Supporting Professionals
Who Study, Protect, and Manage
North America's Rivers

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Winter Snow Highlights Alaska's Nowitna Wild and Scenic River: *After a five-year process, the U.S. Fish and Wildlife Service completed its first comprehensive river management plan to provide for the river's long-term management. Photo: Karin Bodony / USFWS*

Flying the Plane While Building It: U.S. Fish and Wildlife Service Completes Its First Wild and Scenic River Plan

by Jennifer Reed

Most River Management Society members would agree that funding and staff support, priority-guided management, and coordinated efforts to achieve goals are the three essential requirements for establishing lasting support for river stewardship. But how do you get those key pieces in place for a river? The following conversation with Nicole Gustine, Conservation Planner in the Alaska Region of the U.S. Fish and Wildlife Service (USFWS), takes a behind-the-scenes look at her tireless work establishing a strong conservation foundation for a river in Alaska's National Wild and Scenic River System.

The USFWS administers the National Wildlife Refuge System (Refuge System); and shares responsibilities with the Bureau of Land Management (BLM), the National Park Service (NPS), and the U.S. Forest Service to administer the NWSRS. Within the NWSRS, USFWS solely oversees six wild and scenic river corridors in Alaska. These wild and scenic rivers lie entirely within the boundaries of the national wildlife refuges.

Until recently, management of these rivers has been predominantly invisible and unfunded. Instead, the rivers have been indirectly managed through other existing protective laws, rather than by the direct mandates of the Wild and Scenic Rivers Act of 1968 (WSRA). This is due in part to the fact that they were

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Editorial Policy

All contributions submitted for publication should be original, or reprinted with approval. Authorship implies responsibilities that can only be attributed to and performed by humans, rather than generative AI.

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.

Executive Director's Eddy

Risa Shimoda, RMS Executive Director

Join us online, in a classroom, or on the river! As the clock has sprung forward and days lengthen, RMS staff, partners, and volunteers have been furiously busy developing a host of programs and trips for you and your colleagues to meet, learn from topic experts, and perhaps develop a reason to meet one evening for a beverage! Programs highlighted in your biweekly *RMS News Digest* and posted in the 2026 *Calendar of Events* include topics that even the most experienced river manager, river runner, watershed scientist or manager can discover and share. Here are some of the most notable:

River Management Roundtables

These "meet up" sessions feature stories and case studies about topics we offer based on feedback and requests from members. Every other month (this year in January, March, May, July, September, and November), River Management Roundtables topics reflect the results of a survey of water trails managers in 2024 and a still-loosely organized Water Trails Working Group. We appreciate our program leaders Tali MacArthur, Program Manager for Watershed Outreach for the Pennsylvania Environmental Council, Nancy Stewart, Water Recreation Consultant and Water Recreation Program Coordinator within the Minnesota Department of Natural Resources - Parks and Trails Division, John Wenck, State of Iowa Water Trails Coordinator, and Lelia Mellen, former Outdoor Recreation Planner with the U.S. National Park Service.

Other 2026 River Management Roundtables will address insurance coverage options for "friends" groups, the nuanced skill of managing water flows for agricultural needs, surfboard surfing and recreational kayaking at whitewater parks, and a further look at river programs that welcome participants from underserved communities. Check our website for a list of upcoming sessions.

#OhioRiverBasinProud Information Session (March 31)

Many people who live and recreate along the waterways of the 15-state Ohio River Basin do not realize they are part of the basin that is the only major watershed in the United States that, unlike the Great Lakes, or Chesapeake Bay, have no national standing and have never received support for water quality or other initiatives. The Ohio River Basin Alliance (ORBA) is working to change that with a new awareness campaign. Our ORBA's Nature-Based Recreation Committee seeks to host events that are co-branded OhioRiverBasinProud throughout the Basin.

9th Annual Student Water Symposium (April 15-17)

This is an inaugural opportunity for River Studies and Leadership Certificate students to fulfill their 'presentation' requirements in between years in which there is a River Management Symposium. Thank you, Denielle Perry and student lead Kennedy Gilmore at Northern Arizona University (NAU) for creating the opportunity, and to Advisors Chelsie Romulo and Sharon Bywater-Reyes from Northern Colorado University and Susan Washko, Western Colorado University for stirring enthusiasm at home and making it possible to join the NAU students in Flagstaff!

2026 Hydropower Webinar Series (April 8 - June 10)

These sessions will offer both deep dives and new perspectives for all who work in this specialized arena.

April 8: Hydropower Toolkits for Practitioners - Take Two! Anna Calderón-Cleland and I will review the updated hydropower website components and its recently completed sister resource on the Hydropower Reform Coalition website.

April 29: Aquatic Invasive Species Management at Hydropower Facilities A panel of scientists and engineers will share the challenges of preventing or combating aquatic invasive mussels, fish, and plants at hydropower facilities in various regions of the country.

May 20: Energy Storage in Today's Electric Grid Kevin Lewis from the National Park Service will provide a fascinating update on the evolving state of hydropower energy production.

June 10: Tribes: An Evolving Presence as Hydropower Practitioners As a fourth and final webinar, Stephanie Quinn-Davidson from Ridges to Riffles will introduce us to the National Indigenous Coalition on Hydropower-NICH, its mission and plan to make a difference.

Wild and Scenic Rivers Webinar Series (April 29 - May 20)

These updated sessions for professionals who are managing Wild and Scenic Rivers, their partners and advocates. Seasoned experts will offer what they should know and where they can seek additional information.

April 29: WSR 101 Nancy Taylor, U.S. Forest Service (retired), and Liz Lacy, National Park Service (retired), will share how Federal and Partnership Wild and Scenic Rivers are fundamentally different yet similarly protected.

May 6: Section 7 Determinations David Cernicek, U.S. Forest Service, along with Nancy Taylor and Hector Santiago, National Park Service will clarify the irrefutable aspects and highlight the nuances involved in protecting wild and scenic rivers' free flow, water quality, and outstandingly remarkable values.

May 20: Managing Eligible Rivers Wild and scenic river management veterans David Cernicek, U.S. Forest Service, and Lower Salmon River Ranger Ryan Turner, Bureau of Land Management, will provide insights into the realities of managing rivers that may one day become permanently protected.

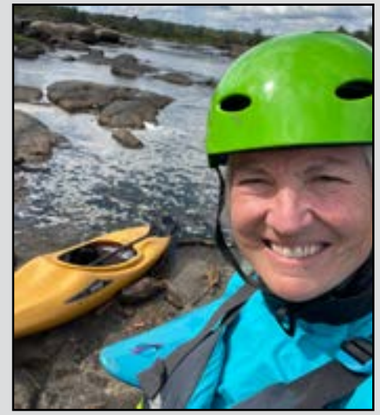
6th Annual National Wilderness Skills Institute (NWSI) (June 3 & 4)

The 2026 NWSI Program will be bursting with river training sessions and should be posted by May 1. Thanks go to the RMS presenters: Colter Pence, Monica Zimmerman, Corita Waters, Tony Mancuso, Nick Kaczor, Nicole Gustine, Steve Chesterton, Liz Lacy Fred Akers, Susan Cook, Eric Sandeno, Mary Ellen Emerick, and John Campbell. Hats off to core team partners Nancy Taylor, Dusty Vaughn, and James Major!

Chapter trips! Check out pages 20-21 to see a wonderful array of events. I hope you'll join one or more of the webinars, River Management Roundtables, and chapter trips, products of the impressive expertise and appreciated commitment of our amazing members and their colleagues. ❖

Risa Shimoda
Executive Director

President's Corner



Kristina Rylands, RMS President

Happy Spring! With three Chapter Chat sessions across RMS complete, these last few months have been a highwater mark for RMS engagement. Our members are what keep us moving forward as an organization, and for that we are grateful. The focus of these chats has been to rally all of our chapters around establishing a slate of events to not only bring members together, but to introduce new folks to RMS. One of the things we've been hearing from you is that now–more than ever–support for river professionals is needed. Who do you know that could benefit from the learning opportunities and camaraderie that RMS provides? I'll bet you a dollar you could come up with a list of at least five people. Send them a link to our website. Invite them on a chapter trip or meet-up (check out the trips and events listed in this journal). Grab a few stickers to hand out to folks (we can supply you!). Stay tuned for another chat at the end of May and for updates on our growing list of chapter activities. And feel free to take me up on my bet! ❖

Kristina Rylands
RMS President

Alaska by Jennifer Reed

Looking Back to Look Forward: A Retrospective of the Alaska Chapter, Its Current Crossroads, and Ponderings for Its Future

The River Management Society (RMS) has given me so much. When asked, I always claim RMS as my source of education about how to steward, interpret, and safely enjoy public water resources.

I became involved in the RMS Alaska Chapter in 2004. In short order, I met most of my formative professional mentors, who over the years have become cherished friends and river trip companions. I soon became an officer and served various leadership roles for about a decade. That input paid back in dividends by helping to shape my fulfilling and effective conservation career. Now I'm retired along with all my mentors. I want to give back to RMS, with targeted intention, smarter not harder.

My first step was to take a look at current conditions so we can look ahead in a meaningful way. Here's what I found:

- At this time no officers oversee the chapter. The last official action taken by an officer occurred in June 2023.
- Membership has reached about 40 people at one time, with 52 total members over the chapter's history.
- There are 13 current chapter members, located from Sitka (1) to Fairbanks (3), with additional members in Juneau (2), Homer (1), and Anchorage (6). To illustrate the challenge this poses, note that the geographic distance between Sitka and Fairbanks is just under 700 air miles—or more than 30 hours of travel by road and ferry, as there are no roads connecting to Sitka. Similarly, Homer, Anchorage, and Fairbanks are not connected to Juneau by road.
- Currently, the average member age is around 60, and to my knowledge at least half are retired.

The current conditions speak for themselves. The Alaska Chapter needs a reboot. The Alaska Chapter is at a crossroads.

Is there anything the past can teach us? Why was I so compelled to join over two decades ago? What worked to recruit me to become a dedicated lifetime member? I remember the contagious energy and zeal with which Melissa Blair presided over the chapter when I first became involved.

***Where the Rivers Flow**: Rivers and cities of the Alaska Chapter mentioned in this issue. Map: James Major*

I remember how warm, welcoming, and reassuring she and other members were to me; how willing they all were to answer my endless questions and advise me as I learned the ropes. I remember fun together on water and a comforting atmosphere for building my own water safety skills. While by no means complete (or completely accurate!), Cassie Thomas and Doug Whittaker kindly helped with the list of river trips and activities they recall the Alaska Chapter undertaking, showing a glimpse into the chapter's momentum of the past:

1998 Little Susitna River
2002 Gulkana River
2003 Upper Kenai River (after RMS conference)
2003 Upper Nenana River
2004 Talkeetna River
2005 Kenai River
2005 Delta Wild and Scenic River
2006 Six Mile Creek (after Anchorage River Rendezvous)
2008 Little Nelchina/Nelchina/Tazlina Rivers
2009 Knik River
2010 Carmen Lake / Twenty mile (jet boat to mouth)
2011 Kenai River (before RMS conference)
2011 Placer River
2011 Portage Creek (after RMS conference)
2012 Susitna River (via train or jet boat to Indian Creek)
2016 Chulitna River

Where can the Alaska Chapter go from here? Some of my RMS mentors have said increasing membership is the key for a vibrant future; some have said more trips together on rivers will bring back energy; others have said diversifying the membership away from federal and state employees toward commercial guides and other non-profits is the ticket. I bet we need all of those approaches and more, simultaneously, in a silver bullet action plan. But we need leadership to coordinate these efforts.

Professional organization membership rates have shown a downward trend among U.S. college graduates. However, recent data shows a "rebound". The MGI 2023 Membership Marketing Benchmark Report found that 49% of associations report growth, contrasting to 26% in 2021. If young folks *do want* to join organizations, what forms should and could new membership take in this ever-evolving world? How will a revived chapter serve professional needs and interests of Alaska's new water stewards into the future? Marketing specialists that cater to membership-based organizations stress the need to focus on the following four factors.

Provide a clear and compelling *value proposition*. We have to compel new members to join. Current members may struggle to understand what young professionals need to help them perform in this new work environment, radically transformed from what we have known. I have lived the lesson that the world is run by the people who show up. Should young professionals be the ones to join together to make-over (takeover?) the Alaska Chapter into a professional organization that will serve their needs? Should existing members recruit young professionals to do just this?

The referenced report asserts the most common reason organizations give for not compelling potential members to see value proposition is that they have challenges in effectively articulating the value of membership. Every RMS chapter can ask themselves: Why should professionals working with (or seeking to work with) rivers choose to join RMS? What unique benefits does membership offer? What specific problem does RMS solve for new members? How does RMS differ from other professional organizations?

Acquire new members. It's not enough to have stable renewal rates. In contrast, continually acquiring new members is a critical driver for an organization's vibrancy and longevity. Considering our current Alaska Chapter membership trend, acquiring new members must be a priority and will require effort. Sometimes the truth hurts. Maybe RMS could incentivize recruitment by chapter members of new members into the organization?

Have a generational focus. Associations are successfully attracting younger members by adapting offerings to their needs. How and why do young professionals experience growth and skill building in today's workforce? What are ways the Alaska Chapter can be responsive to those styles, for both the potential member and their supervisor? Should we frequent university job fairs, targeting natural resource and outdoor recreation management majors? Maybe other chapters with young professional members can coach the Alaska Chapter or the RMS Staff with suggestions regarding the use of social media to reaching young professionals; Facebook is still effective for community building via groups, events, and advertisement.

Re-establish in-person activities. Marketing research on association membership shows that increased in-person engagement is the ticket. A rebound of in-person events and professional development opportunities has correlated with higher engagement and membership numbers. The Alaska Chapter's unique geography and accompanying barrier to in-person gathering was mentioned above. To further illustrate the challenge consider that Alaska as a whole covers just over 665,000 square miles (including land and water). Current members could divide up the state and have over 50,000 square miles per member, all to themselves. (For reference, 23 of the United States are *less* than 50,000 square miles in size.) Perhaps the Alaska Chapter could adopt a hybrid model, hosting occasional statewide virtual connections while also organizing subregional meet-up initiatives. Members in each of the six towns may engage young professionals by hosting in-person gatherings.

Nonetheless, more trips together on rivers with new members is an aspirational goal. Until then, could local trips, meet-ups, and virtual experiences connecting members across the state be enough to help our chapter re-establish momentum?

If there's a young professional interested in meeting other river professionals, or another old dog willing to learn new tricks, I'm at your service to give back to RMS, with targeted intention, working smarter not harder. ❖

2005 Delta WSR Trip Participants (Melissa Blair, far right). Photo: Doug Whittaker

Jennifer Reed is a recently retired federal civil servant, having worked as a ranger at Denali National Park, Yukon Flats National Wildlife Refuge, and Arctic National Wildlife Refuge for a combined 29 years. Jen thanks to the Alaska Chapter members for their input; this article solely represents her opinions.

***Flying the Plane While Building It**, continued from page 1)*
designated without Outstandingly Remarkable Values (ORV) identified in their designating legislation (the Alaska National Interest Lands Conservation Act of 1980 (ANILCA)), to their extremely remote geographic locations, and to their relatively low visitor use levels.

So how did Nicole persuade the USFWS to fund a five-year process to coordinate a final determination of ORVs, identify management priorities by developing a comprehensive river management plan (CRMP)—the agency's first—and commit to proactive, long-term management through focused data collection and monitoring for the Nowitna Wild and Scenic River (Nowitna WSR), in accordance with the WSRA? To learn more, read the full conversation.

Jen: You are an employee of the USFWS and its Refuge System. Many don't associate wild and scenic rivers with the USFWS. Why do you think that is, when the purposes of the WSRA are so aligned with the habitat conservation mission of the USFWS?

