient Future* River Management Training Symposium! The event will take place April 8-10, 2025, at Ashland Hills Hotel and Suites in Ashland, Oregon, with field sessions at regional restoration sites.

With nearly 300 miles flowing freely for the first time in nearly 100 years, the Klamath River will provide a unique backdrop for sharing strategies and techniques that are restoring and rehabilitating watersheds and their communities across the country. Decades in the making, this landmark dam removal project is a national case study about regulation, collaboration, values, and traditions shared by communities who rely on the river for their very existence. In addition to the historic work on the Klamath, we look forward to learning how others are applying related skills to study and improve river flow, water quality, and river-related experiences.

Professionals from across the country — river managers, rangers, outfitters, planners, water trail coordinators, advocates, community leaders, scientists, and students alike — will share how they are applying multidisciplinary approaches to practices supporting visitor use, flood prevention and recovery, fire and forest resilience, water quality, responsible recreation, and cultural tradition. We are confident that you will gain new insights and tools you can apply to support your rivers' ecological integrity and biodiversity, human communities and ecosystems, and long-term vitality.

Registration will open Fall 2024. Details will be posted on the Symposium web page: <https://www.river-management.org/2025-rms-symposium>. Please contact Risa Shimoda at [rms@river-management.org](mailto:rms@river-management.org) or (301) 585-4677 with questions.

## Join us as a presenter!

Share creative approaches, lessons learned and practical tools with a diverse audience of river professionals through a presentation, panel, or poster! Learn more in our detailed request for proposals on the [Symposium](#) web page, including a link to submit proposals online. Proposals will be accepted through October 1, 2024, at midnight ET.

## Sponsor the event!

Your sponsorship supports river leaders nationwide and offers excellent visibility for your organization to attendees and the larger river management community. See the many benefits of sponsorship and auction donation in our [Sponsor Information Packet](#). Whether you sponsor the event or donate items to our auction, we will appreciate your support. Let's discuss how we can provide a unique opportunity to promote your organization, services, or products!

## Donate items to the auction!

The online and in-person auction elevates our partners' brands and, importantly, helps make this event possible. Please consider donating river and outdoor equipment, outfitted trips or instructional classes, jewelry or works of art. Bidding will take place online in early April 2025, the week before the Symposium, and it will close on the final day of the Symposium with a live auction. As a donor, you can receive sponsor benefits equivalent to 50% of the item's retail value. Please reference the sponsor information packet above to see how this might benefit you! To donate an item, visit our [Auction Item Donation Form](#).

Professionals from across the country will share how they are evolving multidisciplinary, collaborative approaches to address a range of topics including visitor use, flood prevention and recovery, fire and forest resilience, water quality, responsible recreation, and development.



2023 session exploring the impact of climate change on Wild and Scenic Rivers. Photo: Angie Fuhrmann



2023 kayaking field trip on the San Antonio Mission Reach Paddling Trail. Photo: Jack Henderson

## Welcome New RMS Members

### Associate

Andrew Schwartz, Director of Design  
Environmental Planning and Design, Pittsburgh, PA

Beth Anne Fischer, Project Manager, Design & Restoration  
Conservation Halton, Burlington, ON

Davina Dube, Environmental Technician  
Ecofish Research, Ltd., Squamish, BC

### Individual

Ella Buckwalter  
Virginia Commonwealth University  
Leesburg, VA

KayeC Jones  
Riparian Maintenance Supervisor  
Fort Wayne Parks and Recreation  
Fort Wayne, IN

*(Rusting, continued from page 1)*

responsible. As permafrost thaws, sulfide minerals can interact with groundwater and can undergo weathering processes that drive rusting of streams and rivers.

Scientists and land managers are concerned about the consequences of rusting rivers on drinking water supplies to rural communities and on subsistence fisheries in the region. The degradation of water quality may impact remote Alaskan communities that rely on river water for drinking and household uses. Rusting rivers may also represent a loss of habitat for aquatic life, including a variety of fish species. Initial observations by NPS and USGS scientists indicate that a shift to orange streamwater causes a loss of resident fish species and a

decline in stream macroinvertebrate biodiversity. Little is known about how rusting of Arctic rivers could impact subsistence fish species like salmon or whitefish. Research is planned for 2024 and beyond to better understand the underlying causes of rusting rivers, and the consequences for ecosystems, fish, and humans. ❖

*Jon O'Donnell is an Ecologist working for the National Park Service, Arctic Inventory & Monitoring Network.*

*For more information:*  
<https://www.usgs.gov/centers/alaska-science-center/science/rusting-arctic-rivers-freshwater-ecosystems-respond-rapidly>

# River Management Society Announces 2024 River Studies and Leadership Certificate Recipients

## Graduates launch river careers in fisheries, climate resiliency, and wilderness therapy

The River Management Society (RMS) has announced the 2024 recipients of the [River Studies and Leadership Certificate](#), a program offered in partnership with fourteen US colleges and universities. Nine students have completed a unique profile of interdisciplinary coursework and a field-based practicum in river-related science, policy, conservation, education, and recreation that offers the foundation of knowledge and experience required to pursue river-related careers.

“We’re inspired by these graduates, whose dedication and passion carve a path towards sustainable stewardship and innovative leadership in river management,” says Risa Shimoda, RMS Executive Director. “As veteran river professionals working in the private and public sector transition into retirement and rivers continue to grapple with escalating usage and climate change, these emerging professionals bring fresh perspectives and skills that are critical for the future health of our river systems.” Recipients include:

**Colorado Mesa University (CO)**  
Amber Martin

**Fort Lewis College (CO)**  
Kennedy Perry

**Northeastern State University (OK)**  
Austyn Rice and Leah Fletcher

**Northern Arizona University (AZ)**  
Danielle Juarez and Macie Wagner

**Virginia Commonwealth University (VA)**  
Ella Buckwalter, Isabelle Pillow, and Jennoa Fleming

Many have already begun river-related careers in positions such as fisheries technician, water quality lab technician, climate resiliency technician, and mental health resiliency ranger.

“My experiences working towards the River Studies and Leadership Certificate provided me with a comprehensive understanding of river systems,” says Kennedy Perry, the first student to receive the certificate at Fort Lewis College. “Now, I am thrilled to be working in my dream job and engaging in exciting research.” ❖

*RMS established the River Studies and Leadership Certificate in 2018 to underscore the multi-disciplinary nature of wise, holistic river management for students interested in river-related careers. For information: Bekah Price at [bekah@river-management.org](mailto:bekah@river-management.org).*



NAU  
Danielle Juarez



NSU  
Austyn Rice



CMU  
Amber Martin



VCU - Jennoa Fleming



VCU - Ella Buckwalter



VCU - Isabelle Pillow



NAU - Macie Wagner



FLC - Kennedy Perry



NSU - Leah Fletcher

# Get to know our River Studies and Leadership Certificate alumni – the next generation of river professionals

Macie Wagner, Northern Arizona University Alumna –  
Friends of the Rio de Flag  
AmeriCorps Climate Resiliency Technician

Upon graduating from Northern Arizona University with a B.S. in Environmental Science and Sustainability along with my River Studies and Leadership Certificate, I embarked on a new journey serving as an AmeriCorps member for a local Flagstaff nonprofit. The Friends of the Rio de Flag is dedicated to the conservation and restoration of our local watershed, known as the Rio de Flag. Much of the Rio de Flag is composed of ephemeral streams, meaning that the public often overlooks the Rio as a dry ditch rather than a fundamental component of our environment. As an AmeriCorps member, one of my goals is to help change this perception of the Rio de Flag and to increase environmental awareness through research, education, and outreach.

Throughout the six months that I have served thus far, I have helped to conduct multiple scientific research projects surrounding the watershed from spring snowmelt research to spring monitoring and riparian plant vigor data collection. I've led educational workshops and tabling events, sat in on various board meetings, and grown to deeply appreciate the importance of this watershed! If it wasn't for RMS, the NAU Free-Flowing Rivers Lab, and my studies, I wouldn't come close to feeling as confident in myself to take on this position. Becoming a local steward and advocate for our watershed has granted me the opportunity to share my knowledge and capabilities with my community in order to do meaningful and impactful work. Grassroots movements are some of the most powerful when it comes to enacting change on a local level, and I am grateful for the opportunity to be a part of a wonderful organization of passionate change-making individuals! ❖



by Bekah Price

RMS launched the River Studies and Leadership Certificate program in 2015 in partnership with various universities to help students build a foundation of knowledge, skills, and experience in river-based science, policy, conservation, education, and recreation. Since then, 62 students have graduated with the certificate, and most have gone on to pursue careers in river management and stewardship.

In this *RMS Journal* column, we showcase their success so that our members can get to know them and learn more about what the pathway from student to river professional looks like today.

## “Where are they now?”

# Moving Water and the Therapy It Provides

Amber Martin is a 2024 RMS River Studies and Leadership Certificate recipient at Colorado Mesa University.

by Amber Martin

When you think of rivers, what comes to your mind first? Is it the sound of the rushing water? Is it the cool feeling of the runoff of snowmelt on your toes as you step in for the first time of the year? The thrill of catching your first trout on a dry fly? Does tranquility come to mind, filling you with renewed energy to go back to your day-to-day grind?

For a multitude of military veterans, peace is the thing they find along the riverbanks near and far. A chance to let their guards down, to get real rest... and oh, the sleep! Thousands of combat veterans are finding river activities like whitewater rafting, paddle sports, and fly fishing to be some of the most transformative and valuable hobbies after their military service is over. There is a profound data shift in the positive with respect to their pain, post-traumatic stress symptoms, depression, anxiety, insomnia, and overall outlook on life.

Then there is the therapeutic process of this medium, the river. Soldiers becoming anglers, Airmen transforming into boat captains, Sailors following tight eddy lines into world class kayakers, Marines becoming activists for nature conservation and change.

Wilderness is powerful. It does heavy lifting, taking away fear, pain, frustration, and anxiety. It strips it away and creates an environment of vulnerability and growth. It allows you to see outside yourself and better understand from where your thoughts and feelings come. You can't think about what is weighing you down back home when you're on 'river time'... only about what the day ahead may look like. Wilderness therapy for combat veterans and their families is what led me to the river. It also led me to this degree field. As a veteran who has deployed in service to this country, I knew what the river did for me, and I knew I could help other veterans and people with disabilities find a new idea on outdoor therapy and change their outlook on various mental health struggles they may be facing. To do that, I needed to go through the ringer of outdoor water activities and really immerse myself.

I came into the river community here in Grand Junction by way of the Western



An all-woman veteran wilderness therapy trip launching at Cataract Canyon.

Colorado VA facility's Recreation Therapy Department. Just moving here, I was trying to find new outlets for myself with the abundance of recreational activities in the area. Having seen people floating the Colorado River through town, and seeing that whitewater kayaking was a choice, I asked for a consultation to join the 8-week program. That was in 2016, and the rest took off from there! Oh boy, I found out quickly that kayaking was therapeutic, and rafting was where I learned the most about myself. The feeling of a long day in the rower's box, the beauty of the landscape, the wildlife sightings, and the roar of whitewater. It warmed my soul and it calmed my brain. The challenging work felt good.

I was hooked and I knew this could help so many other veterans and persons with disabilities. I had already started to become involved with aspects of adaptive sports and as a wilderness therapist I could help get people out of their wheelchairs, out of their heads, and onto boats. But how? From that point forward, I went on every river trip that I could find. I volunteered with local nonprofits. I took every class, flip clinic, or training I could find including the all-female classes in Salida, Colorado's Canyon River Instruction. In the summer

of 2020, I learned about the Outdoor Recreation Industry Studies Bachelor of Science at Colorado Mesa University (CMU). This degree program has offered me and many students a comprehensive list of recreation modalities, conservation, preservation, safety, certifications, and is changing things in an amazing way for the outdoor industry. It is sending out the next generation of outdoor professionals with passion. Professors that are present here create an environment of safety, all while pulling vast amounts of experience from their own wanderlust of the life-changing effects of a life lived outside.

As I learned more about what the outdoor community offered, I added a minor in Social Work from CMU's accredited program to my degree path. I wanted to learn more about the dynamic of inter- and intrapersonal skills on a micro, mezzo, and macro level and what ripple effects the river might have on veterans. I looked downriver to a small nonprofit — Warriors on Cataract (WOC) — out of neighboring Moab, Utah. Their amazing team's specialty is taking different veteran groups on multi-day river trips. They also offer all-female veteran trips including women river guides. WOC has a wilderness therapist who leads these trips doing profound work to curb veteran

suicide and lead to lasting change in the lives of these service members. The expedition participants launch from the riverbank as strangers and end as missions of camaraderie and hope, all with the river at the forefront and red rock canyons as a backdrop.

As I progressed through the semesters, I found more research on other water activities, including fly fishing, that are changing veterans, first responders, and their families' lives. Having gone through one of their programs, I turned to Warriors and Quiet Waters (WQW) in Bozeman, Montana, to complete my internship. I wanted to find a meaningful place to gain valuable knowledge and experience in the world of outdoor therapy for veterans. WQW facilitates growth structures by way of peak experiences in nature for veterans, and at the heart of it all is fly fishing. They teach participants how

to fly fish responsibly in the quiet outdoors, filled by the sound of water. They teach how to treat wildlife with respect and aid with conservation of riparian systems that they call home. They have incorporated growth-mindset modules and cohorts to build connections and camaraderie within the veteran community.

The River Management Society's River Studies and Leadership Certificate program taught me that there are people out there who know that the river is life. It gave me the drive to reach out to these organizations and discover more of the meaningful work that we do not hear about every day. I cannot begin to express my gratitude to the multiple people and organizations that made an impact on the pursuance of this degree. The knowledge and experience I have gained about conservation work, climate change, environmental politics and policy, river culture, and outdoor therapies truly cannot be matched. It has inspired me to become a Wilderness Therapist, and it has shown me that there are programs like these, and ones like the Outdoor Program at Colorado Mesa University, that are basecamps for sending

out new leaders who are knowledgeable in their fields, and who remain passionate in their resolve to protect the outdoors for generations to come. I am extremely grateful for this opportunity to be part of this incredible training program and know that I will use this knowledge throughout my career and personal river pursuits for the rest of my life. ❖



Ruby Horsethief Salt Creek 2, a beautiful place to unwind on a local stretch of the Colorado River. Photos: Amber Martin

## WILD WEST CHOCOLATE

RMS' official chocolate partner now available in stores!

Wild West Chocolate, which donates a portion of proceeds to RMS, recently began distribution to retailers nationwide. Check out the [store locator](#) to find irresistible sweetened-only-with-organic-fruit chocolate near you, or shop their online store. ❖



## Sharing Knowledge and Lessons Learned During Concurrent Comprehensive River Management Plans for Three Different Agencies

by H. Sharon Kim, Tim Hammond, and Nicole Gustine

As of May 2024, three Wild and Scenic rivers in Alaska are in the middle of updating their Comprehensive River Management Plans: Birch Creek National Wild and Scenic River for the Bureau of Land Management, Alagnak Wild River for the National Park Service, and Nowitna Wild and Scenic River for the U.S. Fish and Wildlife Service. Birch Creek is a 111-mile long part of the Ikhènjik River, located in east-central Alaska. The Alagnak Wild River extends 67 miles across two joined rivers where the 11 miles of the Nonvianuk River and the upper seven miles of the Alagnak are located within Katmai National Preserve. Nowitna Wild and Scenic River is a 225-mile river within Nowitna National Wildlife Refuge and is located in central Alaska. All three rivers were designated by the Alaska National Interest Lands Conservation Act of 1980 (ANILCA) and had initial river management plans written in the 1980s.

View upstream of lower Birch Creek Wild and Scenic River near where the river flows from the Yukon-Tanana Uplands in the Steese National Conservation Area onto the Yukon Flats. Photo: Bob Wick / BLM



A small group of planners from the Bureau of Land Management (BLM), National Park Service (NPS), and the U.S. Fish and Wildlife Service (USFWS) have been meeting regularly to discuss the three planning processes and challenges. The BLM's Birch Creek planning effort is the farthest along with their environmental assessment having been released in October 2023 and their decision document signed in May 2024. Both the NPS for the Alagnak and the USFWS for the Nowitna have conducted initial community engagement and are currently drafting their comprehensive river management plans. Both the NPS and USFWS are expected to complete their plans and sign their decision documents for their respective rivers by the end of the year.

All three planning projects have the State of Alaska as a cooperating agency. The state agencies involved include the Alaska Department of Fish and Game, Alaska Department of Natural Resources,

and other state agencies under the coordination of the State's ANILCA Coordination Program.

One difference among the three planning projects is whether the boundary of the river corridor acreages had been identified prior to the recent planning efforts. The Birch Creek National Wild and Scenic River had the river corridor acreages (no more than 640 acres per river mile) delineated in the 1983 Birch Creek River Management Plan. For the Alagnak Wild River, the river corridor acreage outside of Katmai National Preserve was delineated in the 1983 Alagnak Wild River Management Plan – it became the Alagnak Wild River's conservation system unit boundary. However, within Katmai National Preserve, the acreage of the Alagnak Wild River was not identified at that time and will be addressed through this 2024 planning process. For the Nowitna Wild and Scenic River, the proposed corridor is amending the lateral boundary using current mapping capabilities that were not available when the original Nowitna Wild River Plan was written in 1987. Also, the proposed corridor encompasses all river-related values.

Sharing knowledge and experiences across the three different Wild and Scenic rivers' planning processes has been enlightening. Understanding the differences and similarities of the BLM, NPS, and USFWS and their management policies for the Wild and Scenic Rivers Act has led to very nuanced discussions and more consistent outcomes across the agencies when feasible. These meetings have allowed each agency to learn from each other and not "reinvent the wheel." While the Birch Creek Comprehensive River Management Plan's Record of Decision document was signed in May, we hope to continue these meetings into the future to share planning, monitoring, and implementation efforts. ❖

# Restoring Resurrection Creek

by Marian Giannulis

The small town of Hope, located on the northern tip of Alaska's Kenai Peninsula, often swells well past its population of approximately 200 people with visiting hikers, cyclists, paddlers, anglers, photographers, and concertgoers. The scenic beauty, outstanding recreational opportunities, and lively town festivities make this corner of the Chugach National Forest a hotspot for Alaskans and visitors alike. Back in the late 1800's, the town came alive with another type of activity: mining.

When gold was discovered in nearby Six Mile Creek in 1895, it sparked one of Alaska's earliest gold rushes. A year later, the newly founded town of Hope was bustling with more than 3,000 residents seeking their fortune. The area hosted seasonal fish camps for the Dena'ina People long before the gold rush, but there were no known permanent settlements.

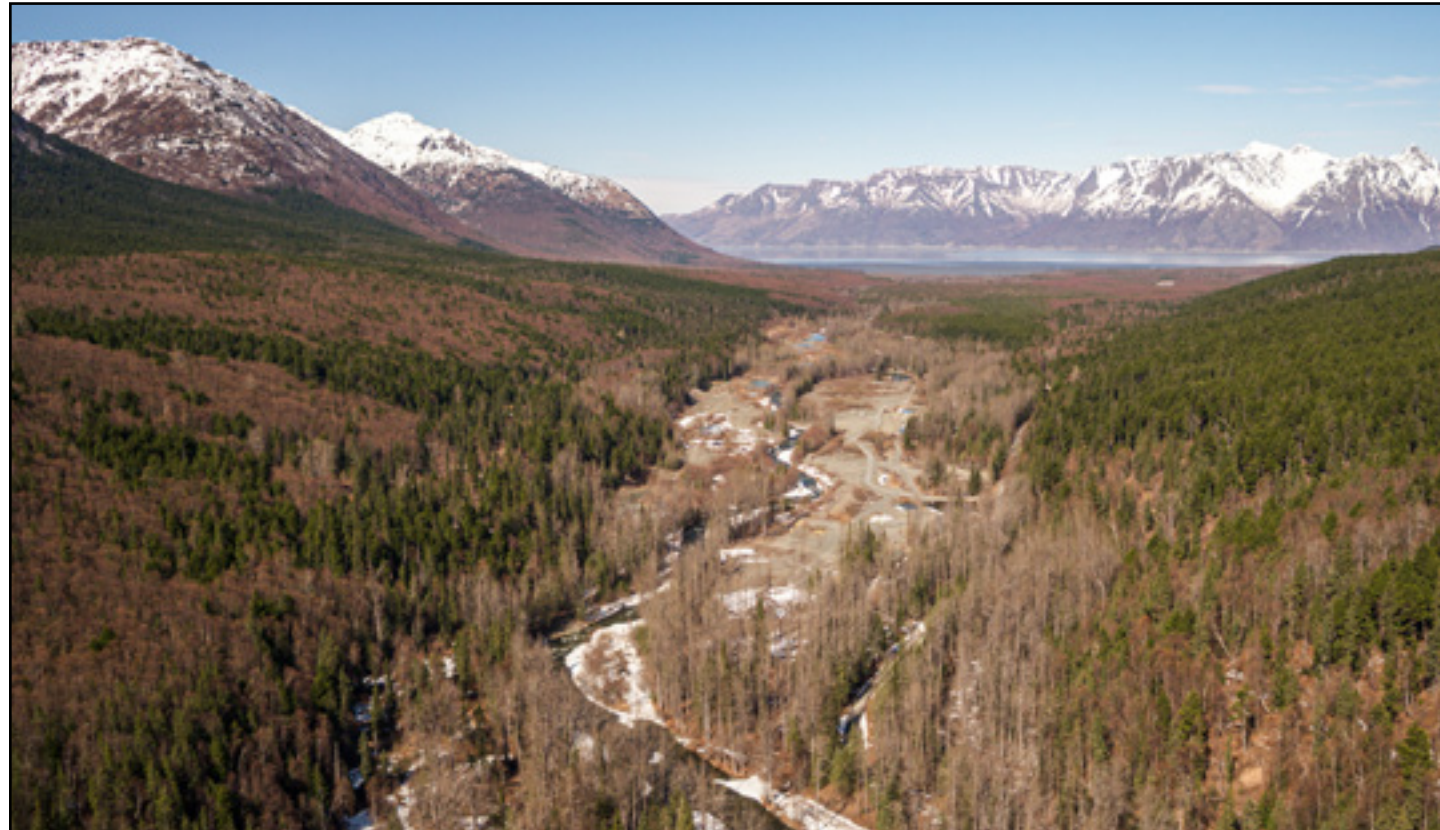
Hope's gold producing heyday was short lived, but the effects of mining were felt well beyond. Historic hydraulic placer mining degraded several miles of Resurrection Creek by changing the shape of the river from a slower-flowing, meandering stream to a narrow and fast-flowing straight channel. The mining methods of the day also removed topsoil and some wetlands adjacent to Resurrection Creek in those areas where placer mining occurred. Mine tailings entrenched the stream and blocked it off from its historic flood plain. With a straightened creek channel, lack of salmon spawning gravel, and the loss of

salmon resting pools, the critical rearing areas that salmon need to survive were significantly reduced. This habitat loss negatively impacted the stream's once thriving salmon runs.

The lower six miles of Resurrection Creek are spawning and rearing habitat for Chinook, coho, chum, and pink salmon. The surrounding lands provide habitat for bears, moose, bald eagles, and other wildlife. The U.S. Forest Service recognized that the stream's degradation would remain in perpetuity without intervention and began work to restore it. In 2002, the Forest Service began restoring a 1.5-mile section of Resurrection Creek. This effort, which became known as Phase I of the Resurrection Creek restoration project, reconnected twenty acres of the historic floodplain to the newly formed channels; constructed new pools, side channels and ponds; installed logs and root-wads in new stream channels; and re-vegetated the riparian areas.

Following the completion of Phase I, fish and wildlife immediately responded. In 2007, just one year after restoration was completed, the number of adult Chinook salmon observed in the restoration area increased six-fold. Resurrection Creek is one of a few streams of its size and type in upper Cook Inlet that supports Chinook salmon, making this habitat invaluable to assuring Cook Inlet Chinooks are around for future generations. Pink and chum salmon also have become more abundant. From 2005 to 2015, the adult pink salmon population increased a

An aerial view of the project site before restoration began. Photo: Trout Unlimited



A temporary bridge allows heavy machinery to access the far side of the creek without damaging the streambed.

Inset: Logs were transported across the creek before being placed in the newly constructed channel.

Photos: Trout Unlimited

whopping 1,550%, while the adult chum salmon population increased 1,025%.

Salmon were not the only species to benefit from the restoration. Harlequin ducks began returning to the area as soon as restoration began, utilizing new pool habitat and constructed log jams for nesting and shelter. Moose also benefited from the restoration. Before the stream channel was reconstructed, the current was too powerful and dangerous for moose calves to cross. The restored habitat now provides safer crossings for moose and their calves, allowing them to more easily escape predators and find forage.

The success of this project made it apparent that additional restoration would likely have similar benefits, and the Forest Service began planning for the next phase along 2.2 miles of the lower stretch of Resurrection Creek. The plan was there—but unfortunately the funding was not, and the project sat on the shelf for 14 years. Then a unique partnership formed to get Phase II off the ground.

Phase II began to gain steam in earnest in early 2021 when Trout Unlimited and Kinross Alaska jointly formed the Alaska Abandoned Mine Restoration Initiative and provided the spark and initial funding that the project needed to get going. The Initiative is the first partnership of its kind in Alaska, where a non-profit conservation organization and a major mining company are working side-by-side to restore important salmon habitat and mitigate the impact of historic mining.

The restoration corridor of Phase II also lies within active mining claims held by the Hope Mining Company. Through a collaboration between the Hope Mining Company and the Forest Service, a restoration corridor was established to allow in-stream and riparian restoration to take place alongside nearby mining activities. This coordination is essential to the success of the project.

The National Forest Foundation joined forces to help fundraise and manage contracts for the project. This unique collaboration and partnership between Trout Unlimited, Hope Mining Company,



Senator Murkowski and staff from the Forest Service, Trout Unlimited, and Kinross Alaska celebrated the start of the project with a ribbon cutting ceremony. Photo: Kinross Alaska

the National Forest Foundation, and the Forest Service is what made it all possible. Along with seed funding from Kinross, additional funding has come from the Alaska Sustainable Salmon Fund and NOAA Fisheries.