Nicole: Yes. In Alaska the USFWS mission and purposes of the WSRA are very aligned: designated wild and scenic rivers in refuges often serve as arteries that drive landscape-level wildlife and habitat health. In the Lower 48 states, the majority of the Refuge System does not encompass river corridors, and instead Refuges are located where there are wetlands.

Alternatively, USFWS leadership may have assumed that responsibilities for the USFWS-administered rivers in Alaska were addressed through the agency's work to uphold ANILCA. Under ANILCA, one purpose identified for every refuge in Alaska is "to ensure, to the extent practicable and in a manner consistent with other refuge purposes, water quality and necessary water quantity within the refuge."

The main reason is probably the fact that the USFWS administers so few rivers within the NWSRS compared to its sister agencies. The WSRA just probably didn't come up much.

Jen: Why and how did you come to coordinate the first team to complete a USFWS-initiated and -lead CRMP, when the task was already more than 20 years overdue?

Nicole: Ultimately, it came down to being in the right place at the right time. The foundation for the effort had been under construction for decades with key staff building momentum over recent years. The pivotal moment happened after *you* organized a state-wide interagency wild and scenic river training in Alaska in 2019 to raise manager awareness of the responsibilities of the WSRA, and then in 2020 teamed up with the River Management Society's River Training Center to energize a cadre of USFWS managers and resource technical experts to be fired up about beginning efforts toward meeting USFWS responsibilities to the NWSRS. Additionally, some staff were expressing concern about potential river impacts from proposed or actual activities occurring outside refuges, but found it difficult to explain the basis for their concern in advance of having ORVs definitively established for wild and scenic rivers.

There we were with Pandora's Box wide open, and only one plausible way forward: actively manage to achieve the direct mandates of the WSRA by developing a CRMP. Add a little funding, a few planners (two key planners in particular: Helen Clough and Stephanie Brady) who advocated the significance of managing wild and scenic rivers to achieve the mission of the USFWS, and ka-BOOM! I was like "Yeah, I'm ready to co-lead a planning project with Ella Wagener, a very experienced USFWS colleague. How hard could this be?" Little did I know…

Jen: Are you blaming me for opening Pandora's Box? If I did then I let the suffering and innocence out of the box and you brought the hope back into it!

Ribbing aside, I understand Ella (the USFWS planning project co-lead you mentioned) has extensive expertise with the National Environmental Policy Act of 1970 (NEPA) that she has applied to big projects, but she moved on from USFWS-Alaska Region shortly after all systems were go to develop a Nowitna WSR CRMP. From my view, you managed to step fully into a solo lead role with courage and wisdom, even though you may have felt unprepared. We all know any effort like this takes collaborative leadership, which means many people are spinning plates intently to get the work done. But there also has to be one person who knows who all the plate-spinners are, so their plates spin with just the right force to ultimately coordinate together. I see you as the orchestrator of all that; the person who leads the team across the finish line. These feats from my perspective seem insurmountable, considering when the process and decision occurred in the national election cycle.

Once you knew this project was really happening, how did you approach the effort? How do you think your approach lent the likelihood of success to the completed effort?

Nicole: I tend to jump into things with both feet, so when I'm in…I'm all in. But I was totally in over my head and at first I was frozen like a deer in headlights. I started by "phoning a friend" and reaching out to other wild and scenic river experts to build a core team. I met regularly with BLM and NPS staff that were developing CRMPs to brainstorm, problem-solve, and learn from each other. I feel like I learned more from them (thanks, Tim Hammond and Sharon Kim!) than they learned from me. But then again, we were writing the first CRMP our agency had ever undertaken, while they were both revising pre-existing CRMPs. I also relied heavily on the Interagency Wild and Scenic Rivers Coordinating Council's invaluable technical papers and wild and scenic river experts that serve on the council.

Even when I'm confident, I don't like to work in a vacuum—so one of the first steps we took was to host an internal kick-off meeting to "build the bench." My goal was to bounce ideas around among staff, hear any grumblings to see where I could help, identify key roles and responsibilities, and ensure staff at every level were on the same page.

I knew I needed to ensure universal understanding that we weren't just doing this because we had to (by law, we did have to!). Instead, I focused on why we're lucky to have this great opportunity to work on something timeless and lasting for conservation.

Jen: So it sounds like success came directly from having experienced colleagues to learn from, your commitment to ensuring everyone felt heard, and your ability to inspire others to dedicate themselves to a once in a lifetime conservation project that is precedent-setting. I also see that this initial USFWS-authored CRMP as setting the bar for a very high standard for similar work into the future, because of your holistic and thorough approach.

Nonetheless, I'm sure it wasn't all fluffy puppies and roses. Tell us the backstory of how the team struggled through this effort. Was there a moment when you doubted the process would be completed? Why and how did the team press through that?

Nicole: Things can get rough when you're building the plane while you're flying it! While the WSRA is clear on what a CRMP must include, there is a lot of flexibility to ensure the river's distinct needs are met. Each agency's purposes help to shape the nuance of how a CRMP's management priorities are expressed for a particular river. USFWS had no template for this, so every turn was a new adventure. We had bumps along the way, but I don't think any one thing ever felt insurmountable. Well at the time, every bump felt like a giant pothole that makes your teeth rattle, but one of the resource technical experts, Karin Bodony (a biologist at Nowitna NWR) and I are both very tenacious, so we kept at it. I think overall the hardest challenge we faced was the turnover in Refuge staff. We saw a Refuge manager leave and a deputy manager come and go, and thankfully Karin was standing in the dust of every big change, willing and able to help.

Nicole (left) and Karin Bodony on Nowitna River. Photo: Nicole Gustine

Jen: You said, "We had bumps along the way," but I don't want anyone to overlook the fact that, while there was guidance for where the road should head, you were also surveying it, doing the groundwork to establish the road, and paving the surface—all while managing the team through the bumps!

After some time to gain perspective and reflect, what is the biggest thing you learned about this process that you would apply to your future work assignments and challenges? How would it inform your interpersonal efforts?

Nicole: I'll start with the interpersonal efforts, since the big lessons learned on that front apply to life in general: **always get buy-in early and invest mightily in education up front, so everyone knows the "why'" behind the work.** A CRMP can't be done without buy-in from leadership (all the way up the chain of command to the national level, at the right time and place), as well as buy-in from the Refuge manager and all Refuge staff. With the staff turnover this project faced, it was a challenge to constantly re-confirm staff awareness of and interest in effective stewardship. That was also a key takeaway for me that I'd invest even more in if I could do it over again.

If I get to support another planning process, **I'd stress the value of *pre-planning*!!** You can never do enough preparation before the actual planning process begins, so I'd make sure to advise staff to gather data and study the process details earlier than and more than you think you need...and then do some more!

Also, build your team wisely. No one likes it when you have too many cooks in the kitchen, but it's impossible to make any progress when no one knows the recipe. Finding the right balance is key. This often means a team leader must conduct a lot of informal communication that goes on behind the scenes that is not documented or seen, but is literally herding the cats to ensure everyone is informed enough about the process to know how and why they are needed to complete tasks on time and in order.

And lastly, I learned an essential team rule: **do a lot of work up front to make sure your team is a good one.** Small and mighty is better than large and lost. Attitude is more important than expertise, because you can always learn the process.

Jen: I hear you on the preplanning. It's intimidating to think about how much needs to be known about the resources and existing uses, as well as procedures for effectively assembling a CRMP. In my experience, managers don't want to think about [preplanning] because they quickly get overwhelmed. It's important to have a manager who realizes the detail work before formal planning is essential. You really helped me see that in planning, there's no need to initiate a review in accordance with NEPA until you have invested in extensive preplanning to assemble all you could possibly need for the project.

With the changing landscape of federal land and water conservation—and a drastically reduced federal conservation workforce going into the foreseeable future—I worry about who will be there to be the expert to lean on for advice or to assemble the info needed into the future. What do you fear most for the public's enjoyment of our natural wonders, for the mission of the USFWS, and for the Nowitna WSR corridor?

Nicole: We can't keep doing more with less. With fewer staff, declining budgets, and competing priorities there will have to be some compromises.

The Nowitna CRMP represents a situation where we were being proactive and visionary based on what is best for the resources

and people, instead of putting out the biggest fire in front of us. I fear that in the near future we will be even more reactive and less proactive in achieving the USFWS mission and managing wild and scenic rivers. I hope in my career I have opportunities for being proactive again. And I remain hopeful that with this initial foundation set, wild and scenic rivers managed by the USFWS in Alaska will continue to be protected for generations to come.

Jen: How do you hope those who come after you will build upon the completed Nowitna CRMP? What work remains undone?

Nicole: We worked hard to develop a plan that is useful for the Refuge staff to understand priorities, and coordinate efforts to achieve goals for management of the Nowitna WSR. For example, we're already implementing actions identified in the plan to address the lack of data for this remote river. My hope is the plan will continue to be implemented over the next decades. Another hope is that this plan could serve as a template for future CRMPs for other USFWS-administered wild and scenic rivers. The USFWS-Alaska Region and wild and scenic river-administering refuges will need to determine if staffing capacity exists for us to develop additional plans. Now that we have a template for future efforts, with effective pre-planning on the part of refuge staff, the process could be much more streamlined. Refuge stations have experienced staffing and subject matter expertise losses, so thorough pre-planning will be that much more essential, and possibly slower. Each of the five USFWS-administered wild and scenic rivers yet to have CRMPs will require extensive pre-planning.

Jen: What are you most proud of regarding this novel achievement? What do you think will be the most lasting impact—on the public who use the river, on the river itself and the broader landscape of interior AK, on the NWSRS, on the USFWS, on the people who completed the effort—from completion of the Nowitna CRMP?

Nicole: We have our first CRMP ever authored by the USFWS! But seriously, the most valuable impact is that the Nowitna CRMP sets a baseline for improved management for all USFWS-administered wild and scenic rivers. CRMPs give us the blueprint for effectively protecting wild and scenic rivers. What can and can't be done in river corridors or on waterways, for example, or how we're going to preserve ORVs for future generations.

I am part of a river-running family, and my husband and I have taken our kids down countless rivers. For a while we lived in Jackson, Wyoming and were lucky to have the Snake River out our back door. It was there we realized the river gave us so much: a place to be a family together, to see wildlife, to make memories with friends. Even though I doubt I'll get my family out onto the Nowitna WSR, I am awed by the fact that I have been able to be a part of creating a blueprint for this spectacular river.

Jen: Thank you very much for sharing your story, for offering up your insights, and for revealing your fears and hopes for Alaska's USFWS-administered wild and scenic rivers. I think you can rest proud of the fact that for the Nowitna WSR, you managed to "fly the plane"! You wrangled together the three essential components of river stewardship: support, management priorities, and a blueprint for working together to achieve goals. We can all be thankful for your courageous effort that will be a lasting benefit to the Nowitna WSR's lands and waters and the people who enjoy them. ❖

Outreach Efforts Begin to Help Inform Communities about *Rusting Rivers* in Alaska

Rusting Rivers Information Pamphlet: *Developed by USFWS, USGS, and NPS, it will be shared with communities in 2026. Photos: Josh Koch & illustration: Julia Ditto*

by Michael Winfree

In recent years, residents in rural northern Alaska communities noticed changes in rivers and streams. Residents observed river water, once pristine, had rapidly changed to a rusty orange color. While northern Alaskan residents were seeing rusting rivers, U.S. Geological Survey (USGS) and National Park Service (NPS) scientists were also observing similar rapid changes in water quality in northwest Alaska. This phenomenon, known as rusting rivers, has been observed beyond Alaska and across Earth's Arctic in recent years. NPS ecologist Jon O'Donnell provided a thorough description of what is currently understood about rusting rivers in this journal (*RMS Journal*, Summer, *37*(2)). To summarize the article, scientists believe that thawing permafrost is exposing previously frozen minerals, such as sulfide minerals (e.g., pyrite), to oxygen and water. This exposure leads to weathering of the minerals, which are then transported into surface water, causing the once clear river water to turn rust-colored due to the presence of oxidized iron particles in the water column. Scientists employed a remote sensing analysis of satellite images over time, identifying over 200 orange streams and rivers across Alaska's Arctic, many of which experienced water degradation starting around 2018.

The large-scale of rusting rivers across Alaska's arctic landscape suggests that several communities could experience degraded water quality in nearby streams and rivers, potentially affecting drinking water systems, subsistence fisheries, and overall ecosystem health. Residents in rural communities have voiced questions and concerns about the issue, prompting the U.S. Fish and Wildlife Service (USFWS) to collaborate with USGS and NPS scientists on community outreach efforts around the rusting rivers issue.

The purpose of focusing on community engagement is to develop a two-way information-sharing network that fosters communication. Agency scientists will strive to keep communities updated with the latest research in Regional Advisory Council meetings and Subsistence Resource Council (NPS) meetings. Scientists will also seek to better understand their concerns about rusting rivers and provide ways for residents to report impaired streams as they occur across the landscape.

As part of the effort to develop relationships with citizens in rural communities, USFWS and USGS have developed a pamphlet with information about rusting rivers. This pamphlet also provides contact information to foster communication between the public, scientists, and managers. It is planned for dissemination to communities in 2026. The outreach pamphlet and more information about rusting rivers can be found on the USGS Rusting Rivers website. Visit the link in the QR code to explore further and stay informed about the rusting rivers issue. ❖

Michael Winfree is a hydrologist for the USFWS National Wildlife Refuge System's Water Resources Branch in Alaska.

Ice Fun: *Students drill holes through the ice. Photo: Sarah Clement*

Fresh Eyes on Ice: Monitoring River Ice in the Last Frontier

by Karin Bodony and Michael Winfree

Six fourth-graders stand on the frozen river, squinting into the bright March sunlight. The snow is deep here, a short distance away from the snowmobile trail that leads to their village. Two students measure the snow depth while another shovels an area clear for the ice auger. They have already measured ice thickness at two other spots today, and this will be their third for the month.

The river is well known to these students who have grown up living on its banks, travelling its waters by boat in the summer and snowmobile in the winter, swimming in its silty waters, and helping their families bring in a year's supply of fish. Some of the children have ancestors who have lived in much the same way here for thousands of years. Now this youngest generation is helping their community and others like it by tracking the unprecedented changes in seasons and ice dynamics that directly affect their safety and livelihood.

This group of students is just one of many citizen science groups located across Alaska and parts of Canada who participate in *Fresh Eyes on Ice*, a project led by an interdisciplinary team of scientists and educators at the University of Alaska Fairbanks.

The *Fresh Eyes on Ice* program began in 2019 by establishing community-based monitoring teams. *Fresh Eyes on Ice* has created and trained a network of local observers to provide information that helps inform the public about ice hazards and reduces risks related to winter travel and recreation. K-12 students and educators, Indigenous Elders, community members, Tribal, state, and federal agency partners, and citizen scientists contribute monthly measurements of ice thickness on their local rivers and lakes, as well as photographs and notes about freeze-up, break-up, and local ice conditions. This information is shared on the *Fresh Eyes on Ice* webpage in graphs, images, blogs, and publications, through Facebook posts, and through local information networks. Working with teachers and students to track local ice conditions and engage in science, technology, engineering, and mathematics (STEM) learning has contributed to the program's success, as evidenced by the 27 community teams submitting hundreds of ice observations, helping it blossom into a state-wide freshwater ice monitoring network.

How does a community-based team in the *Fresh Eyes on Ice* network observe the ice? Methods vary, but the approach is guided by the interests of the kids and educators, who along with the *Fresh Eyes on Ice* team, design the activities and ensure that students understand the scientific principles behind their observations. Typical methods include field surveys, where students drill through the ice and measure ice thickness and snow thickness using standard protocols. Other methods include the use of drones to collect imagery of ice, especially during freeze-up and break-up. Real-time cameras that are connected to satellites are also used to record ice conditions in some locations. Regardless of the method used, engaging with schoolchildren and training the next generation of scientists is always an adventure!