Phase II will restore a 2.2-mile segment of Resurrection Creek and 74 acres of riparian habitat in the lower reaches of the creek, closer to the community of Hope. The restoration includes the same tactics that were successful during Phase I, including rebuilding the degraded stream channel and floodplains, constructing pools, side channels and ponds, installing logs and root-wads, and re-vegetating stream banks and riparian areas.

Instream construction for Phase II began in 2023 and will continue through 2026; wetland restoration and revegetation of the floodplains began in 2024 and will continue through 2027. In the 2023 construction season, 0.4 miles of meandering pool-glide-riffle channel and 6 pool-glide-riffle-sequences were constructed. Channel excavation extended for another half mile, with 515' of constructed side channels. 210 whole trees with root-wads were placed for logjams and floodplain roughness, and 1,000 native

wetland sedges and forbs seedlings were planted at a nursely in preparation for developing fourteen acres of wetlands. The 2024 implementation season kicked off with willow plantings in May.

The Resurrection Creek restoration project is the first of its kind in Alaska, both in terms of scale and scope of work, and the unprecedented partnership between resource extraction and resource restoration stakeholders that brought the project to life. Each partner is proud to play an important role in demonstrating a joint commitment for caring for the waterways, lands and fish that are so important for our communities and future generations. ❖

**For more information on the project, please contact:**

Aaron Prussian, Alaska Habitat Restoration Director, Trout Unlimited, [aaron.prussian@tu.org](mailto:aaron.prussian@tu.org)

Tracy Christopherson, Project Manager, Forest Service, [tracy.christopherson@usda.gov](mailto:tracy.christopherson@usda.gov)

Ruth D'Amico, District Ranger, Forest Service, [ruth.damico@usda.gov](mailto:ruth.damico@usda.gov)

## What floats your boat? Measuring drafts for different craft and loads

by Doug Whittaker, Bo Shelby, and Dan Shelby

I was boating down Campbell Creek in the backyards of mid-town Anchorage. For 25 years I have speculated that with just the right flow it was possible to float the shallow stream and duck under the low bridges. I was testing my theory in a 12-foot cataraft on a July day with 147 cfs (about 50% above median summer flow).

But not without difficulty. I slumped below the oarlocks to get *under* one bridge and dragged *over* a couple of river-wide logs. I'd also gotten *around* sweepers that were nearly blocking the channel by straddling with the bow and then spinning to avoid hooking the stern on the opposite bank. It's not a move I'd recommend on a bigger river, but this creek was seldom more than 30 feet wide and two feet deep. When the boat got stuck, I usually just stepped into the water and hauled it to a better position.

Toward the end of the trip, I was bashing around the end of a fallen spruce, just upstream of a family taking a break from their bike ride on the adjacent multi-use trail. In the fine tradition of peanut galleries everywhere, there were comments.

"That's a cool boat," said the boy, who was maybe ten. "It's like a big purple water strider."

The dad offered some sarcasm: "Think your boat is big enough?"

The mom tried to soften his critique. "We were wondering how you would get around that tree... I guess you kind of pulled it off."

As I brushed away the spruce debris I'd collected, the teenage girl rescued me with curiosity rather than commentary. "So how many times have you gotten stuck? And how much water do you need to float that boat anyway?"

"Ahhh, there's a scientist in the group," I replied as I shipped my oars to chat. "Funny you should ask..."

She had posed a pair of concise questions. I tried to respond in-kind, while hinting at the underlying complexity. "My boat drafts about three-and-a-half inches with just me – another inch when I bring my 80 lb. dog. It's closer to six inches when I take overnight food and camping gear. Today I'm about four miles into a four-and-a-half-mile trip. I've hit rocks or the bottom about 30 times, and five times I got stuck and had to do something to become un-stuck. Six other times I had to get out and drag the boat, usually because a sweeper forced me out of the deeper channel. I also pulled the boat over two river-wide logs – we call those in-channel portages."

Apparently satisfied or possibly overwhelmed, she moved onto more standard Alaskan concerns: "Seen any salmon?"

We've spent over thirty years answering these kinds of questions in boatability studies for navigability, dam licensing, and water rights. The boats and uses change for different rivers, decision settings, and trip types. But an important variable is **boat draft** – the vertical distance from the waterline to the deepest part of the hull. This is the minimum water depth needed to avoid hitting the bottom or getting stuck.

Boat drafts are a common manufacturer specification for sailboats and powerboats, usually but not always defined for the dry weight of the hull (water and fuel tanks empty, no passengers or gear on board; it doesn't include motors that might extend below the hull). Whitewater boat manufacturers are less likely to include draft information or details about how they calculated the measurement. In order to ground-truth manufacturers' claims and extend information to a range of craft, we have physically measured non-motorized boat drafts for different designs and loads in the field, typically using two general techniques:



A wider, deeper part of Campbell Creek. In about two hours on the water, most of the time was spent in places like this with a channel wide and deep enough for this boat to float freely.

- Spanned oar measurement. Place an oar (longer than the boat width) under a floating boat with its load; ensure the oar is parallel to the water surface; use a tape to measure the distance from water surface to the top of the oar.
- Bottom-hit measurement. When approaching shore for a camp or break, maneuver the fully loaded boat until it just barely hits an obstacle in the shallows; note location of the obstacle; use a tape to measure the distance from water surface to the top of that obstacle.

To assess this type of information more systematically, we conducted boat draft measurements in a controlled field setting. With help from State of Alaska Public Access and Assertion





Above: A square back freighter canoe with five people (over 800 lbs.) drafts 5.5 inches.



Left: An old-school kayak passes over the Mirror Lake boat-draft measuring bar (4-inch draft with 160 lbs.).

hard shell canoes, 2 aluminum canoes, 2 pack canoes, a hard shell kayak, and 3 inflatable canoes — specifically:

- 7 foot pack raft (Alpacka)
- 13 foot self bailing raft (Aire Super Puma)
- 14 foot self bailing raft (Aire Super Duper Puma)
- 14 foot self bailing raft (SOTAR Classic)
- 14 foot self bailing raft (Aire 143 R)
- 15 foot self bailing raft (Alaskan Series)
- 16 foot wrap floor raft (Campways)
- 12 foot cataraft (SOTAR asymmetric)
- 16 foot cataraft (Aire Lion)
- 16 foot drift boat (fiberglass)
- 10.7 foot hard shell kayak (Perception Corsica)
- 13 foot canoe (Whitesell Descender)
- 15 foot canoe (Prospecteur)
- 15 foot pack canoe (PakCanoe 150T)
- 15 foot inflatable canoe (Aire Traveler)
- 16 foot canoe (Mad River Explorer)
- 16 foot canoe (Nova)
- 16 foot canoe (Prospecteur)
- 16 foot inflatable canoe (SOAR Pro Pioneer)
- 16.5 foot inflatable canoe (Pioneer X-stream)
- 17 foot canoe (Prospecteur)
- 17 foot pack canoe (PakCanoe 170)
- 17 foot aluminum canoe (squareback)
- 17 foot aluminum canoe (double-ender)
- 19 foot canoe (Old Town Tripper – Royalex)

Defense staff, we measured drafts for 25 boats across a range of loads as described below.

#### Methods

- A draft measuring device resembling a high jump bar was built to measure boat drafts as a sample of boats with different loads were floated over it (see schematic below).
- Boat drafts were measured for 25 different boats, each boat with loads from 0 to about 1,200 pounds (with lower maximum loads for smaller craft).
- Loads were varied by adding people (with different recorded weights) to the boat. Participants' weights were measured with a standard household scale. Boat loads did not include frames except for cataracts, where the frame is needed to hold the boat together.
- For each craft, a load-draft relationship was developed by graphing drafts vs. loads in Excel, then fitting the data to a linear trend line.
- Measurements occurred on Oct 2 & 22, 2019, and Aug 3, 2023. All measurements were conducted on Mirror Lake in Chugiak, Alaska.
- Craft included 6 rafts, 2 cataracts, 1 pack raft, 1 drift boat, 7

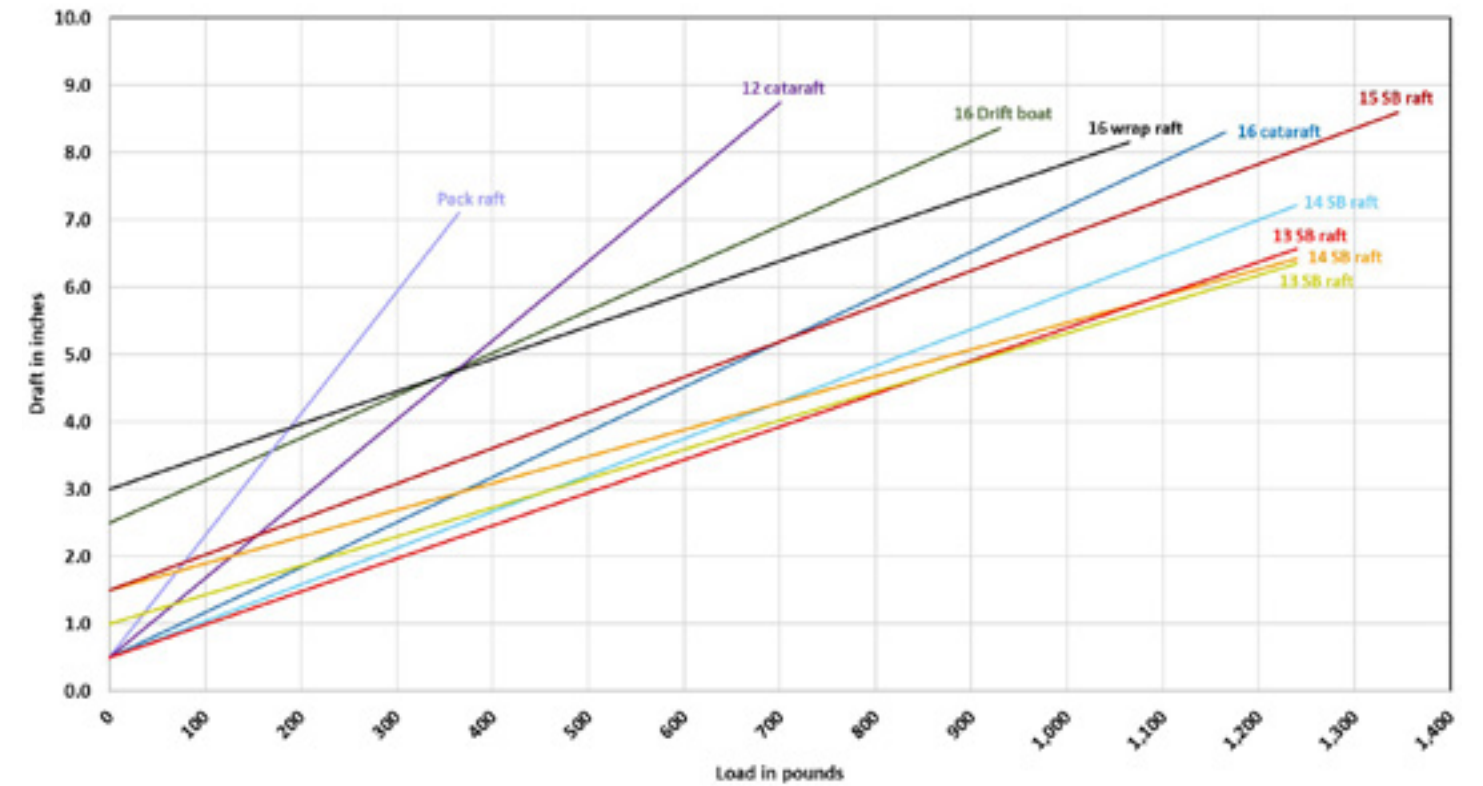


Figure 1. Illustrative draft-load relationships for several rafts and other craft.

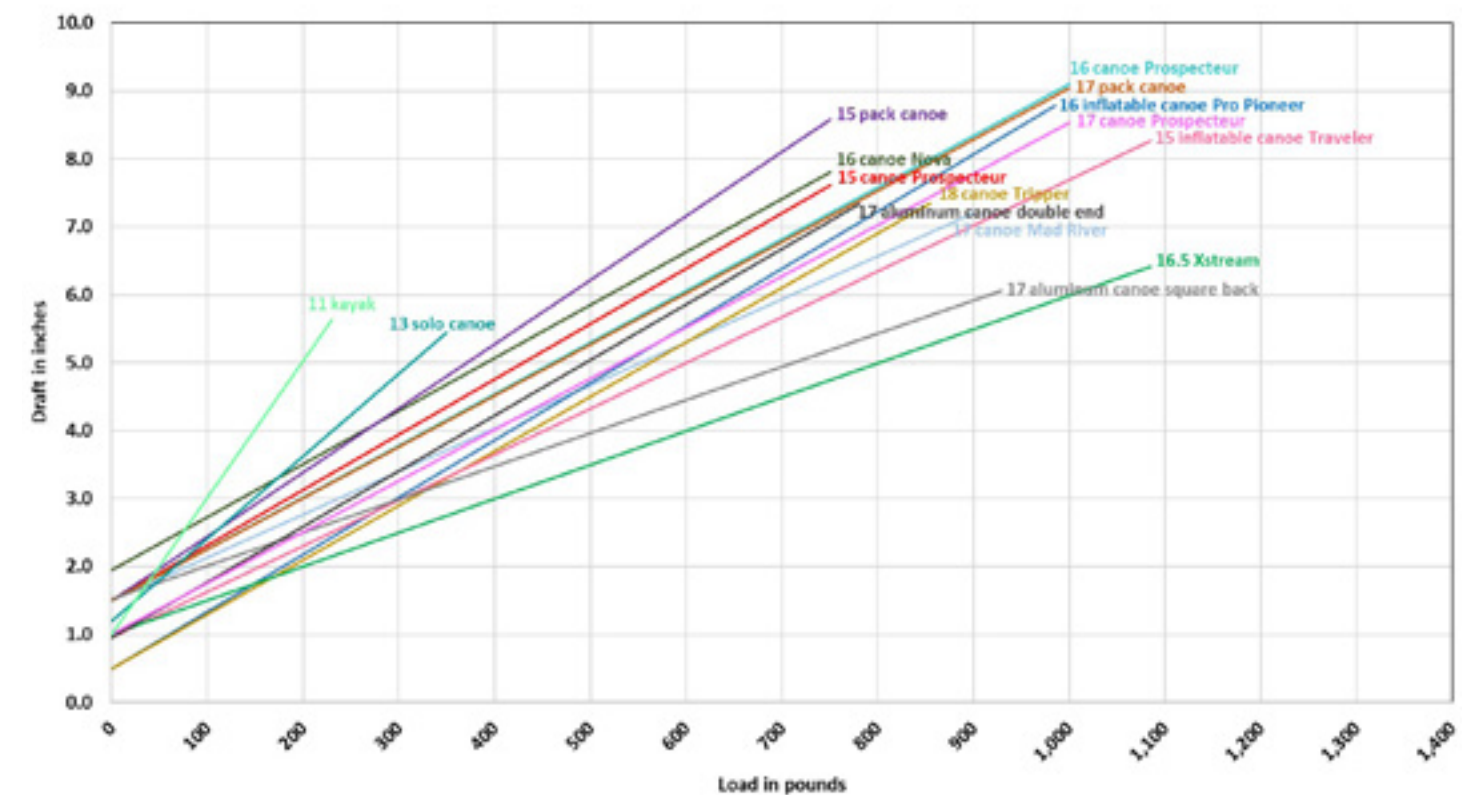


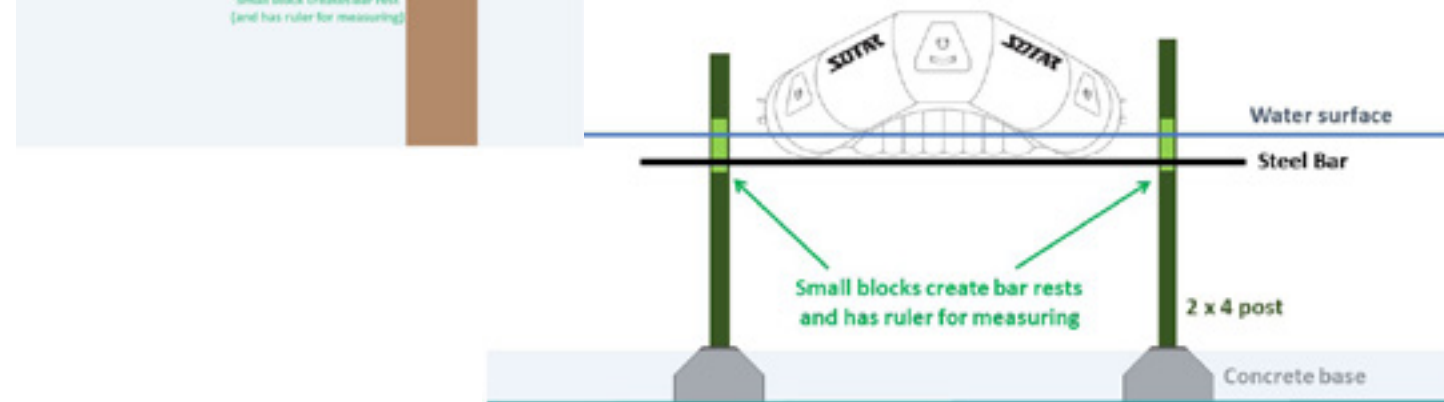
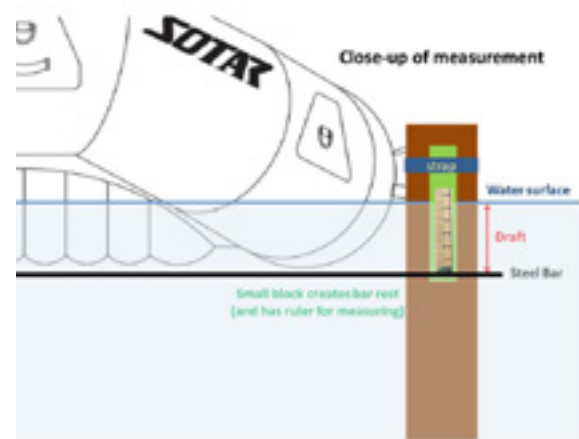
Figure 2. Illustrative draft-load relationships for different canoes/kayaks.

## Findings

Results are displayed graphically in two figures for 1) rafts and drift boats; and 2) canoes and kayaks. Each line is a linear fit to several measurements for each craft.

## Summary

- Drafts increase as loads increase, at predictable rates for each craft.
- Draft-load relationships vary by type of craft.
- Boats with greater surface areas at the water line (e.g., rafts and inflatable canoes) draft less per unit of load compared to those with smaller surface areas (e.g., kayak, pack raft, and smaller canoes).
- Boats with greater rocker or rounded hull designs (e.g., kayak and 12-foot whitewater canoe) draft more than flatter hull shapes.
- Differences between self-bailing rafts with similar designs were small, even when their lengths or widths differed.
- The wrap floor raft drafted slightly more than self-bailing rafts per unit load.
- Cataracts draft more per unit load than rafts. The 12-foot cataract with smaller tubes drafts more per unit load than the 16-foot cataract with larger tubes.
- The hard-shell drift boat drafted more than any raft except the small cataract per unit load.
- Inflatable canoes (e.g., Pro Pioneer, X-Stream, Traveler) draft similarly per unit load to aluminum or hard-shell canoes about the same length, although the wider X-Stream drafts less than its two inflatable canoe counterparts.
- Pack canoes draft similarly per unit load to hard shell canoes about the same length, particularly with heavier loads.
- For most rafts, a typical load about 800 pounds will draft between 4.5 and 7 inches, while a load about 1,000 pounds will draft between 5.5 to 8.0 inches.
- For most canoes, a typical load of about 400 pounds will draft between 3 and 5 inches, while a load about 600 pounds will draft between 4 and 7 inches.



- Notable exceptions were for smaller single person craft (e.g., pack raft, kayak, 12-foot canoe, and the 12-foot cataract) expressly designed for lighter loads.

## Other boat design considerations

The draft-load relationships described above are not surprising. Archimedes' Principle or the physical law of buoyancy applies equally to all boats; more weight in a boat will sink it further (increase its draft) equal in mass to the water it displaces. Differences in specific craft show that boat design matters (e.g., wider/flatter boats draft less than narrower/steep-sided hulls for the same weight). Boat designs affect load-carrying, but also stability, maneuverability, speed, and other performance characteristics.

Boat design is a complex topic that was outside the scope of our measurement study or this article, but the following concepts illustrate how boats of different sizes and designs affect boatability in real-world conditions.

- There are tradeoffs between speed and maneuverability; a longer, narrower hull moves faster through the water, but is more difficult to turn.
- There are tradeoffs between load capacity, draft, and stability. A flat design might draft less and have better initial stability (a boat on flat water), but in moving water with waves or strong hydraulics, secondary stability (as the boat leans on its edge) may be more important.
- Different hull materials react differently to contact with rocks or other obstacles in the water. For example, aluminum canoes tend to stick on rocks more than plastic or fiberglass. There are also differences in inflatable materials; some are more slippery or flexible, and adjusting air pressure in tubes also has an effect.
- There are tradeoffs between boat designs, drafts, load, and river characteristics. For example, subtle differences in rocker and length of drift boats evolved on the Rogue and Mackenzie rivers in Oregon to fit with whitewater difficulty and typical sizes of boulders. ❖

# BOOK REVIEW

Published by University of California Press.

by Bill Sedivy

I read my first book by Tim Palmer, "Youghiogheny, Appalachian River," 40 years ago this year. As a fledgling canoeist, "Youghiogheny" gave me deeper understanding of the history, ecology and culture of an area I'd grown to love, and where I earned my first whitewater stripes.

Since then, I've read dozens of other books by Tim, who has authored 32. Some, like "America by Rivers" (1996), "The Heart of America" (1999), and "America's Great Rivers" (2018), transported me back to places I'd paddled in the past, or offered insight into places I hoped to visit in the future.

Others, like "Endangered Rivers and the Conservation Movement" (1986), "The Wild and Scenic Rivers of America" (1993) and "Lifelines, The Case for River Conservation" (1994), became indispensable references when I left the newspaper business in 1999 and went to work as executive director for Idaho Rivers United, a nonprofit conservation organization based in Boise, Idaho.

"Lifelines" was particularly important to me. It taught me how to best articulate the values of rivers, and how to make the case for protecting them, in an extremely conservative (and sometimes downright hostile) river conservation environment.

But in spite of the profound impact that "Lifelines" and other Palmer books have had on me, I believe that Tim's most recent effort, "**Seek Higher Ground – The Natural Solution to Our Urgent Flooding Crisis**," is the prolific author's most important work to date. This book can teach us all how to better cope with the economic, ecological and human impacts of flooding in America, at a time when global warming is intensifying storms and floods around the world.

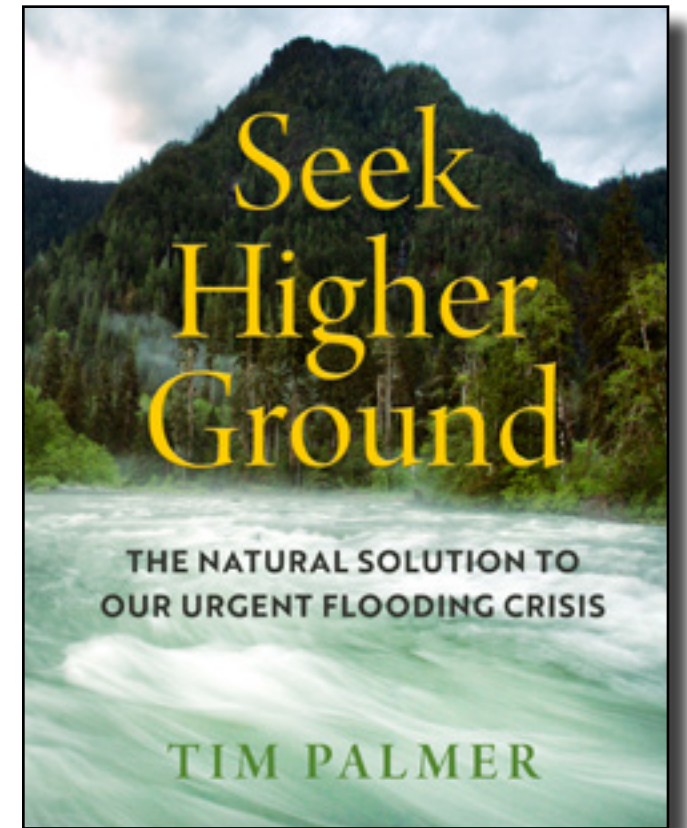
In 11 well-organized and well-written chapters (270 pages), Tim discusses the history of flooding in America, offers a global warming refresher as it relates to floods, examines flood ecology, and reviews our generally ineffective efforts to control flooding in the past.

The book also examines flood insurance, levee and dam failures, the cost of flooding in both financial and human terms, and the prospect of even more powerful and damaging floods in the future. And Tim makes clear that the climate change-induced flooding crisis is already upon us by reviewing recent floods from California to Florida, and from New York to Houston.

The book is incredibly well-researched and documented. Tim uses a mix of journalistic research techniques: historical research, reviews of government and non-governmental reports and statistics, and interviews and personal experiences to make his points.

I confess, when I first opened "Seek Higher Ground" (ironically, while sitting in my camp chair along the banks of the Youghiogheny River in Western, PA) I found all the data a bit depressing. 'Geez,' I thought, 'I didn't know it things were this bad and are so rapidly getting worse.'

But "Seek Higher Ground" also discusses solutions for our flooding crisis — solutions using natural and cost-effective methods that recognize "the indomitable forces of nature" and



work with them. These methods contrast sharply with policies of the past, which focused mainly on attempts to control floods by building costly and often inadequate levees and dams.

Skillfully, and with compassion for flood victims and floodplain managers alike, Tim and this book make a powerful economic and ecological case for: 1) protecting remaining floodplains, and 2) stepping up efforts to voluntarily relocate homes, businesses and communities away from floodwater disasters that are increasing in frequency and power.

Achieving those goals should be possible, Tim writes, as floodplains occupy just 7% of the American landscape. And by sharing stories about flood relocation programs and floodplain protection efforts that are already working in America, Tim quickly had me feeling hopeful again about the future of river and floodplain management.