As *Fresh Eyes on Ice* aims to improve the sustainability of long-term monitoring in communities by enhancing its community-based team models. In rural Alaskan communities, frequent turnover of teachers and local scientists poses a challenge. To address this, the University of Alaska scientists and U.S. Fish and Wildlife Service are creating robust community-based teams that pair teachers with refuge scientists and education specialists to work with school kids. This model has proven successful in the communities of Tok (Tetlin National Wildlife Refuge) and Galena (Koyukuk, Nowitna, and Innoko National Wildlife Refuges), enhancing long-term stability by ensuring continuity despite turnover. In other words, employing a model where there is always a member of the community available who has experience in the *Fresh Eyes on Ice* program may help mitigate the impacts of both teacher and scientist turnover.

The partnership between the U.S. Fish and Wildlife Service and *Fresh Eyes on Ice* provides important ice data that supports Alaskan communities, while advancing the conservation efforts of Alaska's National Wildlife Refuge System. *Fresh Eyes on Ice* prioritizes outcomes that meet the needs of Alaskan communities—such as addressing ice travel safety and ice hazards—based on a statewide assessment of information needs. Alaska's National Wildlife Refuges recently conducted water resources inventory and assessments that highlighted a clear need to better understand ice dynamics and their implications for fish and wildlife populations. Thus, Alaska's communities and wildlife refuges are equally interested in observing changing trends in ice thickness and ice phenology—seasonal changes or phenomena such as freeze-up and break-up timing—in a given year and over the long-term.

As the young ice-scientists pack up their tools and head back toward their school, they are doing more than completing a science lesson. They are deepening their own connection to the rivers and lakes in their community, collecting information that can make travel safer, and ultimately contributing to better stewardship of northern environments. Through *Fresh Eyes on Ice*, local observations become shared knowledge, linking community experience, Indigenous knowledge, and scientific monitoring to inform river safety and a long-term understanding of ice dynamics in a time of unprecedented change. ❖

For background on the program, visit https://fresheyesonice.org.

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Measuring Ice Thickness: *Students and Fresh Eyes on Ice scientists measure ice thickness. Photo: Sarah Clement (top) & Chris Arp (bottom)*

Gulkana River

Same As it Ever Was?

Editor's note: *This piece shares a career's worth of insight from a long-time RMS member. Drawing on his diverse experiences from his river career, Doug provides a narrative that speaks to the diversity of careers in river management. As a river runner, he takes you on a river trip, starting at the put-in early in his career, and ending at the take-out on his final trip. Because of its length, the piece is divided into sections that generally flow downstream with the river.*

by Doug Whittaker

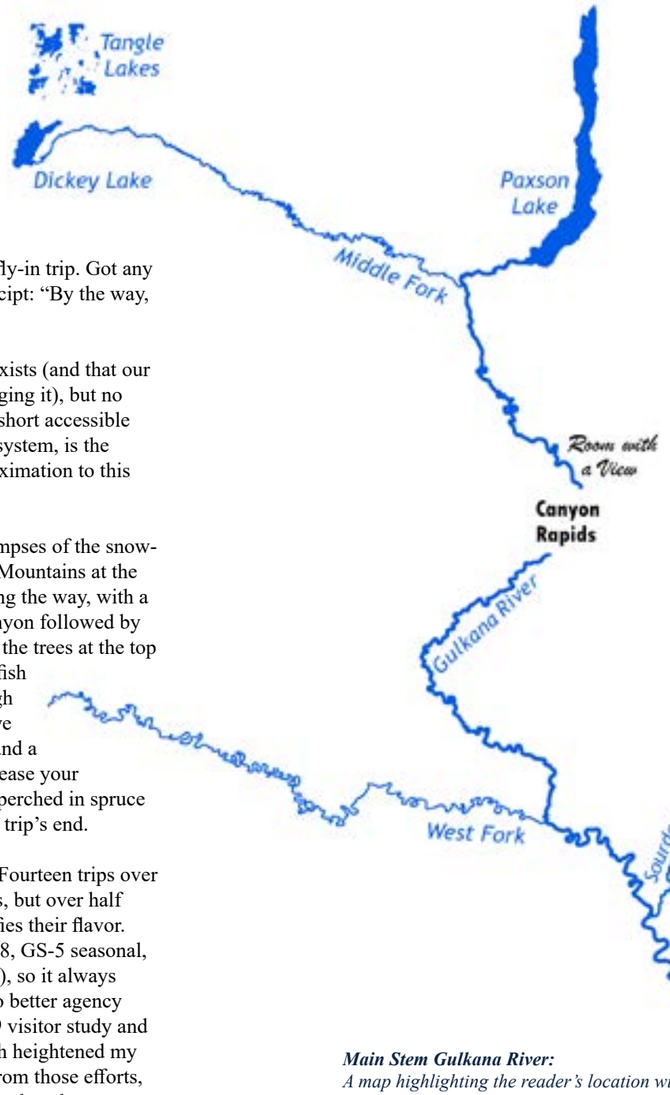
At least once a winter I'll hear from friends planning their once-in-a-decade trip to Alaska. "We have five days between our cruise and Denali, and we were thinking about a river. Somewhere with salmon fishing and good camping. Some whitewater with outstanding mountain scenery would be nice. Also no bugs or crowds, with road access because we can't afford a fly-in trip. Got any ideas?" On some occasions, it might include a postscipt: "By the way, can we borrow a couple of boats?"

Alaska's outsized reputation suggests such a place exists (and that our reputation for hospitality would shame us into divulging it), but no Alaskan river truly has everything people want in a short accessible dose. The fallback, at least for those along the road system, is the Wild and Scenic Gulkana, perhaps the closest approximation to this mythological river.

While lacking grand scenery, the Gulkana offers glimpses of the snow-covered Alaska Range at the start and the Wrangell Mountains at the finish, prototypical interior forests and wetlands along the way, with a measure of splashy rapids in a short Class III-IV canyon followed by eight miles of Class II+ rock dodging. Camps are in the trees at the top and on cobble beaches at the bottom. And there are fish some to eat (if you like grayling or are skilled enough at catching kings), others to look at (spawning sockeye in August, who by that time are past chasing flies), and a few to even torture (because you must catch-and-release your rainbows). As a bonus, you may see a dozen eagles perched in spruce trees, watching as you float under the pipeline at the trip's end.

My own relationship with this river is complicated. Fourteen trips over three decades might suggest it is one of my favorites, but over half of those outings were for work, which always modifies their flavor. This was the first river where I got paid to boat (1988, GS-5 seasonal, 7 bucks an hour, as a tech on an instream flow study), so it always summons some nostalgia. That paid foray also led to better agency gigs and a consulting path with roles in a 1998-1999 visitor study and management plan revision from 2000 to 2006, which heightened my familiarity with the place. Eventually I burned out from those efforts, and didn't return to the river until a pair of trips in the last three years, providing an excuse for retrospection about the river and its future.

The following has been assembled to give a taste of the river, recall a few trip memories, and suggest some management triumphs and tribulations. Opinions are my own and may not be shared by my colleagues or the agencies for which we worked. I apologize to those who have heard these stories before and may be confused by the retold embellishments or conflations. Stories work better when they are shaped to fit a narrative, even if reality is more subtle and complex.



Main Stem Gulkana River:
A map highlighting the reader's location will visually guide the reader through the story.
Map: James Major

Paxson

The classic 47-mile trip on the Main Stem Gulkana begins on Paxson Lake, which is roughly ten miles long and nearly a mile wide at an elevation of 2,600 feet. This is relevant if you want to boat the river early in the year, because the ice on the lake might not be gone. This used to occur about the second week in June, but in some recent years the lake has opened by Memorial Day.

Never one to let the weather dictate my schedule, I started one trip on D-Day (June 6) by sliding boats some three miles across rotting ice from Paxson Lake launch to the outlet. It turns out that a cataraft, lightly loaded, is nearly effortless to pull on snow/ice—and when you get to the sketchy slush near the open water, it was simple to shove it forward and jump aboard without mishap. My companion had an even easier time sliding his canoe, although his entry into the river was more precarious. We were wearing dry suits, just in case. Unfortunately, my trusty canine at the time had no such protection—not the first time he learned the disadvantage of being the lead dog. Genetically stoic, he hardly reacted to the immersion and patiently paddled in a circle until we could fish him out.

Middle Fork

The alternative to a Paxson launch on the Main Stem is a portage-fest from Upper Tangle Lakes to Dickey Lake, the origin of the Gulkana's Middle Fork. On my first trip in 1988, part of a well-funded study out of the Bureau of Land Management's (BLM) Denver Service Center, we were able to avoid that challenge and took float planes into the headwaters. I still feel a little guilty.

This was my first flow study, and we learned it was possible to run rafts and canoes on a measured 26 cfs in the river's entrenched meanders, as long as you were willing to drag your boat across bars once the river widened into braided channels. We also learned that king salmon will wait patiently in a pool below a shallow braid, a third of their backs out of the water, for precipitation to raise the level and allow passage upriver. On cue, a spitting rain began that night and did not stop for days.

Flows had not risen enough by the second day to run a short zigzag gorge, providing our group with an early challenge. As the drizzle turned into a downpour, we had to line a crux rapid. As a very-junior member of our group, I looked to a pair of veteran hydrologists for direction, becoming astonished when they just let go of their lines as the current tugged, trusting fortune to bring their unsteered raft through the jumble. I followed suit and somehow it worked, but as I waded into the bottom of the rapid to retrieve the boat, I remember thinking, "I'm not sure everyone here knows what they're doing."

More questions arose over the next couple of days. Rising waters chased us off one beach and then out of a camp in the trees. It turns out that hydrologists are no better than average at predicting bankfull flows. The forced relocations might not have been so irritating if our tents were worthy, but the new shelters procured for this trip were summer Eureka! specials—the kind that came with a tube of seam seal and a beanie-fly that barely covered its top. As we huddled around a fire on our third night, a team member singeing his last pair of socks in a vain attempt to dry them, I realized there was probably room for me in this profession. Nothing improves self-confidence quite like another person's struggles.

Paxson Lake.
Photo: Bureau of Land Management

The minimum necessary

Despite those misadventures, our study team had its talents. We were charged with inventing a values-based approach to studying instream flows, a standard that could be used to support state or federal protections for the Gulkana Wild and Scenic River. It required cross-referencing information about fish, wildlife, geomorphology, and recreation, then linking it to the river's hydrology at a downstream USGS gage. This included innovative hydraulic geometry modeling from a single trip's data and identifying fish periodicity and flow preferences for salmon, grayling, and trout. On the recreation side, I got to spend the rest of the summer at the takeout, surveying boaters about river values, their experiences, and flow evaluations. With anglers, floaters, jet boaters, and air boaters in abundance, I probably learned 80% of everything I know about Alaskan boating traditions during that first summer.

Some might question whether this work was necessary for a federally designated river remote from Alaska's urban population, particularly one with no development threats in sight. There were probably fewer than 500 people living within 100 miles of the river, and no nearby mining or oil projects. But Wild and Scenic designation only prohibits dams and diversions in its corridor, providing little protection from water projects or other "magic straws" that might remove water from tributaries upstream. Our study was about protecting flows before anyone even thinks of a way to remove them. A hundred years of water development history in the west provided a surfeit of cautionary tales.

When applied to a federal reserved water right claim, case law complicated the mission. Springing initially from *Winters v. United States* (1908) and modified by rulings in *Arizona v. California* (1963) and *United States v. New Mexico* (1978), the evolved legal standard for a federal water right is the "minimum flow [that does not] entirely defeat the primary purposes of the Act for which the [river] was designated." This meant linking flow needs to the river's specific values.

The problem was that no one had articulated the values. Designated as one of 26 rivers through ANILCA in 1980, Congress offered little beyond the list. BLM's initial river management plan in 1985 added some detail, but did a better job describing boundaries and planned actions than values. Our team—a half dozen subject matter experts from the Lower 48 (and me, barely one year in the state)—decided the task would be up to us.

In tackling it, we also had to wrangle with the *minimum necessary* standard, the focus of many campfire discussions. For example, did that mean the minimum flow to keep the salmon alive or provide high quality salmon fishing? And should we only claim enough water to get boats down the river for transportation, or could we ask for higher flows that provide a better whitewater experience? In the end, we decided the Act encouraged requests that would keep the values "outstandingly remarkable," not unexceptionally mediocre.

I'd love to write how that was received by the authorities who could approve those requests, but it's been 37 years and we still don't know. The water rights have never been granted. We completed our report, and BLM used it in support of a 1990 state instream flow application—choosing that legal mechanism instead of seeking a more aggressive federal reserved right. This was during a short but long-forgotten thaw in state-federal relations, and took advantage of the state's progressive instream flow laws (which come directly from the state constitution and explicit step-down water law).

The BLM application included median monthly flows through the winter to sustain anadromous (sea-going salmon and steelhead) and resident fish (grayling and rainbows); a week of higher beach building flows in spring; and tiered median flows through the open water boating season. The latter idea attempted to cover the range of recreation trips provided by the natural flow regime: high challenge whitewater trips in June, moderate flows for fishing and camping-based recreation in summer, and low but boatable flows for fall hunting. With additional input from local BLM staff and a longer hydrology record, I helped BLM update the request a few years ago, further simplifying the flows and segments where they were requested.

The State has recognized both the initial and updated request, putting them in a queue that conceptually grants seniority, but neither has been granted. Unfortunately, this isn't unusual. Agencies have submitted hundreds of applications to the State for instream flows and there has been a backlog. As of 2015 (the last report I've seen), the state had granted just 30 requests (nearly all to a fellow state agency, the Alaska Department of Fish and Game (ADF&G)). Of some 200 U.S. Fish and Wildlife Service requests, only one was granted. BLM made 13 requests and had one granted (Birch Creek). The excuses for this glacial pace are complex, probably political, and beyond my experience (if you want an unabridged history, Christopher Estes possesses the institutional memory). It seems fair to say the state's process has given new meaning to "the minimum necessary."

"[W]e also had to wrangle with the *minimum necessary* standard...we decided the Act encouraged requests that would keep the values "outstandingly remarkable," not unexceptionally mediocre."

Without competing out-of-stream uses, organizations like the Alaska Miners Association and Resource Development Council have claimed there is no need to deal with the backlog. No one needs reminding that assembling support materials for an application is expensive, the information grows more dated over time, and one never knows when an out-of-stream request will come. As I glide downstream toward my own retirement some four decades from that first trip and study, I wonder if we'll ever see an application reviewed, let alone granted.

Gonna get there? I don't know

Gulkana is Athabaskan for "winding river," an appellation that deserves points for accuracy if not originality. The Ahtna branch of this family of Alaskan Natives appear to have arrived in the Upper Copper basin about 2,000 years ago, migrating seasonally from the Susitna for salmon and other resources, then pioneering trade routes between the Gulf of Alaska and Yukon by the early 1800s. Their paths became the little-used All-American route to the Fortymile and Klondike mining districts in the early 1900s. A telegraph line and motorized route (the Richardson Highway) eventually followed. The village of Gulkana grew near the river's confluence at the telegraph station, switching sides after mid-century bridges bisected their village, a situation remedied by the State in 2020.

The most winding part of the main stem is just downstream of the Middle Fork confluence, a segment that some call the frog bog, which also deserves points for accuracy. Not only is the current slow, but the reach has resident wood frogs—the only amphibian species in this part of Alaska. These creatures survive months of sub-zero temperatures by burrowing under forest litter and hoping sufficient snow will insulate them from freezing completely solid (as it is, they get about 65% of the way there). They also stop their hearts and lungs, put their brains into a state of suspended animation, and to prevent other damage pump glycol from an over-sized liver into their cells. There are probably a few Alaskans who can relate.