"Seek Higher Ground" is a must read for people who love rivers, for people who work to protect rivers, and people who manage rivers. It's also appropriate for anyone who cares about fellow humans and the wise expenditure of our tax dollars.

If I had enough cash, I'd buy a copy of "Seek Higher Ground" for every county or municipal flood manager, and every environmental planner or zoning official who works in a floodplain. The ideas Tim Palmer lays out for us in this book may not all be new, but they're presented in a logical, concise way that should not be ignored. ❖

(This book is available on Amazon, and at many local bookstores.)

*Bill Sedivy has been a river ranger on Montana's Smith River, Wyoming's Snake River and Oregon's Rogue River. He also worked as a journalist, raft guide and for 16 years as executive director of Idaho Rivers United.*

# The Amazing Rivers of the Central Yukon River Watershed, Alaska – Koyukuk, Innoko and Nowitna Rivers and National Wildlife Refuges

by David Zabriskie and Helen Clough

For over 120 years the National Wildlife Refuge System has been comprised of areas set aside primarily to protect wildlife and habitat including lands in Alaska. Today there are over 560 national wildlife refuges. Most are very small compared to the 16 refuges in Alaska. They are in every state and most U.S. territories – from Main to Guam. About 80% (80 million acres) of the 96-million-acre land mass is in Alaska.

The Koyukuk, Innoko, and Nowitna National Wildlife Refuges (Figure 1) are found on the traditional homelands of the Koyukon Athabaskan people who have stewarded these lands for thousands of years and continue to depend on them today as they have for generations. This article gives an overview of the refuges and rivers and their importance to the people who live along them. All are tributaries of the Yukon River which flows from its headwaters in Canada to the Bering Sea across the entire state of Alaska; 1265 miles of the Yukon are within Alaska. Of the three rivers, only the Nowitna is designated as a Wild River.

There are 13 designated wild and scenic rivers in Alaska; all added to the Wild and Scenic Rivers System by the Alaska National Interest Lands Conservation Act (ANILCA) in 1980. That law also created the three National Wildlife Refuges described in this article. The refuges are noted for their extensive wetland, riparian, and upland habitats that support diverse bird populations – ducks, geese, swans, cranes, shorebirds, raptors; moose, bears, furbearers; and fish including salmon, sheefish, and northern pike.

Primary uses of the refuges are subsistence activities by local residents. Subsistence is defined in the ANILCA as the “customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing tools, or transportation; for the making and selling of handicraft articles out of nonedible byproducts of fish and wildlife resources . . . .” Many think of subsistence as going to the grocery store for food; but it is much more – a way of life than has been practiced for thousands of years by Alaska Native peoples and a tradition that continues today among both Native and non-Native Alaskans.

Hunting and fishing for recreation, another use of the refuges, is different than for subsistence. An example provided by the refuge manager described a subsistence hunt, where a local Alaska Native individual and his grandson checked in with staff, then set up camp up river and hunted for 2 days, harvested a moose, checked out with the refuge and boated back to their community with the moose. A recreational hunt involved a large group from outside the area who arrived in big boats, camped for 10 days to 2 weeks, with at least one member departing by float plane before the others. They hunted; but were also there for the experience and would have felt it was a good trip even if they did not harvest any moose.

Asked if many kayakers or canoeists visit the refuges and where do they put in or take out, the refuge manager said that most access by float plane, thus limiting canoes and kayaks to the

*Note: This article was adapted from a presentation given to the Friends of Alaska National Wildlife Refuges on March 19, 2004. The presentation with amazing video and photos can be viewed at <https://alaskarefugefriends.org/3-19-24-three-amazing-rivers-of-the-central-yukon-watershed-with-refuge-manager-david-zabriskie/>*



Figure 1. Credit: USFWS

inflatable variety and that generally floaters use rafts. Such trips are quite expensive and visitors really have to be prepared due to the remoteness of the refuges and rivers. Asked about how local residents feel about visitors, he said the local communities are welcoming. Most villages have places to get gas and food. Some may have a place to eat and some have bed and breakfasts.

Alaska Refuges have a unique type of employee. They are called Refuge Information Technicians and are life-long local residents, usually Alaska Natives, hired because of their local knowledge, language and other special knowledge and skills to act as liaisons between the government and the local community. They perform all sorts of duties from translating from Alaska Native languages into English and visa-versa for refuge staff to often translating concepts between two different cultures. They help ensure local residents are aware of refuge management and have opportunities to be involved and have their input considered. They help non-local refuge staff understand the local area, culture, history and resources. They participate in routine refuge work, such as greeting visitors, conducting biological surveys, driving boats, snow machines, etc.

## Koyukuk Refuge and Koyukuk River (see Figure 1)

Located about 270 miles west of Fairbanks, access to the refuge is limited to air and river travel. The refuge contains 14 rivers and more than 15,000 lakes. Within the boreal forest of the refuge, a unique geological feature is found- the Nogahabara



Koyukuk River and adjacent wetlands provide diversity habitats for birds, mammals, and fish. Credit: USFWS

Sand Dunes. The roughly circular active dune field spans about 6 miles in diameter, and was formed thousands of years ago when wind-blown glacial sand was deposited at the base of the Nulato Hills. Various wildlife species call the refuge home including moose, brown bear, black bear, lynx, coyotes, red foxes, wolves, wolverines, beavers, and thousands of migratory waterfowl. Four-hundred thousand acres of the Koyukuk National Wildlife Refuge are designated as Wilderness.

The Koyukuk River with multiple forks flows 425 miles past the ancient glacial sand dunes, boreal forests and wetlands hundreds of miles to the Yukon River. Its headwaters lie within the Brooks Range. The community of Huslia (population 279) lies within the refuge boundary. The refuge shares a northern boundary with the Selawik Refuge.

The Koyukuk River and its adjacent large wetlands are connected and interdependent. They don't exist without each other. When the Koyukuk River floods it replenishes the wetlands - a conduit for nutrients that make the river and wetlands valuable for wildlife. The adjacent sloughs and wetlands are perfect for waterfowl, moose, fish – creating high biological diversity. The refuge is involved in biological surveys for trumpeter and tundra swans, moose, fish. A project on the Giasa River, a Koyukuk tributary involved a weir that will be operated under a co-stewardship project with the Tanana Chiefs Conference (TCC) for fisheries studies. The weir was operated by the U.S. Fish and Wildlife Service Fisheries office in Fairbanks with the refuge providing logistics support. TCC will be receiving money for operation of the weir with the refuge supporting do logistics and

the fisheries office will provide technical support. The first year for this co-stewardship agreement is 2024.

The refuge is also involved in surveys of areas recently burned by wildfire to study fire recovery and habitat succession. Two moose check stations operate during fall hunts to collect data that helps with state and federal regulation of hunts. One is run by the State of Alaska on the Koyukuk River and the other by the refuge on the Nowitna River.

The Iditarod sled dog race has crossed the Koyukuk Refuge during years when it started in Fairbanks due to lack of snow on its traditional route. The normal route of the race is very close to and perhaps even on the Innoko Refuge.

## Innoko Refuge and Innoko River (see Figure 2)

From vast stretches of black spruce forest to vernal pools and slow-moving rivers, the Innoko National Wildlife Refuge is home to abundant wildlife from the smallest shrew to huge moose and everything in between. Located in western Alaska it is the fifth largest refuge in the United States. Fish abound, including huge northern pike in the coffee-colored waters of the Innoko River. A large number of tributaries feed the Innoko River and the refuge; a refuge very dependent on water. The refuge is two separate units (see Figure 2) and encompasses 3.8 million acres, the fifth largest refuge in the system. The 1.24-million-acre Innoko Wilderness is located in the southeast portion of the National Wildlife Refuge.

The Innoko River flows 500 miles north to south from the Kuskokwim Mountains to meet the Yukon River across from the

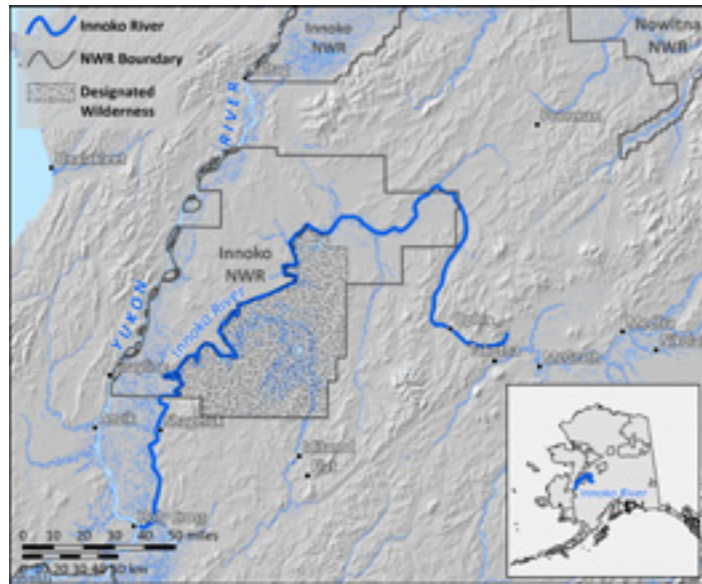


Figure 2. Credit: USFWS

village of Holy Cross (population 159). Residents of Holy Cross, Grayling (population 186), Anvik (population 58), and Shageluk (population 91) rely heavily on the Innoko River and Refuge. Shageluk is located on the banks of the Innoko and the other communities are nearby along the Yukon River with easy access to the Innoko.

Key management activities include visitor services and biological surveys. Refuge staff actively work with local communities and the Alaska Department of Fish and Game to support an array of visitor services and biological studies. They sponsor a science camp, articulated a complete moose skeleton, and conduct other environmental education activities. Studies conducted from goose banding discovered that juvenile geese stage and feed along the river when they are molting – flightless and at risk of predation.

#### Nowitna River and Refuge (See Figure 3)

To access the Refuge, most visitors from Fairbanks, drive north 135 miles to launch a boat from a bridge on the Yukon River and then motor down 210 river miles to get the mouth of the Nowitna River. Obviously, visitors have to want to get to the river and prepare carefully as travel to and on the Nowitna can be dangerous, in part due to its remoteness. Visitors can access parts of the river by float planes in the summer, and by snowmobiles (called snowmachines in rural Alaska) in the winter.

The Nowitna River flows for 285 miles from its headwaters to its confluence with the Yukon River above Ruby, Alaska. Over the course of 225 miles, the Nowitna Wild River transforms from a narrow, swift, gravel-bottomed watercourse to a broad meandering floodplain river where it joins the Yukon River. The Nowitna flows through a mosaic of boreal habitats, some shaped by wildfire, and many created by the winding nature of the river itself. The Nowitna river corridor provides remarkable habitat for an abundant diversity of both terrestrial and aquatic species as well as varied recreational opportunities. It has consistently delivered vital subsistence resources to people since prehistoric times. The topography in the region varies from wetland-dominated lowlands to low rolling hills and tundra-capped mountains. Galena (population 435) is 100 river miles west downriver on the Yukon. The Refuge's headquarters are in



Wetlands adjacent to the Innoko River are regularly replenished through flooding and as on the Koyukuk and Nowitna Rivers provide rich, diversity habitats. Credit: USFWS

Galena. Fairbanks, one of the largest communities in Alaska is hundreds of roadless miles to the east.

The Fish and Wildlife Service is in the process of developing a comprehensive river management plan for the Nowitna Wild River. As part of the plan the Outstandingly Remarkable Values (ORVs) of the river have been described. They include:

**Scenery ORV** - The topography in the region varies from wetland-dominated lowlands to low rolling hills and tundra-capped mountains, which intensifies the scenic beauty of the Nowitna WSR. Seasonal changes add to the tapestry of color, shifting from the stark white of winter to the varied greens of spring and summer. Wildflowers flourish along the Nowitna River's edge, adding splashes of vibrant color. In autumn, deciduous foliage takes on gold, orange, and deep red hues, with dark green spruce standing out in sharp contrast. Add to this the changing light of shifting clouds and dynamic weather, the result is a visual backdrop that is never the same from one moment to the next.