In the summer, you are more likely to hear than see these frogs. They sound like a mob of chuckling ducks, at a volume that makes no sense given some frogs may be no larger than your thumbnail, and most would fit comfortably in a shot glass. I've tried to follow their sound for a visual, but the second you approach they go silent. I've never seen one up close. If you are into photography, a portrait as they thaw provides the best aesthetic payoff. Again, likely a few Alaskans can relate.

Wood Frog. Photo: Beauty of Planet Earth

The relevant point about the "dozing dozen" miles of frog water is that it takes half a day to get through it, and without a breeze you may have to protect yourself with full mosquito battle gear—head nets, overshirts, 100% DEET, and so on. The extra layers can be fine on a cool day in June, but will smother you when mid-summer temperatures exceed 80. On these days, the segment becomes a slog.

Since the late 1980s, there has been a nearly-formed oxbow in the middle of a long meander in this reach. The BLM patrol crew said a portage over the six-foot wide sandbar between that would cut out a mile of river: "It's on river right. With a light boat, a few minutes' portage can save you half an hour." On my second trip, and my first at low water, the cheat seemed worth a try. Upon recognizing the sand bar, we pulled our canoe and raft over, congratulated ourselves for cleverness, and merrily went on our way (me falling into a mindless meditation with a rowing earworm stuck in my head).

The problem arose when we reached a second almost-oxbow twenty-five minutes later. Was there another short cut the crew forgot to mention? And what was to be made of the footprints pointed in the other direction? Standing in a cloud of mosquitoes, trying to decide if the grunt of another portage was worse than the slow row, it dawned on us that the footprints were ours. Who else has sandals the size of clown feet?

The savvy reader will have worked out what happened. It turned out we had missed the short cut on the first pass, then took it in the wrong direction to run the meander again—truly a *deja view*, if you'll excuse the French. When you think about it—or sketch it on a sand bar with a stick—the short cut was always on river right, so that wasn't the cue we needed. And while it's easy to blame the monotony of the spruce-bog for our failure to find the bar the first time, you couldn't help but recognize something karmic in the misadventure. Keep taking those short cuts, I heard my mother say, and you're never going to get anywhere.

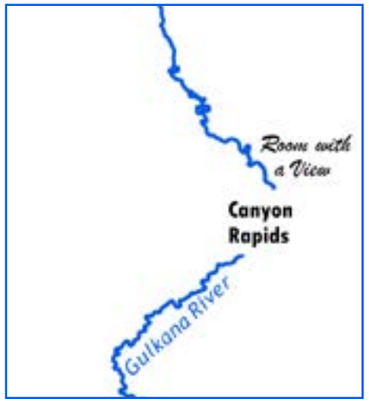
I've told a version of this story on every subsequent trip—saving it for the moment we pass the location about River Mile 9—but it no longer lands without the clear visual. Floods took out the bar between meanders in the mid-2010s, forming a fully stranded oxbow. There are no more short cuts.

"There are no more short cuts."

Room with a View Campsite. Photo: Valentina Abelleira

Room with a view

On our first flow study trip in 1988, with high water flooding us out of camps on the Middle Fork and along the swampy parts of the main stem, we found a desperation camp at mile 16 on a tundra-taiga bluff thirty feet above the river. People had probably used the bluff before, but I believe we were the first to improve the game trail that led to a natural kitchen overlooking the boats. Being on the hill put us in the way of a nice breeze to keep down the bugs. It also offered sweeping views of the river's bend. I have stayed at this spot every trip since, and it ranks among the river's most distinctive camps, not lessened by the challenge of landing boats in its small eddy (with current on an outside bend).



Working on a visitor use study a few years later, I introduced the camp to a group of BLM planners and patrol crew. My tent at the time was a Mountain Hardware model called Room with a View (from a plastic window in the fly, a magnet for condensation that was a gimmick that deservedly never caught on). I perched the Room on the bluff's edge, and the crew was entertained enough to christen the site eponymously. A few years later, this became official when the agency produced a map to the river. Over three decades in river management and I've made at least this one enduring contribution.

Poised an hour upstream of Canyon Rapids, the site has become more popular over the years, possibly because of the map's availability. During my latest trips I have noticed some impacts. The main kitchen has more exposed roots, a permanent fire ring, and more satellite tent sites by the back-meadow. The main trail from the eddy is bigger, and has sprouted two alternatives, along with user trails that stretch along the ridge to toilet sites or fishing holes. Overall, the camp feels much the same three decades later.

Kudos to BLM's long history of active management on the river. In addition to an assertive waste carry-out education program, BLM runs a seasonal patrol crew to pick up litter, minimize fire rings, and discourage the spider's web of user trails that grow at sites with regular use. Denton Hamby, the BLM's long-time recreation lead, laments the inevitable "toilet paper gardens" at these higher use sites, and continues to provide W.A.G. bags for portable toilets to groups that request them. Hamby is also constrained by shrinking budgets that have recently reduced annual crew trips from four to one.

Obligatory bear tale

The Gulkana has salmon, so it also has bears, but nothing close to the *Ursus* densities found on the Katmai coast or at Brooks River. The Gulkana also has no hunting prohibitions, and boaters have been packing on this river for decades. The bears who live there have learned to avoid the more dangerous primates in their rafts, canoes, and powerboats. If you see a bear on the Gulkana these days, it is likely to be a fleeting glimpse of its hind quarters.

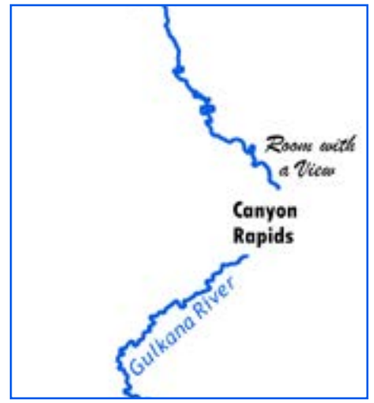
There was a period in the 1970s through the early 1980s when this was less true. The salmon returns were more robust then, attracting goal-oriented anglers with a camp culture that was less Leave No Trace and more Here We Are. During the king salmon season, four-wheeler camps at the Middle Fork confluence and powerboat-serviced beaches near the West Fork were sometimes occupied for weeks at a time, with food sources like fish smokers offering attractions for a certain kind of bear. An outdoors writer for an Anchorage paper famously shot a problem bear off his leg after it had raided his camp during this period, burnishing his bear credentials for a spell at the expense of the river's reputation.

Clean camp culture has improved in Alaska since then, a conclusion shared by BLM's Denton Hamby. The advent of bear spray has further reduced bear risks, the canned deterrent gaining popularity in Alaska after successfully protecting cleanup workers in Prince William Sound following the Exxon Valdez oil spill. Research by Tom Smith and Stephen Herrero (2011) documented 269 bear-human conflicts in Alaska, with spray halting bear aggression in 92% of cases (and preventing human injury in 98%). By contrast, having a gun—whether fired or not—had no statistical influence on bear aggression or human injury outcomes (although it sometimes left bears dead or injured). Not that I expect such data to sway the firearm advocates—in nearly four decades, I don't think I've ever been on a work trip without several pistols and shotguns (even as none were ever needed or used).

Which brings me to my only Gulkana bear tale from the late 1980s. Accompanying new parents and their nine-month-old daughter on a personal trip, I paddled a canoe while they rowed a raft. Bear spray had not yet made it into our kit and we were not packing a firearm. Below Canyon Rapids on the second night, we had landed boats on the downstream end of a long bar, with fingers of alder blocking visibility up the beach. We three adults were spread out—the dad messing with a stove, the mom setting up a tent, while I was digging through a dry bag—with the baby centered between us, strapped into a bouncy chair to keep her from going mobile, covered with a mosquito net. Bear bait, as they say.

I'm not sure who saw the cub first, but it registered as a puffed-up blonde dog in my brain, bounding into our space from behind the alders. About the same time we shouted, "Hey!" the cub saw us and skidded to a stop, then spun 180 degrees with gravel flying—if this were a cartoon, you would have heard the bongo drums of a hurried retreat. At that moment, the momma bear appeared around the corner, stopping only to slap her cub across his shoulder as he passed. It didn't take a translator to understand the message to her tyke: "Fool! Watch where you're going!" Together they disappeared into the alders, crashing through the vegetation, with mom huffing loudly behind our camp for a minute before continuing on their way downstream.

Things had happened pretty fast, the official excuse for inaction by the two large human males. It's also evidence that you need bear spray or a firearm on your hip if you hope to find it useful during a surprise encounter. And what, you may ask, was the human mom doing while we stood stationary with mouths open? Well, she had scooped up her daughter, jumped into the raft, and was preparing to row away. Everyone knows you can't outrun a bear and most have also heard the joking addendum: you don't have to, as long as you stay ahead of the slowest person in your group.



"We three adults were spread out—the dad messing with a stove, the mom setting up a tent, while I was digging through a dry bag—with the baby centered between us, strapped into a bouncy chair to keep her from going mobile, covered with a mosquito net. Bear bait, as they say."

Navigability should not be more than a Class III challenge

"Whiskey is for drinking; water is for fightin' over." Not only is the quote misattributed to Mark Twain, it is incomplete when it comes to Alaska. There are disputes over water rights in Alaskan rivers, but those are small creeks compared to the Yukon-sized battles over who owns title to those rivers.

The *RMS Journal* has covered title navigability before, and it requires a longer conversation than I'm willing to rehash here. However, the Gulkana is arguably the precedent for all subsequent navigability cases in Alaska, and the energy it generated continues to strain state-federal relations to this day.

Some background for non-Alaskans may be helpful. Without taking consideration of the 60,000 indigenous people living here at the time, the U.S. purchased Alaska from Russia in 1867 for seven million dollars, a mere 2 cents per acre. Sound familiar to headlines about another chunk of Arctic territory? Perhaps, but one difference is the Russians were willing sellers. Anxious to cover their debt from losing the Crimean War, and with its Alaskan fur trade following the sea otters to near extinction, the Czar figured he should grab some cash before the Yankees came asserting manifest destiny.

This was a prescient call, but it took thirty years before Alaska began changing from the days of the 1897 Klondike gold rush. Successive economic booms—including more mining rushes, whaling, salmon, and timber—all contributed to growing populations, but none led to sustainable economies until World War II brought an infusion of federal investment. Originating as the Department of Alaska in 1867, Alaska became a District in 1884, a Territory in 1912, and a state in 1959, with shifting bureaucracies and jurisdictions at each new manifestation.

Statehood brought stability and the promise of a less dependent economy, in part because the federal government began disposing a third of its acreage to Alaska Natives and the State. An even more powerful driver was the discovery of oil—first in Cook Inlet (1957) and then on the north slope (1968)—which changed the north forever. Ownership of lands with oil and gas became more valuable, and the subsequent taxes and royalties provided a revenue stream to support the government and build an infrastructure capable of developing burgeoning fishery, tourism, and transportation industries.

The disposal of Alaska's federal lands also deserves a longer conversation. The gist is that the U.S. gave 105 million acres (about 28%) to the State and 44 million acres (about 12%) to settle Alaska Native aboriginal claims (in 1971, clearing a path for the pipeline from Prudhoe Bay to Valdez). The U.S. also established deadlines for selection and withdrew acreage defined by Alaska National Interest Lands Conservation Act (ANILCA). That 1980 law set aside 104 million new acres in 13 national parks and preserves, 16 wildlife refuges, two national forests, two monuments, and 26 wild and scenic rivers (including the Gulkana).

BLM was tasked with overseeing the selection and disposal process. It was supposed to take about 25 years, with a clock that ostensibly started at statehood, but that was extended after ANILCA. We are now approaching seven decades and the work is still not quite done. Most of the selections for Native and State lands have been decided, with about 100 million acres of the latter patented, conveyed, or with tentative approval. About five million acres are still contested, with some double selected by Natives and the State, and there are a few process disagreements to resolve.

Navigability fits into this category. If a river that flows through a federal conservation unit (park, refuge, or Wild and Scenic river) is navigable, its submerged lands were already owned by the State the day it joined the union, so those would not count against its selection total. The State asserts there may be 800,000 navigable river miles; taken with navigable lakes, the total could approach 30 million acres. The federal government only acknowledges about 9% of the miles and 16% of the acres. While I'm unsure which numbers better describe reality, the problem is the immense divide between the two sides' versions.

This dispute has played out, largely one river at a time, since that first case on the Gulkana. It began when BLM declared the river non-navigable in 1979, conveying selected native lands to Ahtna along the lower 30 miles. When ANILCA passed in 1980, BLM likewise considered all 181 miles of the Wild and Scenic Middle Fork, West Fork, and Main Stem non-navigable. The State objected and took BLM to federal district court in the early 1980s. Predicting how things might eventually go, BLM disclaimed title to the river and submerged lands on the designated river segments before a court decision, leaving them to the State in 1984. However, the Ahtna component of the case continued on, with the court deciding in favor of the State in 1987. Ahtna later appealed to the 9th Circuit, which agreed with the district court in 1989. The Supreme Court refused to hear a second appeal.

While the *Gulkana* cases settled matters for that river, it did not necessarily clarify them for others. Most facts in the *Gulkana* cases were stipulated by the three sides (the U.S., the State of Alaska, and Ahtna) and assessed in a summary judgment, rather than argued at trial. And because the river had abundant historical boating use, neither court defined explicit standards for a susceptible use case—the physical characteristics of a river that could have allowed boats to transport goods and people at the time of statehood. Many Alaskan rivers' navigability are likely to hinge on susceptibility.

The State and U.S. have tangled on these issues for dozens of rivers since *Gulkana*, and in several cases I've had a courtside seat as a boating researcher. Many trips, reports, meetings, and depositions have been organized to address the issues from both sides. Unfortunately, the impasse remains.

While several individual navigability cases have settled, nearly all have ended with the federal government disclaiming title (a de facto navigability declaration) but without precedents from the courts. Without legal decisions setting indelible standards, the two sides are free to continue arguing questions for each new river (e.g., what constitutes a river's ordinary and natural condition; what craft were in common use around statehood; what loads and drafts are reasonable; how much difficulty is acceptable; and how often must boatable flows be present). It feels a little like the oxbow short cut adventure described earlier—around again one more time.

The hardest rapid on a river always gains an outsized reputation. On the Gulkana, that would be Canyon Rapids at river mile 17.5. About a quarter mile long, the reach has some Class II rock dodging at the top, and a few well-known routes through boulders and drops at the bottom. At high flows the largest hole can flip a raft, and people occasionally hang up in other places, but this is usually a Class III run—straightforward for the moderately skilled in a raft, although challenging for anyone in an open canoe.

Back in the day, canoeists commonly carried their gear and boats around the rapid on the portage trail to avoid mishap. Strangely, at least to me, a similar tradition also developed among some Gulkana rafters too, who routinely portage their gear to lighten boats and make maneuvering the canyon easier.

Now I like an empty boat as much as the next rower, but I'll never understand this. The effort required to portage gear around this rapid is unlikely to compensate for the reduction in risk—even if I planned to camp along the trail and would be carrying a bunch of things to camp anyway. Some Gulkana rafters are just timid about this rapid. I used to attribute this to their narrow focus on fishing to the neglect of developing their whitewater skills. I also thought it was a tradition that would wane. Even salmon-obsessed Alaskans seem to improve their boating abilities over time. But on my last trip, I still met a group lugging their crap down the portage trail, with a perfectly good raft in the top eddy.

I'm possibly stretching the analogy, but I feel a similar apprehension has become attached to navigability in Alaska. With an undeserved reputation as an irreconcilable issue, agency staff and lawyers on both sides spend inordinate effort organizing information and experts for each new dispute, fearing a court's precedent that could dampen their interests for the long term. But is that fear warranted? The gulf between state and federal positions for several issues is real, but reasonable compromises are available and could simplify determinations for most rivers, avoiding the drain on both sides' budgets, the long parade of individual cases, and the bad blood that ensues. Bilateral discussions to find these compromise standards could be an efficient way to navigate the problem, but the tradition of case-by-case court battles still seems to hold. At some point, I hope we can all just get in the boat and figure things out. Navigability should not be more than a Class III challenge.

(new section continued, page 22)

Doug Whittaker running Canyon Rapids. Photo: Rockford Weber

Join RMS on the *River*—2026 Chapter Trips

Thanks to everyone who participated in our recent chapter chats to share updates and help coordinate trips. We're just beginning to announce chapter trips for the year. Dates and details are still being finalized, and registration links will be coming soon. Find more information in our Calendar and list of Upcoming Events.

These are EXCELLENT opportunities to share river management challenges and insights with peers in a fun and supportive environment. ❖

Campbell Creek–Alaska (May)

Campbell Creek Cleanup
Anchorage, AK

***Last Year's Cleanup**: Jim Renkert and Valentina Abelleira on Campbell Creek from Lake Otis to New Seward highway. The team pulled nine 33-gallon bags of trash from the river (along with a pile of discarded political signs). Photo: Doug Whittaker*

This annual cleanup is held every May! Hundreds of Anchorage volunteers clean tons of trash from local streams and waterways. This effort improves habitat for fish and other critters and helps humans thrive too! Anchorage Waterways Council organizes this event each year through generous financial and in-kind donations from businesses and individuals, including generous support from Matson's "Caring for Alaska" program and ConocoPhillips Alaska. The effort was first organized in 1984 when Mayor Tony Knowles called for a group of citizens to come together and improve the health of creeks. The event spawned the Anchorage Waterways Council which still tirelessly protects, restores, and enhances the creeks of Anchorage.

The Alaska Chapter of RMS will take-on a segment of Campbell Creek for this year's cleanup. The river is usually running 50 to 70 cfs, so boating is marginal (you do more walking than paddling), but the boats are good floating dumpsters. Wear warm clothes and chest waders. We can end the trip with a burger and brew at the Peanut Farm or Arctic Roadrunner.

Contact: Doug Whittaker - dougwhitalaska@gmail.com

Klutina River–Alaska (May 29)

Heavy Raft & Swimmer Pickup Training
Klutina River, AK

Photo: Rocky Weber

Course Description: This course is designed to build skills for heavy oar raft operation, such as those used on multi-day excursions, in Class II and Class III waters.

Learning Objectives:

- Swimmer!: Managing boat spacing and executing swimmer pick ups.
- Heavy Rafts: Mastering momentum, pre-planning, oar setup, and angles of attack with a loaded raft.

Schedule:

April (date TBD), Classrom Portion online
May (various dates) - River, optional raft instruction
May 28, 29 - River portion

Required Prerequisites:

1. Swiftwater Safety (or equivalent), Comfort rowing in Class III waters, to be determined by the instructor.
2. Boat Ingress, Egress, and Flipping (or equivalent)

Offered by Rocky Weber - rocky@currentbearing.com

Flathead River—Northwest (July 10)

Flathead Wild & Scenic River 50th Anniversary Celebration, Columbia Falls, MT

Join RMS in celebrating 50 years of the Flathead Wild and Scenic River system alongside Flathead Rivers Alliance, American Rivers, and the river community of northwest Montana and beyond.

RMS members are invited to a morning coffee social, sponsored by Flathead Rivers Alliance, at the West Glacier river access from 9-10 a.m. the day of the Festival, followed by a day float on the Wild and Scenic Middle Fork of the Flathead's Moccasin to West Glacier whitewater stretch (Class III). This section offers a little bit of excitement in the whitewater and a lot of really cool geology, history, and recreational value.

Contact: Lelia Mellen - lrm.nps@gmail.com

New River— Southeast (August 21-23)

New River Weekend with RMS & NPS
Glen Jean, WV

Padddle the New River with RMS & NPS in the New River Gorge National Park!

August 21: Arrive at Camp Burnwood.

August 22: Paddle the upper New River (McCreery - Stone Cliff; Class II-III), with lunch on the river, partner presentations, and dinner at Camp Burnwood.

August 23: Paddle the New River Gorge (Cunard to Fayette Station; Class III-IV), with lunch on the river, followed by departure after the river.

Contact: Jack Henderson - hendersonjc3@gmail.com

Mississippi River–Midwest (October 3, 4)

Mississippi River Trip
St. Louis, MO

The Mississippi is for paddling, and we cannot wait for you to see and experience this for yourself. October 3, we will be spending time on the mighty Mississippi with Big Muddy Adventures in Voyageur canoes. That evening, the RMS board invites chapter members and friends for dinner. Details are in development: stay tuned!

Contact: Chris Geden - chris@rivercityoutdoors.org

Register Today on the RMS website!

Deerfield River–Northeast (July 10)

Deerfield River, MA

Photo: Zoar Outdoors

The Deerfield River represents a model program of negotiated water releases and coordinated river management practices that have established a national standard for positive impacts on the river ecosystem, local communities, and the regional economy. Rafting the Fife Brook section will be hosted by Zoar Outdoor. Participants will meet the precedent-setters of today's hydropower settlements.

Rafting cost: $99 RMS members, $115 non-members

Kayaking cost: $35 for RMS members, $44 for non-members. For participants with a reliable roll in Class III whitewater, the fee covers trip safety support provided by a Zoar paddling guide.

Must Register Online!

Allagash Wilderness Waterway—Northeast (September 5-13)

Allagash Wilderness Waterway, ME

Photo: Jack Henderson

Participants are in for a basecamp-style week to get to know the Allagash Wilderness Waterway, a designated National Wild and Scenic River. Explore the history of how the Waterway came to be an icon of the Northern Forest, and learn the management side of the Allagash Wilderness Waterway from Mr. Mark DeRoche, the manager of the system and Allagash river rangers.

We'll cook mostly by campfire, enjoying unparalleled wildlife viewing. There are always bald eagles, herons, and osprey to spot, so bring along your binoculars, cameras, and field guides.

Trip cost:$395 RMS members, $425 non-members

Must Register Online! *Contact*: John Little - jalittle58@gmail.com

Gulkana River, *continued from page 19)*

One fish, two fish, red fish, blue fish

For many, the Gulkana is more about fishing than boating. A fabled king salmon (Chinook) run with fish as large as 50 pounds has historically attracted the most angler attention, although agencies also care about the river's red (sockeye) runs with its commercial consequences. Biologists use sonar counts downstream on the Copper River to measure run strength and decide if emergency closures are necessary. But agencies also track fish specific to the Gulkana from a tower about river mile 35, ten miles upstream of the Sourdough access point. The site is hard to miss with its Quonset hut, counting tower, and six-foot wide white vinyl panels spanning the braided channel (helping technicians count individual fish by species in tea-colored waters). Techs conduct counts for ten minutes every hour, round the clock, from June through mid-August.

The **Gulkana king salmon** run primarily occurs on the lower 40 miles of the river, from the Copper confluence to the counting tower. Ahtna owns the uplands below Sourdough, although BLM manages three public easements for day use. Jet boats and airboats rule from Sourdough to the count tower, which has beaches that accommodate camps through the peak king season (mid-June to mid-July). Some floaters from Paxson also target the kings, especially over the Fourth of July weekend.

King counts have averaged about 3,600 per year since 2003, and they topped 4,000 the last four years, suggesting decent fishery health, although there have been some leaner years (e.g., only 1,000 in 2016). And even these counts are deceptive because most years since 2008 have had emergency closures or regulation changes (e.g., reduced limits, no bait or treble hooks) to meet escapement goals.

Weak king salmon returns and reduced fish size are not limited to the Gulkana or the larger Copper watershed; the Kenai and Susitna runs are also hurting, and the Yukon and Kuskokwim systems are in deep trouble. As to causes, the science suggests commercial overfishing and declining ocean productivity are more likely than in-river problems. There are no dams, timber over-harvest, or pollution issues in the Copper or Gulkana watersheds to criticize, the common culprits for dramatic salmon collapses on Lower 48 salmon streams. But managing sustainable salmon populations on even healthy Alaskan rivers remains challenging, and long-term inter-related problems are unlikely to be solved by harvest adjustments on a single river.

Gulkana king salmon (Chinook). Photo: Ryan Hagerty / USFWS

The **Gulkana red salmon** run is less important to sport anglers, but it attracts attention because of commercial fishing interests. The run is served by the self-proclaimed largest sockeye hatchery in Alaska, located on the upper Gulkana above Paxson Lake, some 265 miles from the ocean.

Built in 1973 after declining runs in the 1960s, the hatchery depends on seven springs to stabilize temperatures in bitter interior winters. It produces some 35 million eggs per year, which turns into 20 million fry dumped into Paxson, Summit, and Crosswind lakes with tickets to the Gulf of Alaska. The hope is that a million sockeye will survive to maturity four to five years later. Most will find themselves in commercial gill nets at the mouth of the Copper (700,000-900,000) and subsistence and personal use dip nets upstream at Chitina (100,000–150,000), but 1,500 may be caught in the Gulkana itself. The remaining 20,000 will make it to the upper Gulkana where their eggs and milt can be harvested to complete the annual cycle again.

Since 2003, Gulkana sockeye counts have ranged from 9,000 to 47,000, with an average of 21,000. Even in stronger years, sport fishing attention to the sockeye run is small compared to the 1.5 to 4 million reds available to anglers and dip netters on the Kenai River.

If you listen to some people, Gulkana reds are also hard to catch. If the water is high, it's apparently too murky; if it is low, it's apparently too clear. And of course, most Alaskans believe reds won't seek food in fresh water, so luck depends on successful flossing (sweeping your fly in front of a current-facing fish, hoping the hook will grab its lip). It's always felt a bit like legal snagging to me.

Taken together, the state of Gulkana salmon fisheries is precarious but probably not dire; the red fish are not yet code blue (i.e., indicating a crisis situation). Salmon-focused anglers can expect reduced opportunity and tighter regulations unless robust escapement levels return, or larger marine and climate problems are understood and addressed. But there are plenty of fish in the river for the more casual angler. I'd rather catch and release a handful of grayling than spend all day hoping for a strike from a king. And even if you don't carry a rod, you can still appreciate the thrill of parting a school of red fish in the shallow glides below the Middle Fork.

Gulkana red salmon (Sockeye). Photo: Ryan Hagerty / USFWS

"[T]he state of Gulkana salmon fisheries is precarious but probably not dire; the red fish are not yet code blue..."

The best laid plans...

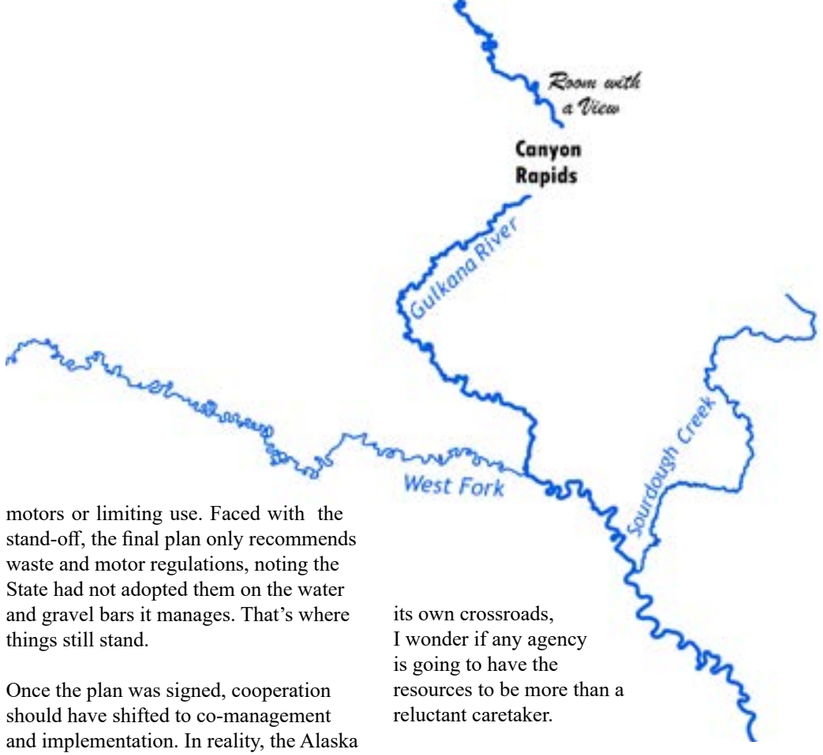
The studies and revision of the Gulkana River Management Plan from 1998 to 2006 was probably the high point of Alaska state-federal cooperation for a Wild and Scenic river. The State assigned a full-time planner to the BLM-led effort to update their 1985 plan, and the BLM fully acknowledged the State as co-manager of the river, with title to the water and submerged lands below ordinary high water. The agencies supported good surveys of both trail and river users in the corridor, and did all the usual work with multitudes of planning team, advisory board, and public meetings.

Leading the research side, and getting to see much of the planning side, ranks among the better projects in my career. I got to rely on my history with the river from the flow study and my personal trips; agencies were also receptive to our advice about managing visitor impacts (the need for capacities, varying indicators/ standards by segment and season, and linking phased actions to monitoring).

Even better, there was genuine goodwill among the people from BLM and the State, who shared common goals to protect the river's values, as well as presenting reasonable demeanors when they disagreed. Bruce Rogers from BLM and Brandon McCutcheon from the State deserve particular kudos for guiding the process, while Heath Emmons and Denton Hamby have helped implement the plan.

The Gulkana was one of the higher use rivers in Alaska, and everyone was familiar with complaints about the fishing decline, crowding, campsite impacts, litter and human waste, and motorized/ non-motorized conflict. The surveys had documented impacts, people's tolerances for them, and their evaluations of management actions that could address them. The planning team worked through the choices and bundled actions into viable alternatives.

The problem was choosing a preferred one. BLM felt pressure to adopt a capacity (as the Wild and Scenic Act requires) and wanted formal waste carry-out regulations and a non-motorized use zone; the State thought educational approaches were sufficient, and couldn't stomach regulating



motors or limiting use. Faced with the stand-off, the final plan only recommends waste and motor regulations, noting the State had not adopted them on the water and gravel bars it manages. That's where things still stand.

Once the plan was signed, cooperation should have shifted to co-management and implementation. In reality, the Alaska Department of Natural Resources (DNR) is more of a planning, permitting, and compliance organization than a field operation. With its State Parks arm being a notable exception, DNR rarely builds or improves front country facilities, fixes trails, or considers actively managing backcountry use. That left BLM responsible for executing the plan.

In making navigability claims, the State has consistently argued for a "seat at the table" when federal agencies develop plans for conservation units. With its libertarian philosophy, lack of field staff, and limited budgets, few expect the State of Alaska to do more. But the State should at least recognize the bargain—it gets to help make all of the decisions but is responsible for none of the costs.

Even prior to the plan, BLM had spent $2.1 million (roughly five million in today's dollars) to improve Sourdough Campground and launch in 1992, with no contribution toward management from the State. Applying the 2006 plan, BLM has taken the lead for the education program, facility improvements, and seasonal patrols. It's hard to call this co-management. Having said that, with federal investment for conservation, restoration, and recreation having reached its own crossroads, I wonder if any agency is going to have the resources to be more than a reluctant caretaker.

So, two decades after the plan, one might ask: How is the river doing? Based on my conversation with BLM's Hamby and recent trips, it seems fair to respond, "not bad." Due to struggles of the king fishery, use has been stable rather than increasing. There is still crowding and noticeable social impacts during the peak king season; but camp encounter standards in the plan vary during and after that season, and neither have been exceeded. Similarly, use has not exceeded the defined capacity of six launches per day on the Upper River, obviating any need for a permit system. On my recent trips outside the prime season, we saw just one or two other groups each trip until we passed the West Fork. Use on the Sourdough powerboat-heavy segment also remains reasonable and within standards. In contrast, BLM crews struggle to keep up with micro-litter, multiplying fire rings, and toilet paper flowers around popular camps—especially as budget hits have reduced patrol trips. The plan has near-zero standards for these impacts, which are always hard to meet.