**Ecology ORV** - The combination of abiotic and biotic features of the Nowitna WSR, including the hydrology, geology, and biodiversity, create a truly unique example of boreal riparian ecology. Over its 225 miles, the river transforms from a narrow, swift, gravel-bottom river to a relatively broad, slowly meandering river typified by cutbanks, sandbars, sloughs, and oxbow lakes in the lower floodplain area. Spring flooding enriches the oxbow lakes and sloughs with nutrients and carbonates from the limestone bedrock in the headwaters. The distinct water chemistry, flood regime, and meandering nature of the Nowitna generate diverse and highly productive riparian habitats within which a broad, interconnected array of northern wildlife species exists. Species includes moose, black bear, grizzly bear, wolf, wolverine, red fox, lynx, marten, porcupine, hare, river otter, muskrat, mink, weasel, squirrel, wood frog, waterfowl, raptors, songbirds, and other birds. The grassy margins of the Nowitna WSR, surrounding lakes, and waterways provide some of the best breeding habitat in Interior Alaska for trumpeter swans, white-fronted geese, canvasback ducks, cranes, and many other migratory waterfowl. A mixture of mature forest and early successional plant communities provide excellent moose habitat. Taken as a whole, the diverse and abundant

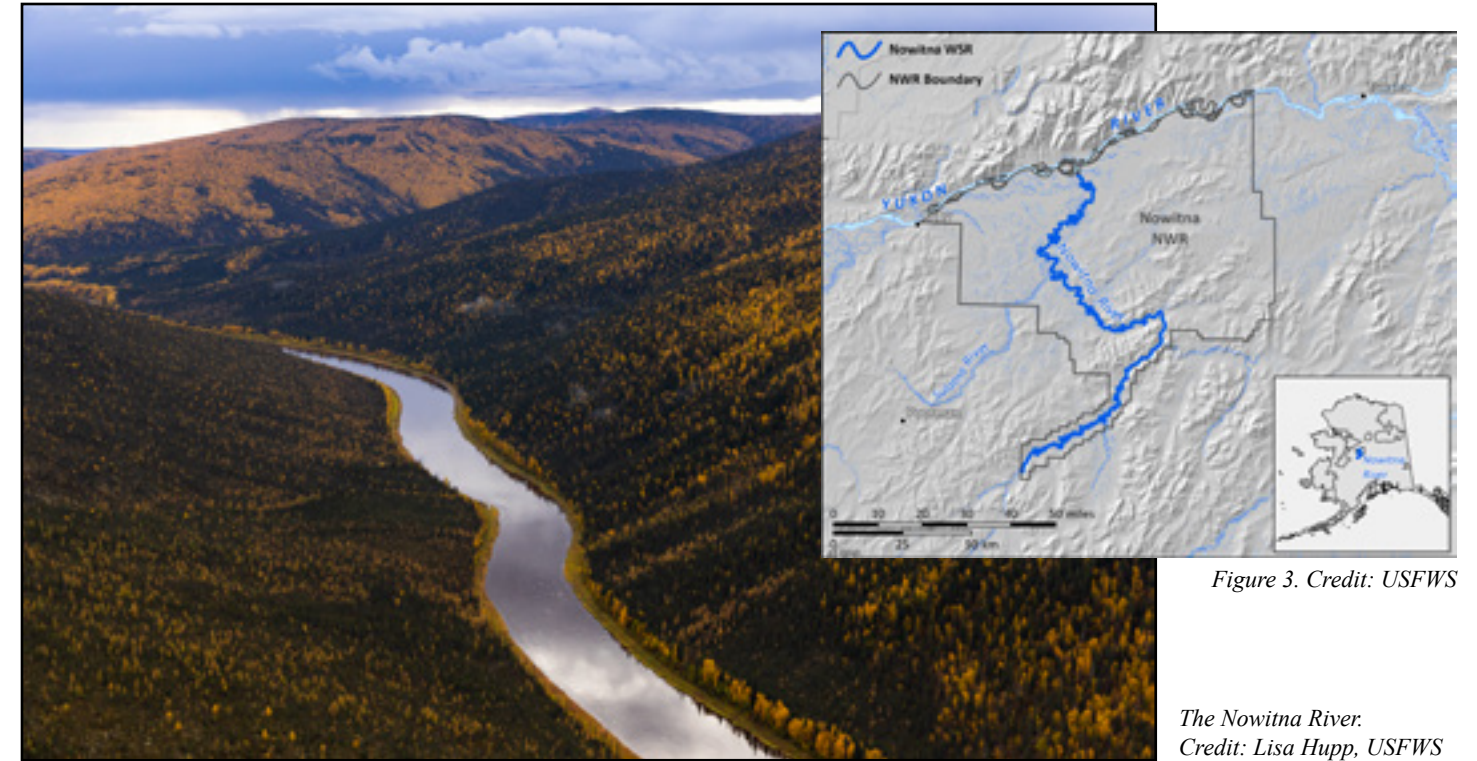


Figure 3. Credit: USFWS

The Nowitna River.  
Credit: Lisa Hupp, USFWS

assemblage of boreal wildlife species is a defining characteristic of the Nowitna WSR. Extensive stands of larch, a species of conservation concern in Alaska, occur in areas along the upper and middle portions of the Nowitna because of the unique water chemistry. Additionally, the Nowitna corridor contains an uncommon old-growth white spruce forest community, including some of the oldest white spruce found in Alaska with many mature white spruce that are between 200 and 350 years old. These old-growth forests provide nesting areas for raptors and some of the best marten habitat found in Alaska. You will not find another river in Alaska with the unique ecology and resulting species diversity of the Nowitna River.

**Fish ORV** - Nineteen fish species have been documented in the Nowitna corridor, surrounding wetlands, and tributaries. The upper section of the river provides suitable habitat for Arctic grayling and resident Dolly Varden. The lower section of the Nowitna supports summer foraging and overwintering habitat for multiple spawning populations of fish. The shallow floodplain lakes, marshes, and oxbows are uniquely important habitats providing slack water for foraging on smaller prey fish and providing spring spawning lakes for Northern pike. The Nowitna provides exceptionally high-quality forging habitat, and it is a continentally important migration corridor for populations of Chinook, coho, chum salmon, resident Dolly Varden, and sheefish and other species of whitefish. Sheefish are among the region's most targeted subsistence and sport fishing species. The sheefish that migrate up the Nowitna are one of only six known spawning populations of sheefish in Alaska's Yukon drainage. The excellent water quality and natural seasonal patterns of dynamic flow regimes contribute to the diversity of fish species found there.

**Cultural ORV** - Though the Nowitna River is constantly changing, the human relationship to the river and its resources has remained remarkably constant over thousands of years. This is especially true for local Athabascans whose connection to

the Nowitna goes back countless generations. The watershed has long been an important location for travel and trade across Alaska due to its unique proximity to tributaries of the Tanana, Kuskokwim, and Innoko Rivers. Nowikakat, an early settlement, and highly important trade center was situated at the mouth of the Nowitna River. Trapping which was the foundation of trade in earliest times, continues along the Nowitna today, and is just one part of the ongoing cultural significance of the Nowitna. Generations of Koyukon Athabascans once lived in the Nowitna drainage seasonally and year-round. They survived by hunting, fishing, trapping, and gathering other necessities from the land and waters. Descendants of these families continue to spend time along the Nowitna, nourished by and connected to the land and river as their ancestors had experienced.

Paleontological remains from prehistoric animals, including mammoth, can be found within the Nowitna corridor and along the Yukon River mainstem nearby. The presence of these prehistoric animals and relatively close proximity of a high valued obsidian source near the Nowitna WSR, approximately 140 miles north of the Yukon River, could signal that it was a hunting or scavenging ground and a corridor to lithic raw material for some of the first inhabitants in the area. Therefore, it is highly probable that the Nowitna WSR drainage contains numerous archaeological sites that have yet to be discovered.

A separate article in this Journal describes the comprehensive river management planning process among the various federal river managing agencies in Alaska. The Fish and Wildlife Service plans to complete the draft Nowitna Comprehensive River Management Plan by the end of this year. Additional information can be found at this US Fish and Wildlife Service resource: <https://fws.gov/page/nowitna-wild-and-scenic-river>. ❖

David Zabriskie is the Innoko, Koyukuk and Nowitna National Wildlife Refuges Manager and Helen Clough is USFWS, Retired.

# Congratulations – 2024 RMS Award Winners

Linda Richmond, Ronald Stork, and Travis Connot were recognized in separate venues this year as RMS had no symposium — each award presentation is described below along with the amazing contributions of these river professionals.

## Outstanding Contribution to River Management Award — Linda Richmond

This award recognizes a history of contributions to the field of river management. Linda Richmond of Bluff, Utah, is the 2024 winner recognizing her long career as an outstanding advocate for professional river management, her communication skills, and her amazing body of work. Linda received the award at a small get-together on May 5, 2024, at the Sand Island Ranger Station, the put-in for the San Juan River. The event was planned and hosted by current river ranger, Rick Boretti. Guests included Linda's daughter and granddaughter, current and former supervisors, co-workers, and volunteers. In RMS tradition Linda knew nothing about the award until it was announced and placed in her hand by former RMS President, Dennis Willis.

Linda worked from for close to 40 years in river management — an extraordinary length of time for a field operations employee, having adapted and enhanced the river unit operations on the San Juan River from the program's infancy to today. Linda contacted individuals from other river management programs to research ideas on how to solve common river management challenges. She was open to a wide range of ideas and implementation strategies.

Longevity in any career demands that you adapt to a wide variety of management personalities, goals, and communication styles. Linda was passionate about professional river management, effectively communicating with both management and employees working with her from other disciplines. In many cases, management might not realize what effect their decisions or actions might have on the river program. Linda was able to educate management on both problems and possible solutions.

Linda was involved in all aspects of the river management program including



L to R: Past RMS President Dennis Willis, Linda Richmond, current San Juan River Ranger Rick Boretti, and former supervisor, Phil Gezon.

permitting, campsite maintenance and development, wildlife protection, invasive species control, and visitor safety. She provided management with creative concepts for how to deal with ever increasing public visitation. This included ideas to provide for a fair and understandable river permit system dealing with both commercial and private permitting, closure recommendations for the long-term benefit of wildlife and river habitat, interagency coordination, including with tribal entities, and how to keep operations running within a year's given budget.

Linda developed and implemented campsite surveys to increase baseline knowledge. She worked with and scheduled river staff to work with all types of school groups and individual researchers assisting them in all aspects of their programs. Often, she coordinated with tribal groups to organize and provide access for interpretation of resources. A retired law enforcement colleague said that Linda assisted her in many aspects of law enforcement on the river including recognition of potential violators, development of new regulations, and physical river skills. Most importantly, Linda used education as the background

## Thank You, Dennis!

Dennis Willis, past RMS President, has overseen and paid for all aspects of fabrication of our lovely RMS awards for well over a decade. He works with the fabricator to create the awards, always improves the language that is engraved on the awards, and makes sure they get to where they need to go for the presentations — always a challenge in years when there is no symposium. His dedication and attention to this important task is always much appreciated.

for the development of specific regulations to protect both the public and the river-based environment.

Through the years Linda coordinated meetings both on and off the river among diverse agencies, including Glen Canyon NRA, Utah Division of Wildlife, Navajo Fish and Wildlife, Utah and New Mexico

Fish research, Hopi and Navajo tribal entities and educational groups. Topics included wildlife management practices, coordination and practices for applicable law enforcement, enhancement of visitor safety and experience, control and mitigation of invasive vegetation, as well as permit procedures and goals.

Check-in procedures at the San Juan River were most educational for visitors regarding their role in caring for rivers due to the attention Linda paid to the presentation of the material as well as the selection and training of volunteers who also presented this information. Due to her knowledge of how other river programs were run and what information visitors may or may not have been accustomed to hearing she was very good at giving the appropriate level of information for specific groups. Her professionalism and background in education was obvious whenever she was in contact with visitors. As she knew the progression of the program through so many years, she was able to explain to visitors the evolution and need for specific requirements to be met while on the river and the long-term benefits of these regulations. Linda was greatly respected and admired by the public and all the various agencies she worked with over the years.

## Frank Church Wild and Scenic Rivers Award — Ronald Stork

This award recognizes contributions focused on the management, enhancement, or protection of designated Wild and Scenic Rivers. It recognizes a history of contributions with a broad geographic scope. Ronald "Ron" Stork of Friends of the River in Sacramento, California, is the 2024 award winner. He was presented the award on April 26 at the Friends of the River annual River Awards Gala that took place in San Francisco.

The long-time, dedicated Senior Policy Advocate for Friends of the River (FOR), Ron has been working for Wild & Scenic Rivers (WSRs) in California for more than 40 years. He is a national expert in California and federal WSR legislation and regulation, and has a lifetime of achievement for WSRs in California.

In the early 1980's, as the director of the Merced Canyon Committee, Ron successfully guided the effort to obtain National Wild and Scenic River designation for the Merced River. The committee was formed to protect the

natural and public resources of the Merced River Canyon — the gateway to Yosemite National Park. The bill supported was Senate Bill 275 which aimed to protect the entirety of the Merced River above Lake McClure Reservoir. Ron was able to garner further support with efforts from the National Park Service, U.S. Forest Service, and Bureau of Land Management — agencies that managed over 90% of the river corridor. He led the way to make a joint draft proposal via the Sierra National Forests Draft Land Management Plan (LMP). After much deliberation Senate Bill 275 was successfully passed.

Prior to joining FOR in 1987, and together with FOR's Steve Evans, Ron has experienced multiple campaigns to establish WSR designations: the Merced, Kings, and Kern in November 1987, Lower Merced in 1992, South Fork of the Yuba in 1999, Cache Creek in 2005, and Black Butte River in 2006.

Friends of the River, Steve Evans, and Ron worked on WSR advocacy for many years across many watersheds and legislative efforts, which resulted in passage of the Omnibus Public Land Management Act of 2009 (Public Law 111-11). The bill was a conglomeration of public land and water measures affecting more than half of the states in the union, as well as the Puerto Rico Commonwealth. For California, the Omnibus Act included designation of 105 miles of streams as Wild and Scenic Rivers, as well as 750,000 acres of new Wilderness and Wilderness additions.

Ron has also been instrumental in protecting California's WSRs. On behalf

Keiko Mertz with award winner Ron Stork.



of FOR, he led the successful fight against the Auburn Dam that would have destroyed the North Fork of the American River. He navigated through many conflicts of the California WSR system with the California State Water Project and the Federal Central Valley Project. He remains active today in advocating for the protection of the McCloud River from the proposed Shasta Dam Raise.