BLM has developed a strong carry-out waste education program, providing example toilets at the put-in, loaner wag bags, and building a clean-out station at Sourdough for DIY groovers.

Lower River Camp on the Gulkana River. Photo: Doug Whittaker

Nonetheless, a proportion of Alaskans have not embraced the carry-out tradition, and Hamby heard complaints after BLM removed some backcountry pit toilets because he lacks funding to maintain them. As a scientist who has followed this issue in a few places, even the best education programs fall short without a nudge from regulation/enforcement.

Another persistent problem is motorized/ non-motorized conflict. Fishing-based powerboat use is stable and usually sticks between Sourdough and the fish counting tower; the State's reluctance to ban further upstream travel has rarely been tested by anglers. But a new breed of small inflatable jetboats (e.g., 12 to 15 foot Solar Strelas and ProJets) have appeared recently and they are more interested in chasing boating challenges than looking for fishing access. The eight miles of Class II rapids below the Canyon is a playground for them, and they happily ignore BLM's recommended powerboat limit. The year these powerboats appeared, downstream rafters and canoeists began to complain. Several inflatable jetboaters are local to the Copper Valley, and Hamby hopes he can convince them to avoid it during the prime downstream boating season. Without a formal regulation, he has few other choices. The outcome here is less certain. You can find the plan at: https://www.govinfo.gov/content/pkg/ GOVPUB-I53-PURL-gpo129805/pdf/ GOVPUB-I53-PURL-gpo129805.pdf

Letting the days go by

On a late September night, the last night of my last Gulkana trip, I found myself with my dog at the campfire in a contemplative mood. Friends and family had turned in; I was enjoying a few solitary moments next to the gently swirling waters of the lower river as a cool darkness descended. The season was mostly done; this would probably be my final trip before snow fell, and I wondered when I might make it back. Trying in vain to recall the last night of my first trip, possibly on this same beach, I remember wondering: where did the years go, and what has changed?

The answer is surprisingly little. Since I came to Alaska, the state's population has increased about 50%, rising from 500,000 to 750,000. Tourist arrivals, by contrast, have increased more than 500% over the same period, from 600,000 to over three million per year. On the face of it, one might expect all these people to have changed a well-known resource like the Gulkana River, which is only a four-hour drive from either Anchorage and Fairbanks.

But it doesn't seem to be the case. Weak fish runs and related closures are one reason, but it is also possible that Alaskan residents and visitors are spreading wider across the state, pursuing a broader array of recreation experiences. For residents, a traditional weekend Gulkana raft trip now competes with rivers and terrain opened by SUPs, pack rafts, and fat bikes. For tourists, many of whom are old and happy enough to see Alaska through a bus, train, or cruise ship window, a Gulkana trip isn't going to fit into the tour program. The number of outfitters on the Gulkana has decreased from about thirty to a handful; there are simply fewer people who need help to get on this river (or who remain interested).

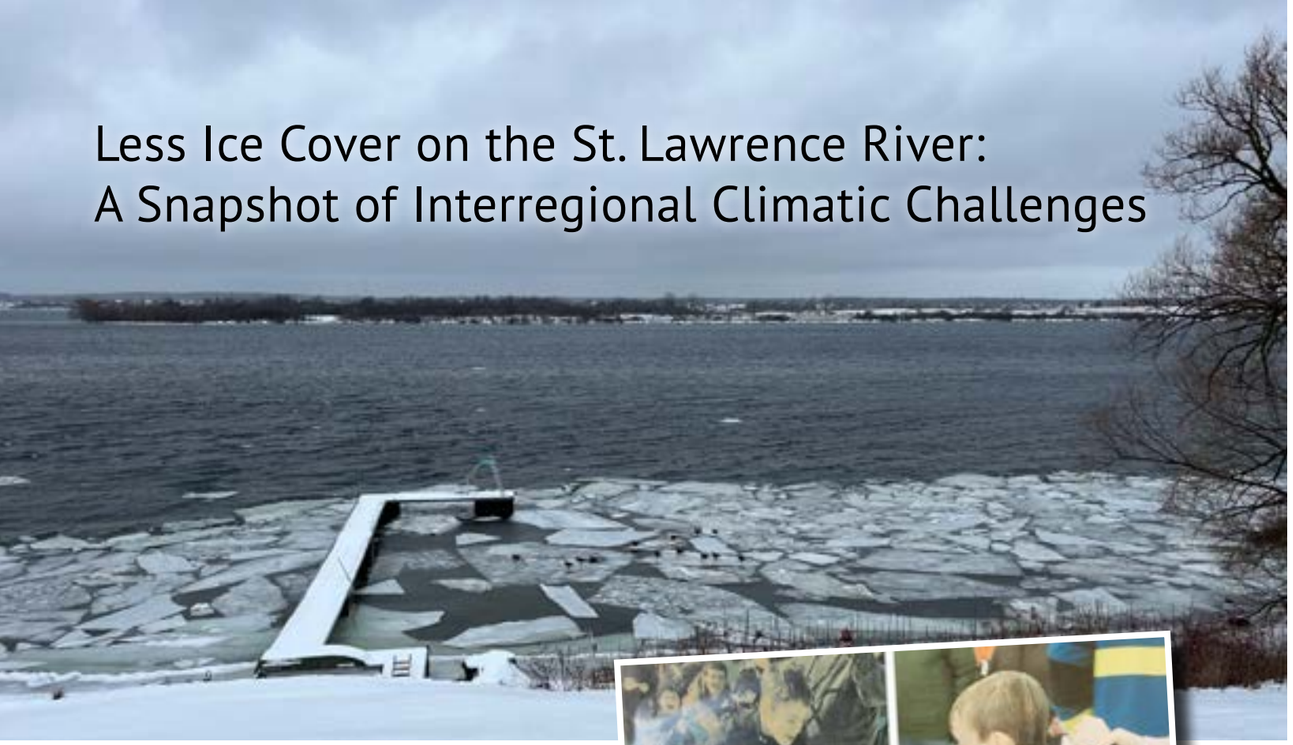
Meanwhile, the river rolls on, same as it ever was. Some campsites are a little more worn; the fishing isn't quite as reliable. If you have to go over the Fourth of July you might not get your favorite camp or it will be in sight or sound of others. But the whitewater in the Canyon and on the "great eight" miles beyond are always fun; there will be opportunities to swim on a low water August trip; and it is certain there will be bugs to irritate you in at least one camp. The rhythm of the Gulkana is often repetitive, but I always return from trips soothed by its pace and ease.

I have critiqued a few management choices for this river, but they have been conscientiously developed and diligently applied. The ideas in its plans and policies remain viable and adaptive, with solutions available if impacts or threats increase. While implementation has sometimes struggled, that's to be expected with two "parents" arguing about the rules while both their household budgets are meager.

Nearly a half century after being designated for protection, it's hard to find a substantive change caused by direct use. While wider anthropogenic impacts are getting harder to ignore (and perhaps too big to address), the policy and management scaffolding to protect and enhance this river seems to be doing its job. The river's values remain identified and honored, and people continue to find diverse ways to enjoy them. I'm not sure we can ask for much more in a post-modern world. ❖

Doug Whittaker, PhD. has over 35 years of experience working on natural resource issues as an outdoor recreation planner with the BLM and NPS or as a researcher and consultant. He has published dozens of reports and journal articles, and has made presentations at symposia and conferences across the country, about half of which have focused on instream flows for recreation. The remainder of his work has focused on crowding, conflict, and carrying capacity issues in recreation settings.

Less Ice Cover on the St. Lawrence River: A Snapshot of Interregional Climatic Challenges



Top: Ice cover on the St. Lawrence River.
Bottom: Author and brother as children participating in Polar Bear Plunge.
Photos: Anne Marie Massic (author's mother)

by Chayton Massic

While the St. Lawrence River is located in the northeastern part of North America, its influence transcends boundaries by shaping global trade routes. The Great Lakes Commission (2025) described the St. Lawrence River as a nearly 800-mile body of water defined by its significant geographic and economic role in connecting the Great Lakes to the Atlantic Ocean. One of the most common associations with the river is the binational partnership that its mere presence nurtures between the United States and Canada.

In addition to serving as a commercial corridor, the St. Lawrence River is also home to a diverse array of species. Many of these species grew accustomed to what were once longstanding attributes of the river, such as its high oxygen levels. However, with the Industrial Revolution inviting an upsurge in emissions, the river is warming, which signifies an undeniable fact: commerce and ecosystem stability have fallen out of sync.

An effective approach to recalibrating stewardship at the human-nature interface relies on the sharing of lived experiences. Personally speaking, I was raised along the St. Lawrence River by parents who exuded nature-centric values. These values became infectious, which consequently deepened my appreciation for various aspects of the river.

I often led with observation growing up, which invited a culmination of moments that can now be discerned by the time in which they transpired. During my childhood years, I remember winter seasons that invited a vast presence of ice cover on the St. Lawrence River. The thickness of the ice cover permitted community events like the Polar Bear Plunge, where residents would walk across the river and jump into a hole carved in the ice.

With winter temperatures in the early 2000s that sometimes dropped lower than -30°C, the normalcy of this ice cover was unsurprising. However, winter seasons soon became warmer, which led to a notable decline in the amount of ice cover on the St. Lawrence River. Community events like the Polar Bear Plunge and even just casual walks down the river became memories of the past. I remember saying to my parents during my senior year in high school, "I wish the river would freeze over the way that it used to."

The reality is that observable patterns of warming, such as declining ice cover, signify drastic climatic changes. These observations are supported by numerous data findings. For instance, Galbraith (2025) noted that four out of the six times in recorded history when the Gulf of St. Lawrence had virtually no sea ice took place after 2010. Additionally, Save the River (2024) shared how the St. Lawrence River is experiencing less ice cover due to warmer air and water temperatures during winter seasons.

In a broader context, the evolving state of the St. Lawrence River serves as a snapshot of the global climate change phenomenon. This phenomenon has both similar and distinctive implications spanning rivers in every region, including those native to Alaska (Environmental Protection Agency, 2025). Through leading with observation while interacting with rivers, opportunities for sharing intersectional lived experiences can propel interregional activism for dismantling patterns of global destruction. ❖

Dr. Chayton Massic is academic advisor, curriculum coordinator, and instructor in the Division of Environmental Science at SUNY College of Environmental Science and Forestry in Syracuse, NY.

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by Ryan Roberts

Since 2006, the National Fish Habitat Partnership (NFHP) has supported over 1,700 projects and has put over $600 million in conservation projects on the ground, benefiting fish habitat throughout all 50 states. This effort seeks to conserve fish habitat nationwide, leveraging federal, state, tribal, and private funding resources to achieve the greatest effect on fish populations through priority conservation projects of 20 Fish Habitat Partnerships that are organized around key fish species, geographic areas, or important fish habitats. In 2020, NFHP was recognized by Congress as part of the America's Conservation Enhancement Act and was reauthorized in 2024. NFHP guidance and policies are developed with partners and the National Fish Habitat Board.

In 2025, through NFHP, the U.S. Fish and Wildlife Service (USFWS) and its partners provided more than $23.4 million to support 53 on-the-ground fish habitat conservation projects in 29 states. The USFWS contributed $5.9 million, while non-governmental organizations, state resource agencies, and other partners contributed an additional $20.4 million, resulting in a 6.7:1 leveraged funding ratio. These projects support locally led conservation efforts that restore and reconnect habitats, leading to enhanced fish populations, improved fishing opportunities, and healthier waterways. Nationwide, 20 individual NFHPs nationwide drive these efforts, working with a variety of partners—including private landowners, farmers and ranchers, Tribes, nonprofit organizations, and state, federal, and local government agencies—to achieve fish habitat conservation goals that protect, restore, and enhance aquatic ecosystems.

NFHP uses a nationally-focused conservation strategy to maximize the impact of limited resources. Under NFHP, federal, state, tribal, and privately-raised funds are leveraged through regional Fish Habitat Partnerships to address the nation's biggest fish habitat challenges. The USFWS is a key partner, providing leadership and technical expertise on the local, regional, and national levels, as well as financial assistance directly to partners for on-the-ground conservation projects. Since 2006, the USFWS has given $65.6 million to conservation projects, helping generate over $335 million to enhance fish habitats and recreational opportunities nationwide.

2026 marks the 20th anniversary of NFHP. For two decades, NFHP has united local, regional, and national partners to protect, restore, and enhance fish habitat across the United States, benefitting fish, wildlife, and our way of life. For more information visit: https://fishhabitat.org/. ❖

Ryan Roberts is senior program manager for the National Fish Habitat Partnership, Association of Fish and Wildlife Agencies, in Washington, DC.

Editor's Note: RMS Alaska Chapter member Christopher Estes held a leadership role in developing the NFNP Action Plan in 2006, served as one of the original NFHP Board staff, and was an editor of the 2012 update to the NFHP Action Plan. He has also served on the NFHP Board's Science and Data Committee since its inception. Estes' career in aquatic resources and habitat conservation spans nearly 47 years, with a focus on instream flow and water-level conservation. He currently works as an aquatic resources and habitat scientist for Chalk Board Enterprises, LLC, and serves as a director-at-large of the Instream Flow Council.

Congratulations 2025 Wild & Scenic Rivers Award Winners

by Helen Clough

On January 29, 2026, The U.S. Department of Agriculture Forest Service (USDA Forest Service) and the Interagency Wild and Scenic Rivers Coordinating Council (IWSRCC) presented their 2025 awards to three incredible individuals at a video-conference attended by 65 colleagues. Steve Chesterton, Acting Wilderness and Wild and Scenic Rivers (WSR) Director at the USDA Forest Service, welcomed the folks to the event and introduced Katie Armstrong, Acting Public Benefits Director, who then introduced Associate Deputy Chief Gordie Blum.

Gordie welcomed everyone and said, "As we are all aware, 2025 brought a set of unprecedented challenges associated with our workforce and partnerships. The work related to stewarding wild and scenic rivers was no exception. The staff who support and manage these designations—as well as other critical resource areas—faced an extraordinary loss of personnel across the USDA Forest Service and our partner agencies. While three very deserving individuals were formally recognized with awards, Gordie continued, "It is also important to recognize the critical contributions of everyone involved with wild and scenic rivers work over the past year. Many individuals left the agency and many others stepped up to fill the gaps—often taking on additional duties—to ensure the continued stewardship and management of our wild and scenic rivers." He thanked all for the work they have done and continue to do, acknowledging that it is not easy, but the efforts matter.

Gordie congratulated all the recipients of this year's Wild and Scenic Rivers National Awards saying, "Thank you to everyone who submitted nominations to recognize the critical work being done across the country in stewardship of WSRs. It is so inspiring when we take opportunities like this to honor the incredible dedication of individuals and partnerships around the country."

"Thank you for all that you do!" Steve Chesterton closed the ceremony by thanking attendees for joining and encouraging them to begin considering nominations for the 2026 awards.

Outstanding Wild and Scenic River Stewardship Award
Russ Miller

The Outstanding Wild and Scenic River (WSR) Stewardship Award recognizes a USDA Forest Service employee, partner, or volunteer—individual or group—demonstrating excellence in wild and scenic rivers management and addressing needs of the river and surrounding communities. This year's award went to **Russ Miller** with Friends of Red River in Kentucky.

Known as the "River Cowboy," Russ organized the first Upper Red River Cleanup in 1996, and is one of the founding members of the Friends of Red River in Wolfe County, Kentucky. After moving to the edge of the Red River Gorge with his wife in the 1980s, Russ realized that the Red River had a problem when he saw discarded trash, particularly old tires, moving along the river. The wild section of the Red River bisects the Clifty Wilderness—and is remote and rugged by any standard. With limited to no public access to the wild designated river section, a river cleanup can become an insurmountable challenge.