Ron has worked on a number of WSR management plans, including serving on the Citizens Advisory Committees for the Lower American River Parkway Plan update and Lower American River Corridor Master Plan, and provided assistance to the BLM, Forest Service, and NPS for the Merced WSR plans. Ron continues his WSR work today at Friends of the River. In addition to his advocacy, he publishes regular updates on WSR threats and opportunities. Ron is an insightful observer of history and has compiled detailed histories of past WSR events. He maintains a comprehensive and constantly updated memo on the California WSR system. He serves as an expert to many, on WSR history, legislation, and strategy. His accumulated and present contributions to national and state Wild & Scenic Rivers over the last 40 years are far-reaching, and cannot possibly be overstated.

Ron is a national expert in flood management, federal water resources development, hydropower reform, and Wild & Scenic Rivers. He joined Friends of the River as Associate Conservation Director in 1987 and became its Senior Policy Advocate in 1995. Ron was

presented the prestigious River Conservationist of the Year award by Perception in 1996 for his work to stop the Auburn dam. In 2004, he received the California Urban Water Conservation Council's Excellence Award for statewide and institutional innovations in water conservation.

## River Manager of the Year Award — Travis Connot

This award recognizes contributions that are field-oriented and location-specific, with a focus on recent accomplishments. Travis Connot of the Niobrara National Scenic

River in Valentine, Nebraska, is this year's winner. The award was presented on June 5 by Park Superintendent Susan Cook, with the staffs of both Niobrara National Scenic River and Missouri National Recreation River in attendance. A heartfelt thank-you and appreciation for the vision Travis has for the park's work along the river was given. Local media, including print and television, were in attendance and the TV clip was picked up by several other outlets. Travis Connot lives the park motto — *we take care of the river by helping our landowners care for their land*. "His work is innovative and forward-thinking as he strives to ensure this river's resources are protected for future generations" stated Superintendent Cook.

Travis has always been dedicated to this area, its resources, and working collaboratively with landowners and partnerships. Travis is the Natural Resources Program Manager/Biologist for Niobrara National Scenic River. His strong dedication and passion for water has driven him to making the Niobrara River sustainable for everyone a top priority.

The Niobrara National Scenic River (NIOB) is a 76-mile stretch in north-central Nebraska, which is mostly privately owned. The Niobrara River is roughly 70% groundwater fed and 30% rain/snow runoff. The groundwater comes from the High Plains (Ogallala) Aquifer. There are over 200 waterfalls in the first half of the scenic river. NIOB is unique in that six different ecosystems converge here, creating a mix of flora and fauna, and some unique hybrids.

The Niobrara is also known for its recreational opportunities where tubing, canoeing, and kayaking are fun summer adventures. Farming, ranching, and recreation are some of the bigger livelihoods in Valentine and the surrounding areas which rely on these natural resources, especially the water. Working with partners and private landowners, Travis has built up the water quality and quantity program sampling efforts at NIOB from just seven sites to 20 sites. Water sampling begins in April and runs through October. With 20 sites being sampled, the water run is broken out into three days, scheduled the first Wednesday of each month. Water quality parameters sampled for each site consist of E. Coli, pH, Specific Conductivity, Dissolved Oxygen (DO), Water Temperature, Nitrates, Ammonia, Phosphorus, Alkalinity, Salinity, Turbidity, Air Temperature, and a daily blank and duplicate for E. Coli. Water quantity sampling consist of Stream Flow, Stream Stage, Gage Height, Recent Rainfall, and Runoff Evidence. By collecting this scientific data, Travis hopes to make better water management decisions with partners based on the reliable data. Management decisions and areas of concern, such as impairments or flows, will be easier to pinpoint by having 20 different sites. Ensuring good water quality and quantity for the people of the area and for the future drives Travis' passion.

Creating a new proactive approach for Niobrara National Scenic River is what lead Travis to applying for the United States Geological Survey-Natural Resources Preservation Program (USGS-NRPP) Grant. Travis wrote and received a \$264,000 USGS-NRPP grant titled *Sustaining the Niobrara: Understanding Groundwater-Surface Water Interactions to Inform River Management*. This grant funding will be used for installing five groundwater monitoring wells along with pressure transducers to take daily water level readings. Well locations

have been strategically selected while working with Ft. Niobrara-National Wildlife Refuge, Cherry County Commissioners, University of Nebraska at Lincoln, USGS, Natural Resource Districts, and private landowners. Temporary stream gages will also be installed to see the influx of groundwater to surface water correlation. The data collected will be published and shared with conservation partners and landowners.

Travis hopes to expand upon this by applying for more funding to install multiple other dedicated monitoring wells throughout the 76-mile stretch. He also monitors daily rainfall and moisture content in snow for Nebraska Rainfall Assessment and Information Network (NeRAIN) in partnership with Nebraska Department of Natural Resources, Nebraska Natural Resource Districts, and the Nebraska Environmental Trust. This data is available for public access and offers an interactive map and reports at NeRain ([nebraska.gov](http://nebraska.gov)). He is also working with USGS to do continuous water quality parameters and stream flow at the stream gage near Sparks, NE.



Travis Connot and Park Superintendent Susan Cook. NPS Photo.

Currently, there is a push for Federal Priority Stream gages where USGS would like to add 50% more stream gages throughout the United States. Travis has been actively looking at locations that would strengthen the data he is collecting and improve upon water management decisions. To date, Travis has selected three potential stream gage sites that will play a big factor in continuous data collection for NIOB. The stream gage data is available to partners and the public to view at Water Resources of the United States — National Water Information System (NWIS) Mapper ([usgs.gov](http://usgs.gov)).

Rangeland is a big part of the surrounding area and a well-managed range can provide many benefits. Travis works with the Natural Resource Conservation Service and is an active member of the Range Management Society, where they teach and host range judging to high school students. Travis helps host the area competition where 200 high school students attend and the state competition where 500+ high school students attend. Travis also helps the local Future Farmers of America chapter with natural resource practicums. Practicums are created for critical thinking, bringing in all aspects of natural resources, wildlife, and farming/ranching. This critical thinking teaches cause and effect actions

to students. Travis also judges at District FFA, where 75 students create presentations related to natural resources.

Travis conducts threatened and endangered species studies within the Niobrara River corridor and monthly wildlife studies for mammals, reptiles, and birds along the watershed. Working with the Nebraska Game & Parks Commission, information is shared to assist in wildlife management. This past year, Travis was asked to be a speaker for two different organizations — Nebraska Water Leaders Academy and the National Association of Wetland Managers — sharing his knowledge of water around the Niobrara River and improvements towards conservation efforts. Travis' passion for the water, dedication to the landowners and wildlife, and drive for accurate, reliable data for decision making with partners make him River Manager of the Year. ❖

## RMS Awards and Criteria

### Outstanding Contribution to River Management (open to all)

This award recognizes a longer history of contributions to the greater field of river management (as opposed to more recent or project/location-specific accomplishments).

- Advanced the field of river management through contributions in areas such as science, education, interpretation, research, and/or law enforcement;
- Developed innovative (or creatively adapted) river management techniques;
- Organized conferences/meetings that advanced river management as a science and as a profession;
- Developed or implemented new communication techniques to coordinate and connect managers;
- Provided opportunities for increased awareness by citizens and river visitors regarding their role in caring for rivers and watersheds; and/or
- Was an outstanding advocate for one or more aspects of professional river management.

### River Manager of the Year Award (RMS Members)

This award recognizes contributions that are field-oriented and location-specific, with a focus on recent accomplishments. The committee considers contributions on the river (field-oriented, technician level) and at the managerial or supervisory level (policy, planning, program development).

- Provided leadership in promoting and protecting natural, cultural, or recreational resources;
- Worked effectively and cooperatively with other agencies, user groups, private landowners, and/or general public;
- Established or re-established key partnerships to protect and manage the river corridor;
- Created an effective, professional, and enjoyable working group environment;
- Worked to protect one or more rivers within the context of their watershed and beyond designated lines on a map;
- Created and established new and innovative approaches to river management, advancing the field and creating new enthusiasm;
- Shows strong dedication and commitment towards advancing and improving river management into the future.



## 2025 RMS Awards – Nomination Deadline – December 31, 2024

We invite you to nominate those who deserve to be recognized for their work and contributions to managing our rivers and developing RMS. If you submitted a past nomination and your nominee was not selected, you are encouraged to update and resubmit the nomination. See criteria below and full details on the RMS website.

Submit online or email to RMS Secretary Helen Clough:  
[hcloughak@gmail.com](mailto:hcloughak@gmail.com)

### Frank Church Wild and Scenic Rivers (open to all)

This award recognizes contributions focused on the management, enhancement, or protection of designated Wild and Scenic Rivers.

- Advanced awareness of WSRs through contributions in areas such as education, research, technology, training, public contact, interpretation, law enforcement;
- Worked effectively and cooperatively to build partnerships with other agencies, scientists, user groups, private landowners, and/or general public to promote, protect, enhance, or manage WSRs;
- Demonstrated, developed, or creatively adapted innovative WSR management techniques;
- Organized conferences, training, etc., which involved and advanced WSRs;
- Exhibited leadership in promoting and protecting WSRs within the context of the established corridors and beyond designated lines on a map; and/or
- Worked to improve managing agency process, budget, and/or support for wild and scenic river programs.

### Outstanding Contribution to RMS (RMS Members)

This award recognizes contributions to the success of the River Management Society itself. This award recognizes contributions at the national or regional level that result in greater organizational effectiveness, efficiency, growth, positive change, or enthusiasm. The award focuses on impact on the organization as a whole, rather than a particular length of service.

- Exceptional contribution to national policy, planning, and program development that brings recognition to RMS as a leader among river and / or professional organizations;
- Demonstrated leadership within RMS that has created sustainable positive change;
- Donated considerable time, money, or effort that has resulted in advancement of RMS as a unique and robust institution;
- Brought new and positive private and public awareness;
- Increased membership substantially;
- Developed or located new funding or resources; and/or
- Provided exemplary service through an elected office.

Presentations will be made at the RMS Symposium  
in Ashland, OR, April 8-11, 2025.

## Alaska by Helen Clough

While the Alaska Chapter has been inactive for quite a while as a group, individual members have been very busy in river management as the reader can see from this Alaska-focused Journal. As a longtime national officer and former Alaska Chapter Vice President, I thought I would share a bit of my personal story with RMS and the Alaska Chapter.

My journey to rivers and to RMS is certainly unusual. I spent much of my youth around saltwater – living on the Atlantic and Pacific coasts. I could operate a boat on saltwater before I was old enough to drive a car. After starting my career in public land management in the California Desert, I moved back to Southeast Alaska. Then I moved to Bristol Bay in Southwest Alaska — a part of the state with amazing rivers.

Recruited to join the National Wildlife Refuge System because of local residence, planning experience, and knowledge of Alaska, I found myself in charge of the first river management plan done on a national wildlife refuge. While I knew a lot about planning, environmental law, and public involvement, I didn't have a clue about river management. I felt what we were doing — trying to address conflicts among river users by managing fish — just didn't make sense. Somehow, I learned about the American River Management Society (a precursor organization to RMS) and attended the first symposium in Portland, Oregon, in 1992. While I felt outside of my comfort zone with these river folks, I learned so much from them and felt welcome. The next RMS event I remember was an interagency training on river management held on a float trip on the 40-Mile River — this was an amazing learning and networking experience. In 1998, the symposium was held in Anchorage, Alaska, and proved to be another very educational and successful event.

By 2011, with several river management plans under my belt, I was the Chief of Policy and Planning for the Alaska Region of the FWS, our Director Caroline Kurz decided to move on, and RMS had just hired Risa Shimoda. At that time,

## Chapter Musings ...



Rob Doyle (rowing) and Helen Clough enjoy the scenery of the Kanektok River in southwest Alaska, circa 1992.

the four resource agencies (NPS, BLM, USFS, FWS) used to hold interagency workshops throughout the country in the years without a biennial RMS symposium. The agencies took turns and it was time for FWS to host. We decided to hold what turned out to be the last interagency workshop in Alaska. We also partnered with the State of Alaska to host the International Submerged Lands conference at the same time. This was the beginning of Dave Schade's involvement with RMS, leading to his longtime chapter leadership. Two years later, I retired from FWS after almost 40 years of federal service and took up my first role on the national board as treasurer. When I was working, the Alaska Chapter was instrumental in providing support, guidance, and contacts within the state and elsewhere. We collaborated with other organizations and held several workshops and trainings.

Seeing all the incredible work being done by RMS members and others in river management, I hope someone will be inspired to step up and take on leadership of the chapter. There are many folks willing to help out... we just need a leader to help us support each other as we take on the many challenges facing us in this great land.

Please reach out to me with any questions or to discuss next steps for anyone interested in resurrecting the Alaska Chapter: Helen Clough, RMS Secretary, hcloughak@gmail.com ❖

## Northwest



Mark your calendars for these 2024 trip options and reach out if interested!

### Middle Fork of the Flathead River, MT – July 17

Echo Miller-Barnes, Lead River Ranger on the Flathead NF, will lead a day trip on this section of the Flathead. Contact Echo (echo.miller-barnes@usda.gov) to RSVP or ask questions.



### Main Payette, Boise, ID (or Snake River, Hagerman/Bliss reach) – October 5/6

This day trip will be in conjunction with the National RMS Board Meeting. Water levels will determine which river.

Details and date TBD.



### Upper Green River around Pinedale, WY – August/September (stay tuned for exact dates)

Join our 3-day float from Green River Lake, USFS to Warren Bridge. Packrafts are best, as the much of the water might be too low for rafts and canoes. The majority of the river is Class 2-2+ and one 1/4-mile stretch of Class 3+ a few miles below the lake. Contact Lelia Mellen (lelia\_mellen@nps.gov)



Main Payette. Photo: raftidaho.org

# Fall Workshop – Using Fluvial Geomorphology to Improve Stream Restoration and Watershed Management



November 18-20 — Virtual Short Course  
 November 21 — Optional Virtual Field Trip  
 Instructor: Dr. John Field, Field Geology Services

Learn more and register: <https://bit.ly/3UIw5h2>

## Course Description

Stream restoration has become a catch-all phrase nationwide to describe all sorts of river management activities including flood and erosion control, habitat enhancement and endangered species recovery, and sediment and nutrient reduction efforts. An understanding of fluvial geomorphology can be helpful in establishing the underlying causes for stream degradation and bank erosion, anticipating how the stream will change over time if no restoration occurs, developing appropriate restoration strategies for the given setting, and foreseeing how streams will respond to a proposed restoration project. In this way, the actual needs for restoration can be documented, restoration projects tailored for a given site, and better restoration outcomes achieved. This course will utilize examples from around the country (and in fact the world) with particular focus on New England, the Pacific Northwest, and the Chesapeake Bay Watershed, but will be of value to all, regardless of location, as the basic principles of fluvial geomorphology and stream restoration to be covered in the course are applicable everywhere.

This three-day short course (10am-5pm ET each day) will explore the principles of fluvial geomorphology and stream restoration in a virtual format. An optional virtual field trip of stream restoration sites in the Chesapeake Bay region and possibly other locations is also available and will include live interaction with the field trip leader. The course is designed for government officials, environmental and engineering consultants, non-profit watershed groups, construction contractors, educators and students, and others trying to sustainably address flooding, erosion, habitat, and sediment and nutrient loading issues along rivers and streams.

While some quantitative methods will be introduced, the course will focus on the underlying concepts of fluvial geomorphology that are needed to effectively apply and interpret the results of quantitative analyses used in stream restoration designs. Fluvial geomorphology is also critical for anticipating how streams respond, both positively and negatively, to human activities along rivers, including stream restoration projects. The course will highlight process-based restoration practices, which are typically more effective, sustainable, and cost effective than form-based practices. Whether designing stream restoration projects yourself or reviewing plans to determine their potential effectiveness, this course will provide background and practical experience to identify the best restoration approaches for a particular setting and set of project objectives.

The short course will consist of visual presentations, small

*"I think [this course] does a good job of zooming out of the reach scale and providing a larger context framework. I have done Rosgen 1 and 2 and been heavily involved in a number of restoration techniques, but this class has provided a much more digestible framework for understanding stream processes. I like how John doesn't get bogged down in the technical side, and really focuses on the dominant processes. I have been a strong proponent of process-based restoration in my region, and this course has further reinforced that for me and given me some new strategies for presenting the information to others."*

– May 2024 Participant

group exercises, and activities that will provide participants with practical experiences and examples to recognize unstable channel reaches in a watershed and identify the most appropriate stream restoration techniques that will best address the identified instabilities, if present. The first day will focus on the basic concepts of fluvial geomorphology including extended discussions on stream equilibrium and channel classification. The second day will consist of hands-on activities in small breakout groups to reinforce the geomorphic concepts learned during day one and will provide practical experiences using resources (e.g., topo maps, aerial photographs) critical for completing geomorphic assessments at the watershed scale. The final day will apply the knowledge gained to examine numerous stream restoration practices through a series of case studies (working in small groups) that will highlight the many issues that must be considered to successfully and sustainably restore rivers and streams and to anticipate potential problems even before a restoration design is complete. The optional virtual field trip will tour examples of restoration sites that will reinforce the concepts and lessons of the first three days.

This course is pre-approved for 10 CE credits under SER's Certified Ecological Restoration Practitioner (CERP) program. ❖

## Registration

**Early Bird** (on or before October 18):  
 \$955 non-members / \$900 RMS members

**Regular** (after October 18):  
 \$995 non-members / \$940 RMS members

**Virtual Field Trip:**  
 \$245 non-members / \$220 RMS members

## Chapter Officers

### ALASKA (vacant)

### PACIFIC

Kristina Rylands, President  
 Upper Merced River Watershed Council  
 Mariposa, CA 95338  
 (209) 761-6674 / kristinarylands@gmail.com

Leigh Karp, Vice President  
 BLM California Desert District  
 1201 Bird Center Drive  
 Palm Springs, CA 92262  
 (951) 697-5291 / lkarp@blm.gov

Larry Freilich, Secretary  
 Inyo County Water District  
 PO Box 337  
 Independence, CA 93526  
 (760) 920-1169 / lmfreilich@gmail.com

Bob Stanley, Events Coordinator  
 Tuolumne Wild and Scenic River  
 24545 State Highway 120  
 Groveland, CA 95321  
 (209) 962-7825 / beobob@yahoo.com

### NORTHWEST

Cannon Colegrove, President  
 Montana Fish, Wildlife and Parks  
 4600 Giant Springs Rd, Great Falls MT 59405  
 (406) 454-5854 / cannon.colegrove@mt.gov

Chris Elder, Vice President  
 Whatcom County, WA  
 PO Box 43, Acme WA 98220  
 (360) 840-3064 / celder@co.whatcom.wa.us

Echo Miller Barnes, Secretary  
 Hungry Horse Ranger Station  
 10 Hungry Horse Dr, Hungry Horse MT 59919  
 (971) 940-3583 / emillerbarnes@gmail.com

Lelia Mellen, Events Coordinator  
 National Park Service  
 2310 Flourhouse Way, Bozeman MT 59715  
 (406) 224-3509 / lelia\_mellen@nps.gov

### MIDWEST

Ed Fite, President  
 Grand River Dam Authority  
 15307 North Swannanoa Rd, Tahlequah, OK 74464  
 (918) 456-3251 / ed.fite@yahoo.com

Ed Sherman, Vice President  
 USDA Forest Service  
 #66 Confederate Ridge Road, Doniphan, MO 63935  
 (573) 996-2153 / edward.sherman@usda.gov

Bobbie Jo Roshone, Secretary  
 Niobrara National Scenic River  
 214 W. HWY 20, Valentine, NE 69201  
 (402) 376-1901 / bobbiejo.pennington@gmail.com

### SOUTHWEST

Matt Blocker, President  
 Bureau of Land Management  
 440 West 200 South, Suite 500  
 Salt Lake City, UT 84106  
 (801) 539-4021 / mblocker@blm.gov

Stew Pappenfort, Vice President  
 Colorado Parks and Wildlife, Retired  
 308 Palmer St, Salida, CO 81201  
 (719) 221-4905 / sgappy@gmail.com

Secretary (vacant)

Events Coordinator (vacant)

### NORTHEAST

Emma Lord, President  
 National Park Service  
 54 Portsmouth St, Concord, NH 03301  
 (603) 224-0091 / emma\_lord@nps.gov

John Field, Vice President  
 Field Geology Services  
 P.O. Box 985, Farmington, ME 04938  
 (207) 645-9773 / fieldgeology@gmail.com

John Little, Trip Coordinator  
 Missisquoi River Basin Association  
 737 Rushford Valley Rd  
 Montgomery Ctr, VT 05471  
 (802) 326-4164 / jalittle58@gmail.com

### SOUTHEAST

James Vonesh, President  
 Virginia Commonwealth University  
 1000 W. Cary St, Richmond VA 23284-2012  
 (804) 426-8553 / jrvonesh@vcu.edu

Vice President (vacant)

Elise Chapman, Secretary  
 University of Tennessee at Chattanooga  
 615 McCallie Ave, Holt Hall, Room 328  
 Chattanooga, TN 37403  
 (423) 227-6131 / elise-chapman@utc.edu

Jack Henderson, Events Coordinator  
 French Broad Paddle Trail  
 P.O. Box 1242, Pisgah Forest, NC 28768  
 (703) 638-3616 / hendersonjc3@gmail.com

### Canadian River Management Society

Contact: Max Finkelstein  
 tel (613) 729-4004 / dowfink@gmail.com

## Become a Member

Name \_\_\_\_\_

Home Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

Home Phone \_\_\_\_\_

Organization \_\_\_\_\_

Office \_\_\_\_\_

Work Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

Work Phone \_\_\_\_\_

Email \_\_\_\_\_

Job Title \_\_\_\_\_

Duties/Interests \_\_\_\_\_

Rivers you manage \_\_\_\_\_

Membership Category (please check one)

- Individual \$60/yr (\$240 for 5 years - save \$60!)
- Associate \$40/yr
- Student \$30/yr
- Lifetime \$750 (for individuals only)
- Organizational (1-2 people) \$75/yr
- Organizational (3-4 people) \$150/yr
- Organizational (5-8 people) \$300/yr

Membership benefits are described online:  
[www.river-management.org/membership](http://www.river-management.org/membership)

Who referred you to RMS? \_\_\_\_\_

Make checks payable to "RMS" –  
 RMS also accepts VISA or Mastercard:

Card #: \_\_\_\_\_

Exp date: \_\_\_\_\_ Amount: \_\_\_\_\_

Send this form, with payment, to:  
 RMS, P.O. Box 5750, Takoma Park, MD 20913-5750  
 (301) 585-4677 • [rms@river-management.org](mailto:rms@river-management.org)

Give the gift of membership  
 to a colleague, student, retiree or friend!

RMS is a nonprofit organization.  
 All contributions are tax-deductible.





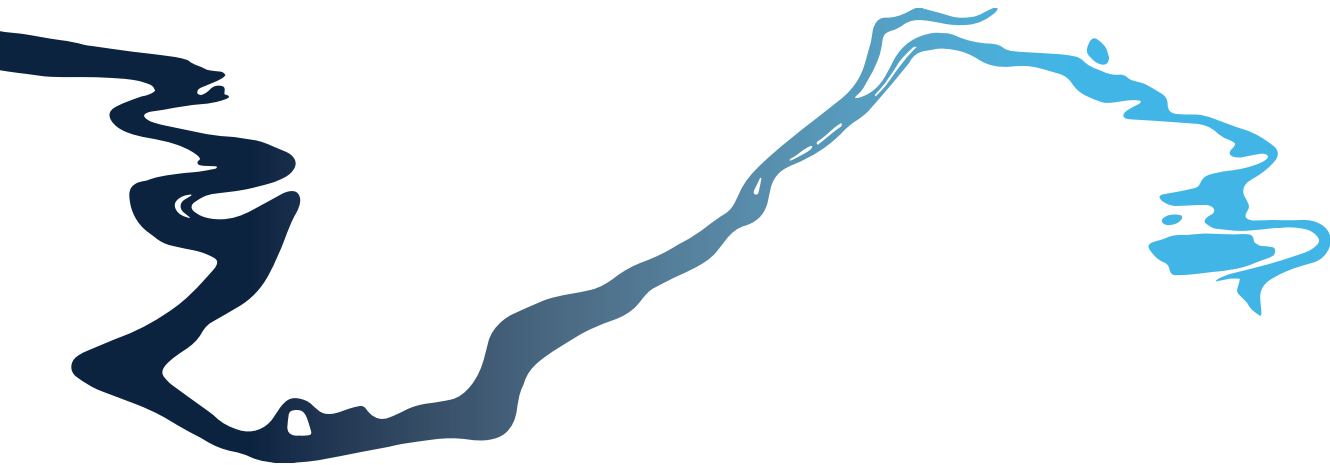


RMS, P.O. Box 5750, Takoma Park MD 20913



Like and Follow Us! @rivermgt society

Non-Profit Org.  
US Postage PAID  
Permit 536  
Missoula MT 59801



## RMS Journal Submission Deadlines

Fall 2024	Vol. 37, No. 3	Southeast	Aug
Winter 2024	Vol. 37, No. 4	Midwest	Nov
Spring 2025	Vol. 38, No. 1	Southwest	Feb
Summer 2025	Vol. 38, No. 2	Northwest	May
Fall 2025	Vol. 38, No. 3	Northeast	Aug
Winter 2025	Vol. 38, No. 4	Pacific	Nov

## Alaska Chapter Focus

Rusting of Wild and Scenic Rivers, AK .....	1
Support the 2025 River Management Training Symposium .....	4
Announcing the 2024 RSLC Recipients .....	6
Get to Know Our RSLC Alumni .....	8
Moving Water and the Therapy it Provides .....	9
Three Comprehensive River Management Plans, AK .....	11
Restoring Resurrection Creek, AK .....	12
Measuring Drafts for Different Crafts and Loads, AK .....	15
Book Review – Tim Palmer’s “Seek Higher Ground” .....	19
Rivers of the Central Yukon River Watershed, AK .....	20
Congratulations 2024 RMS Award Winners .....	24
RMS Chapter News .....	28
Fluvial Geomorphology Fall Workshop .....	30