"River Cowboy" Russ Miller

This challenge did not deter Russ. In the weeks leading up to the cleanup, he travels the river, noting any new hazards and dislodging and piling tires to expedite the day-of cleanup. Volunteers lower the boats off a cliff line on Russ and his wife's property to shorten the cleanup stretch by a few miles. To date, Russ and the Upper Red River Cleanup have removed an estimated 3,000 to 4,000 tires from the Red River.

Russ was able to join from Mexico while traveling and thanked attendees for the recognition, as well as all those who work with him to make the effort successful. He expressed his appreciation for the USDA Forest Service, and shared his memory of initially approaching the agency over 30 years ago to initiate the Red River Cleanup. Don Fig, a long-standing ranger on the Red River Gorge, assured Russ that if he could "float down the river and get the trash off, the USDA Forest Service would take care of disposing it." Russ also acknowledged and thanked the volunteers that have helped over the years and credited the creation of Friend of the Red River as being instrumental in continuing the work of the Red River Cleanup.

Interagency Wild and Scenic Rivers Coordinating Council Jackie Diedrich Wild and Scenic River Leadership Awards
Jennifer Reed & Eric Sandeno

The Interagency Wild and Scenic Rivers Coordinating Council (IWSRCC) presented the Jackie Diedrich Award to two deserving individuals. The first award was presented by Nicole Gustine of the U.S. Fish and Wildlife Service (USFWS), one of the current co-chairs of the IWSRCC. The IWSRCC's Jackie Diedrich WSR Leadership Award recognizes river-administering agency staff who have shown outstanding leadership to help manage wild and scenic rivers, build capacity for river stewardship, and/or develop exemplary training programs for river management professionals.

The first awardee was **Jennifer Reed,** a retired employee of the USFWS. Over her career, Jen demonstrated exceptional leadership in advancing the USFWS's WSR Program, both regionally and nationally. Her leadership, vision, and collaborative spirit significantly strengthened the agency's capacity to protect and manage designated rivers, while also building a foundation for long-term stewardship. From 2004 to 2025, Jen worked as the visitor use manager at Arctic National Wildlife Refuge in Alaska. Additionally, Jen represented the agency at the regional and national level to tackle challenges and create positive waves of change. In the Alaska Region, Jen's tireless dedication helped integrate WSR considerations into broader conservation planning and land management efforts, ensuring that river values are protected in one of the most ecologically and culturally significant landscapes in the country.

As co-lead in the development of the USFWS's WSR policy, Jen played a pivotal role in establishing clear, consistent guidance for wild and scenic river management across the agency. Jen was also an influential leader on two interagency councils: the IWSRCC and the Interagency Visitor Use Management Council. When she retired in 2025, Jen's impressive career left ripples and lasting impacts on WSRs in Alaska and beyond.

Jen thanked the council for the award and recognized several colleagues who had supported her career with WSRs. She stated that the thing she was most proud of was "…the efforts towards amassing an army of people who understood the profundity of the need and were committed to shifting the perspective within the USFWS about our responsibility to the WSR system."

Corita Waters, from the National Park Service and other current co-chair of the IWSRCC, presented the second Jackie Diedrich Award to **Eric Sandeno**, retired employee of the USDA Forest Service.

Over the course of a 35-year career with the USDA Forest Service, Eric consistently demonstrated a commitment to stewarding wild places. While much of his career focused on wilderness management, his contributions expanded to included WSRs when he took on the role of Wilderness and WSR program manager for the Eastern Region in 2014. A few years later, Eric joined the Washington Office staff, serving as the national information manager for wilderness and WSRs. During that time, he displayed leadership not only through his expertise in maintaining USDA Forest Service national datasets for designated and candidate rivers, but also through his unwavering willingness to go well beyond what his position description entailed to support the National WSR System.

In particular, Eric demonstrated tremendous leadership and persistence through his participation on the IWSRCC's Project Review Subcommittee, helping to navigate a challenging, multiyear project to provide much-needed updates to technical materials on Section 7 of the WSR Act. Eric's leadership skills are marked by his positive and supportive attitude, and his passion for sharing his experiences and expertise, especially through mentoring earlier career colleagues. Eric retired from the USDA Forest Service in 2025, leaving an indelible impact on the WSR program from his years of incredible service to people and rivers.

Eric thanked his colleagues for the award. He reflected upon his career with the USDA Forest Service and his work with WSRs, beginning with his work on-the-ground monitoring of areas that later became WSRs and continuing to the development and implementation of tools that provided expanded information and data on WSRs. Eric acknowledged that, for many river managers, work on rivers is not a full-time job, but an additional duty; however, he added, "dedication and commitment from our river managers is amazing. As Jim Watkins stated, 'river cuts through rock not because of its power, but because of its persistence'." ❖

Jennifer Reed

Eric Sandeno

A *River* Runs Through Me

by Hailey Stines

Hailey rafting the Snake River with her family in Jackson, Wyoming, circa 2011. Photo: Adria Stines

A river runs through me; it is the only way I have found to encapsulate what rivers mean to me personally. The following essays discuss three key aspects of what my summers as a raft guide in Jackson, Wyoming, have meant to me. Not to say there are not many other ways to describe the hundreds—if not nearly thousands—of hours river guides dedicate to the water each summer. I hope this gives some insight to a world lived on the river—and perhaps explains all the people's texts I failed to answer this summer.

HEAT The summer doesn't start in the heat, but once the heat starts, it becomes impossible to escape. On the first trips of the season, I pack hot peppermint tea and show up to the boathouse bundled in my waterproof, fleece-lined pants, a down coat, bulky rubber boots, and a fleece hat my mother made me. This may seem overkill, but when the water is a brisk 40°F, and the air is even colder, dressing like this is not for fashion, but for function.

The surrounding mountains are still blanketed in winter's snow, which will soon become the water we raft on. Talk among the guides centers on when high water will come and how big it will be this season. During this time, we all forget that the melting snow is also the beginning of the end.

The Teton, Snake River, Gros Ventre, and Wyoming mountain ranges receive copious amounts of snow every winter, sometimes surpassing 500 inches (more than 41 feet, if you can believe it). The snow melt runs in the veins of the valley—keeping it alive.

Jackson has changed a lot in my nearly twenty years of living there. Although I do not recall my earliest years here, my parents' words and our old camcorder tell the story of what the winters used to be. As a kid, the month of June was still sometimes part of winter. I spent the majority of my June birthdays inside or bundled up as we got our last few snow squalls around that time. The spring runoff and high water did not happen until the middle or end of June. However, as the world has changed, high water in Jackson is now around the first week of June. Spring runoff makes the rivers look like chocolate milk and fill the banks to the brim. High water does not only mean faster trip times but also, more carnage, harder swims, colder water, and higher consequences. The Snake River in Jackson only becomes a Class IV run once a year, as then the river only gets lower.

I like to joke that I give my whole summer to be a river guide but in reality, that is part of the job. It may sound cliché to say it's blood, sweat, and tears to do the job. But I have experienced all three at once during the dog days of the summer. The sweat that runs into my eyes as I give my fourth safety speech of the day on whitewater trips is a gentle reminder that my Nalgene full of water rolling on the floor of the boat is not just an accessory, but also a means of survival.

The sun beaming down at such high elevation also is taxing. I have my Chacos, watch, and work uniform tanned into me by my third week of work every summer. The skin peeling off my nose and the cracks in my lips remind me that sunscreen was invented for a reason and I should reapply.

Heat is a variable that you dream of in the early season because rafting is not fun in the cold. But heat is also the thing you complain about in the middle of the season as it seemingly takes years off your life each day. Heat carries no mercy and no remorse for about two months of the year and then it's gone just as it arrived—making you forget about its pain and making you dream of it all over again till the next season.

The new company hat that I receive at the beginning of the summer is completely bleached by mid-season; the navy blue is pale with hints of orange tones and my black life jacket appears lighter and ripped. My Smokey Bear Chacos have only a shadow of a bear figure left on them, as they carry the memories and wear of thousands of river miles, and dozens of different rivers. The wear on my gear reminds me I am not the only one who battles the heat.

GRIT The first trips of the season are my constant reminder that ski season did not maintain my upper body strength from the previous summer and that you do not really use your legs to row. The first few weeks cut deep into everything, your shoulders and back feel it the most. The newly forming blisters on your hands are a slight distraction, but your mental strength is also weak. Getting back into the grind of rowing a minimum of a marathon a day, is not one you just slide into (at least not for me).

But there is a sweet spot in the season when you are feeling strong, both physically and mentally. The rivers are still high, and the afternoon storms have not started yet. By mid-summer, your body is strong, but the mental side of the game is only beginning. Rowing 8 to 16 people downriver for up to 13 hours is a mind and body workout that tests every ounce of patience. Carrying the joy and excitement for each group—trip after trip—is far from easy, especially when the rivers are low and winds are persistent.

As fun as the whole raft guide thing sounds, it is one of the most taxing things I have put my body through. *Blisters*, *bruises*, and *blood* are the unofficial "three B's" of river work.

Blisters come in many forms: the rips in your hands and fingers during early season as you tear off the soft winter skin are just one kind. The second type of blister comes from the sun. No matter how often you reapply sunscreen, you inevitably miss a spot, which will blister, a daily reminder of the sun's intensity.

Bruises are something I would've thought would make me more self-aware, but they never do. Each day I get home, look down at my legs, trying to recall everything I have bumped into, which is tracked by the dozens of bruises that litter my legs during the summer.

Hailey in 2025. Photo: Juniper Mayble

Blood is the one you know about immediately. I only had one good bleed this summer, but I think the scar will remain for the rest of my life. Of all things, the raft trailer door tore a six-inch gash into the back of my right thigh at 8:00 a.m. A stitches-worthy wound instead had to be held together by extra-large Band-Aids and Steri-Strips because trips still needed to be guided, and that is what I did. My scar collection are like natural tattoos left as reminders of the effort I put into every day of work.

When the end of the day rolls around, the pain endured and angst-ridden thoughts fade just like the memory of the 8 a.m. trip rowed nearly 12 hours before. Though the majority of the job is spent in Type Two Fun (difficult during, but fulfilling later), the end of the day is when the Type One Fun (enjoyable during) settles in, and you can laugh about the mistakes and pain that you endured just hours earlier. The life of a raft guide is far from glamorous; at the end of the day, the rough and ugly parts, as well as the golden and glorious moments, are what makes the job all worth it.

PASSION I wouldn't exist without rivers, but that is true for all forms of life, as water is crucial for survival. I would not be the person people know if it wasn't for water and rivers and their impact on my life. When I say, 'I grew up on the Snake River,' it is not an exaggeration. My parents took me rafting as soon as I fit into a Personal Flotation Device. I went whitewater rafting the summer I turned 3 and could roll a whitewater kayak at 9 years old. If you asked me today what I love, I would put rivers high on that list, though it was not always that way. As the youngest child, I was known to throw a decent tantrum, and while I was beyond fortunate to grow up with adventure-loving parents, I often preferred to hang out with friends instead of going rafting. As time went on, I started whitewater kayaking with the local kids' kayak club, and things began to change. Having independence and control of my adventure quickly hooked me, and for many summers I spent most of my time running new rivers with a gaggle of boys my age.

The year I turned 14, my dad told me I needed a job, so I walked into a local raft company and asked if I could work there (it really was that simple). I became a wetsuit washer—exactly as it sounds—after requesting three weeks off in peak season to kayak the Grand Canyon (I had my priorities). Over the years, I climbed the company ladder until I turned 18, when I was finally allowed to guide trips.

Each trip I row, I put on a bit of a persona to hide the teenage girl I truly am. Most people don't want to trust their family to someone so young. With a hat and sunglasses, a solid tan, and a healthy amount of confidence, nobody really questions it. I'm still deciding if it's a compliment to look six years older than I am, but for now, it works.

Beyond my passion for rivers, getting to share them with people from all over the world seems too good to be true. This summer, I rowed 89 commercial whitewater and 56 scenic trips, totaling about 1,500 miles. Many of those miles were hard, but most of them were spent guiding families on the highlight of their year. The smiles on kids' faces as they get pummeled by whitewater is far more rewarding than washing someone's dirty wetsuit.

I never thought I could like a job enough to count down the days until I get to work again. This may sound crazy, but part of me is always in the river, and part of the river is always in me (I end up drinking a lot of river water). With the state of our world and the uncertain future of many waterways, I write of my genuine love for rivers and eagerness to share them with as many people as I can to encourage the preservation of our rivers—everywhere. ❖

Hailey Stines is a River Studies and Leadership Certificate student at Fort Lewis College, expected to graduate December 2026 with a major in Environmental Conservation and Management. She is currently interning with the Animas Watershed Partnership and working as a raft guide for Dave Hansen Whitewater in Jackson, WY.

Waterlink: A Tool for Assessing, Planning, and Organizing for Water Security in West Virginia

by Samuel Bayne

West Virginia has a storied history of water contamination. With over 30,000 miles of streams and rivers, the state is highly dependent on surface water for drinking. However, the legacy of extractive industries, chemical plants, outdated infrastructure, and flood vulnerability all contributes to the drinking water insecurity that West Virginians face. Acid mine drainage affects many mountain streams, and chemical spills such as the 2014 Elk River spill, place drinking water at risk of contamination.

In 2019, my colleagues at the West Virginia University (WVU) Center for Resilient Communities (CRC) embarked on a project called Waterlink. Waterlink is an online tool seeking to democratize access to data that exposes the threats to water security in the state making it more accessible to community members. Water hazards are abundant in West Virginia, but the data is not easy to find. Waterlink helps to visualize where these hazards are occurring. In the summer of 2025, I joined the Waterlink team working out of the CRC's Environmental Justice Lab to update the existing data and expanding our assessment of water security by finding new data surrounding water quality.

To guide this update, our team created a Water Security Assessment Tool, focusing on six areas to investigate: waterways, human landscape changes, industrial impacts, water facilities, Safe Drinking Water Act violations, and social vulnerability. With this as our guide, we procured public data to display it and analyze spatial patterns using GIS. Following visualization, the end goal is to present the data at community meetings and invite community perspectives into the planning process for response to these environmental injustices.

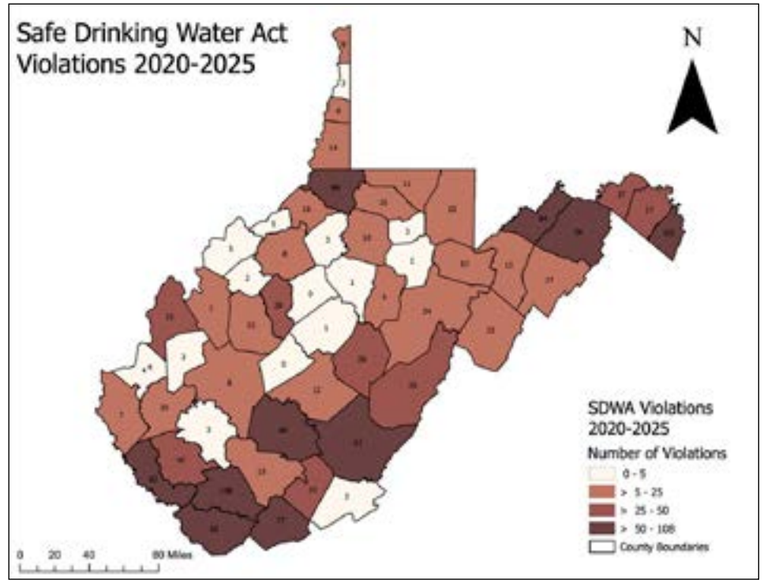
Throughout the first three and a half years of my education at WVU, I learned about the abundance of threats to the state's "wild and wonderful" environment. When I first embarked on the Waterlink project, I thought that I had a fairly good understanding of what I would find. However, after diving into case studies, news articles, and published papers on water security, I realized that there was much more to unpack. West Virginians face a unique set of challenges when it comes to water security, just as residents of other states face challenges specific to their regions. As the most flood-prone inland state in the United States, West Virginia waterways are constantly impaired by large influxes of water and waste from combined sewage overflow (CSO) pipes. Additionally, coal and logging companies abandoned the state after extracting its resources, leaving residents to deal with the harmful effects of acid mine drainage, sedimentation, and poor water quality. This abandonment also led to stunted economic growth, causing outdated infrastructure that struggles to address water quality issues.

Once I understood the threats facing our waterways, I needed to find the data to support them and visualize the findings. I used the Water Security Assessment Tool to guide my data collection process. I utilized publicly available data from many sources, including the Department of Health, the West Virginia Department of Environmental Protection, the U.S. Environmental Protection Agency, and the West Virginia Public Service Commission, among others. Following the data procurement, I began a multi-month process of data cleaning, visualization, and spatial analysis. During the cleaning process, I learned new skills, including coding with Python, and organized a CRC-wide "hackathon," where my colleagues graciously helped me with the location verification of more than 700 healthcare facilities in West Virginia. I then used ArcGIS Online and ArcGIS Dashboards to visualize the data. I ended up creating six maps and six dashboards (one for each aspect of the assessment tool) that help to provide a visual story of the dangers West Virginians face when it comes to drinking from and recreating in our waterways.

Water Security Assessment: *Tool used to guide data procurement process. Figure: Grace Dever*

The maps that I created include:

- The *Waterways* map visualizes streams that have been impaired in the past and waterways used as sources of drinking water.
- The *Human Landscape Changes* map shows the threats posed by the legacy of extractive industries.
- The *Industrial Impact* map indicates where pollutants are being discharged into waterways.
- The *Water Facilities* map examines how much residents pay for water that may be harmful to their health.
- The *Safe Drinking Water Act Violations* map demonstrates which counties have been most affected by these hazards.
- Finally, the *Social Vulnerability* map provides insight into the additional risks residents may face beyond unsafe drinking water.



Safe Drinking Water Act Violations: *By West Virginia county from 2020-2025. Figure: Sam Bayne*

As 2026 begins, our team approaches the most important step of this process: community involvement. I have learned during my time at the CRC, I have learned that any successful action research endeavor involves gathering community perspectives to guide planning and response efforts. People are at the center of environmental hazards. They face these threats every day, so they have the right to have a say in how we respond. I have grown to love the waterways of this state and am grateful to have been a part of this project. I am excited to see the positive changes we can make for the state's natural ecosystems and for the people of West Virginia. While every state faces a unique set of challenges, a tool like Waterlink can help communities understand their own threats to safe water, bringing us closer to nationwide water security. ❖

Samuel Bayne is a senior at WVU pursuing RMS's River Studies and Leadership Certificate and earning a bachelors degree in Environmental, Soil, and Water Sciences with a minor in GIS. During his time at WVU, he spent a summer as an intern with a local watershed organization addressing acid mine drainage pollution and has also spent two years conducting environmental justice research with the WVU CRC. He hopes to continue working in environmental GIS to support the protection of protect water resources.

University of Maine at Farmington now offers River Studies and Leadership Certificate in partnership with the River Management Society

Classroom with Flow: *University of Maine at Farmington (UMF) students measure stream flow near a river restoration site. Photo: UMF*

Press release by the University of Maine at Farmington and River Management Society

The University of Maine at Farmington (UMF) has partnered with the River Management Society (RMS) to offer the River Studies and Leadership Certificate (RSLC), creating opportunities for students to explore the multi-disciplinary foundations of careers studying, managing and protecting rivers.

"We're excited to welcome the University of Maine at Farmington to the RSLC network and to support the students who will become tomorrow's river stewards," says Risa Shimoda, RMS executive director. "The RSLC exposes students to a range of career pathways, connects them with experts working in river-related fields, and gives them hands-on experience. The broad foundation this program provides helps prepare them to tackle today's pressing river management challenges."

Students enrolled in the RSLC program study river systems in ways that integrate the life and earth sciences, policy and conservation, socio-cultural and economic factors, as well as education and recreation. They complete at least one geospatial information systems (GIS) course and a river safety requirement, in addition to other courses they choose in an area of emphasis. Students are encouraged to attend RMS' online and in-person events and will share their own project with a national community of river professionals.

"I'm thrilled to bring the RSLC certificate to the Northeast, with our new partnership between UMF and RMS," says Rachel Hovel, associate professor and RSLC Advisor at UMF. "Our region is rich in river ecosystems, and this certificate is an excellent fit for students in our outdoor recreation, ecology and environmental sciences, environmental education, and policy and planning areas of study. However, it is valuable for anyone, whether they are current students or returning for an additional credential, who would benefit from connecting to a nationwide network of river professionals and career support." ❖

For more information on the UMF program visit https://farmington.edu/river-studies-and-leadership-certificate/.

Students interested in enrolling in the RSLC program at UMF should contact Rachel Hovel at rachel.hovel@maine.edu.

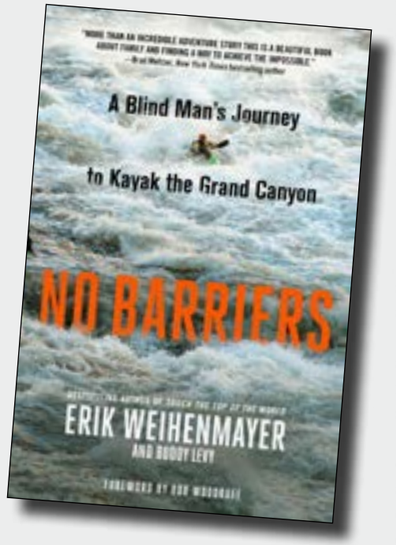
Visit https://www.river-management.org/river-studies-leadership for more information on the RMS and the RSLC.

Book Review

No Barriers: A Blind Man's Journey to Kayak the Grand Canyon

Weihenmayer, E., & Levy, B. (2017). *No barriers: A blind man's journey to kayak the Grand Canyon.* St. Martin's Press.

by Gary Marsh



Even if you have never held a paddle, climbed a mountain, or adopted a child from a foreign country, you will be inspired from reading about Eric's journeys. *No Barriers: A Blind Man's Journey to Kayak the Grand Canyon* is an incredible true story of how one person can make a difference in the lives of others. This book highlights the fact that at some point in our lives we are all tested. It is how we choose to respond which makes the difference.

Eric Weihenmayer, born September 23, 1968 is an American athlete, adventurer, author, activist, and motivational speaker. At three years of age, Eric was diagnosed with juvenile retinoschisis (splitting of the retina) and eventually lost his vision in high school. Originally from Connecticut, Eric captained his high school wrestling team and represented his state in the National Junior Freestyle Wrestling Championship. At 16, he found he was a natural rock climber, scrambling up a rock face using both hands and feet. He attended Boston College and graduated with a double major in English and communications.

In 1996, he climbed up the Nose of El Capitan in Yosemite. Five years later, on May 25, 2001, he became the first blind climber to reach the top of Mount Everest. Eric also climbed Denali and Aconcagua, the highest peaks in North and South America, respectively. He also climbed the Vinson Massif in Antarctica in temperatures as low as −40 °F. In 2002, he completed the Seven Summits (the highest mountains on each continent) as one of 150 mountaineers at the time; notably, he was the only blind climber to do so. In 2005, he co-found *No Barriers*, a nonprofit that helps people of diverse backgrounds and abilities attack challenges head on, build winning teams, and serve others. In 2008, he ascended Losar, a vertical ice face in the Himalayas. In 2010, he became the first blind person to complete the Leadville 100 mountain bike race in Colorado, riding a tandem bike. He has also skydived, paraglided, and skied

Eric took six years to learn to kayak. River guide Harlan Taney introduced him to kayaking and helped him get comfortable in a kayak. Later, Rob Raker, a seasoned paddler, became his primary instructor. Raker taught him kayaking skills and later led him down rivers, often with verbal commands. Chris Weigand, a former international whitewater kayaking competitor and coach, also worked with him—offering coaching and guidance during his progression into more technical whitewater. He took advantage of the U.S. National Whitewater Center in Charlotte, North Carolina, using the skills of instructor Casey Eichfeld. In 2014, Navy veteran Lonnie Bedwell–who is also blind and holds first blind descent on the Grand Canyon, Zambezi, and Gauley rivers–led Eric as they kayaked 276 miles (165 rapids) of the Grand Canyon. (Lonnie was also the keynote speaker at the 2016 River Management Symposium!)

In the book, Erik captures the thoughts and emotions of running rapids, but especially Lava Falls Rapid, the iconic class 10 out of 10 on the "Big Ditch." If you have ever run a challenging rapid like Lava, you will be amazed at how Eric communicates the anticipation, going with the flow, and the thrill of victory or agonizing defeat.

He also relates experiences of other people who have defied barriers. He shares the story of Kyle Maynard, the first quadruple amputee who in January 2012 ascended Mount Kilimanjaro, Africa, without the aid of prosthetics by crawling 19,340 feet in 10 days. He shared Harlan Taney's story, who attempted to make a new speed record on the Colorado River through the entire 270 miles of the Grand Canyon in a 24-hour period. He also shares the story of Hugh Herr. After a climb and blizzard on Mount Washington, New Hampshire, Herr spent three nights at −20°F and, although he was rescued, suffered severe frostbite that resulted in both legs being amputated below the knees. Undeterred, Hugh designed specialized prostheses and began climbing again at a more advanced level than before his accident on par with elite-level climbers. While a post-doctoral fellow at Massachusetts Institute of Technology (MIT), Hugh holds patents to a computer-controlled artificial knee, an active ankle-foot orthosis, and the world's first powered ankle-foot prosthesis. This book and these stories offer a testament to determination and human resilience; may you have no barriers to reading this book for yourself.

I wish I could buy a copy of this book for every RMS member (as well as others). I am committed to donating funds in order for every RMS chapter to have and share a copy of this inspirational testament. ❖

Gary Marsh is a longtime member and advisor to RMS, retired after long career with the BLM as their national rivers lead.

Meet your 2026-2028 Board Officers

We're thrilled to welcome the newly elected RMS officers for 2026–2028. They bring with them extensive experience in river management, passion for our mission, and a commitment to serving our members.

We could not be more well suited to navigate the options for RMS's organizational growth and the challenges facing you, our members, and your respective organizations. I send thanks to all members who took the time to participate in the election as a way to acquaint, or reaquaint, yourselves with our national officers' backgrounds and their interest in leading the RMS.

Please join me in welcoming our new officers. Don't be shy to reach out to them (or me) with your thoughts about how we are doing and suggestions for how we can better support you, the professionals who study, protect and manage our rivers in 2026 and beyond! —Risa Shimoda, Executive Director

President - Kristina Rylands

As a kid growing up in Southern California, Kristina daydreamed that a river ran through her backyard. At age 10, she knew it was all over when she first set foot in the Merced River in Yosemite National Park. Professionally, she spent 13 years as an NPS wild and scenic river planner on both the Merced River Plan (including supporting multiple rounds of litigation) and Tuolumne River Plan (zero litigation!). In addition, she served as an NPS representative on the Interagency Wild & Scenic Rivers Coordinating Council. She currently works as the watershed director for the nonprofit Upper Merced River Watershed Council located just outside of Yosemite National Park. She also works as a contractor for the National Park Service in the Northeast Region, supporting the effort to complete a wild and scenic river reconnaissance survey on the Deerfield River in Vermont and Massachusetts. Kristina is a lifetime member of RMS and serves as the current interim national president and president of the Pacific Chapter. She has a B.A. in English and Environmental Science from UCLA, and a M.A. in Organizational Leadership, with a concentration in Ethics, from Claremont Lincoln University. In addition to spending time with her family—including husband, three young adult kids, and a menagerie of horses, dogs, and cats—you'll find her spending as much time as she can on the Merced River, often floating in her kayak named *Bunny*.

Vision for RMS: I recently had a longtime colleague tell me, "RMS has been a lifeline throughout my career; everything I learned to do my job well I learned through RMS." My vision for RMS is to strengthen that peer-based lifeline, and inspire the next generation of professionals through our shared passion for protecting the nation's rivers. In these challenging times, providing support at the chapter level, and through opportunities to learn and connect with colleagues across the country, is needed now more than ever. The strength of the organization is in its membership, and we need to get creative in how we bring people together. I envision an RMS where:

- chapters are engaged, active spaces for collaboration, connection, and camaraderie;
- members and staff experience professional growth and feel that their expertise and contributions are valued and welcomed; and
- the organization is synonymous with a national think tank dedicated to addressing common river management challenges.

When I came to my first RMS symposium in 2006, I left with hundreds of instant friends and lifelong colleagues. Serving as RMS president is THE highlight of my professional career and appreciate the opportunity to serve you and this incredible organization.

Treasurer - David Cernicek

David lives in Jackson Hole, Wyoming, and works as the Wild and Scenic Rivers Coordinator for the Bridger-Teton National Forest, overseeing the 315 miles of the 415 streams that make up the Snake River Headwaters Wild and Scenic designation. He is a member of the Interagency Wild and Scenic Rivers Coordinating Council, has been a member of RMS since 1997, as well as a former RMS board treasurer.

Vision for RMS: RMS will train professional river stewards to safeguard waterways and inspire communities, while ensuring we remain financially strong to grow our impact. Healthy rivers, skilled stewards, and lasting sustainability—that's the legacy we're building.

Vice President - Tony Mancuso

Tony was raised from an early age to love and appreciate rivers and creeks that provide recreation, clean water, and vital wildlife habitat. He has worked professionally on rivers since the late 2000s, and has served as the Colorado and Green Rivers Program Manager at the Utah Division of Forestry, Fire, and State Lands since 2017. He has been involved with RMS since 2019, and currently serves as the RMS Southwest Chapter president. In his free time, he...runs rivers recreationally. But, he's figuring out that mountain biking can be pretty fun, too.

Vision for RMS: I think the most valuable asset that RMS provides is the capacity for interagency collaboration and training. The RMS Training Center, the River Ranger Rendezvous, and River Management Roundtables have essentially taught me my job in real time. Connecting expert river managers with students and early-career river professionals is needed to ensure the continuity of sound river management and river science. In the future, I would like to see RMS engage more with organizational-level partners to maximize our reach and connect as many new river professionals as possible to the profound depth of knowledge that RMS holds in our veteran membership roster.

Secretary - Helen Clough

Helen has been an RMS member since about 1992. Retired from U.S. Fish and Wildlife Service, Helen is a long term board member for RMS, and has previously served as treasurer, president, and secretary. Her nearly 40-year career has encompassed all aspects of public land and river management, spanning rivers from the desert Armagosa to the high Arctic Sheekjek. Notably, she prepared the first river management plans for the rivers in the National Wildlife Refuges in Alaska, and also helped plan and oversee several RMS symposia.

Vision for RMS: RMS will continue to grow and will become a more financially secure organization. We need to diversify our funding sources. We also need to make sure we are serving all our members. During my 13-year board tenure, we have not grown our membership significantly but our impact has grown by magnitudes—implementing the National Rivers Project, the River Training Center, and the River Studies and Leadership Certificate Program. My vision is that these programs will continue and grow to reach their full potential. We will continue to service our traditional members and continue to expand the people we serve. We will continue to add staff as funding allows and to provide services to those involved in all aspects of river management. I envision increased collaboration with state agencies, nonprofits, and academia.

At Large Member - Chris Geden

Chris, Thrive Outside program manager and River City Foundation director of community engagement, brings a deep passion for community engagement and outdoor education to his role with the RMS board. As the community engagement director for River City Outdoors, he works to expand access to outdoor recreation, fostering stronger community connections and advancing environmental stewardship. With over a decade of experience in youth development, including roles with the Children's Education Alliance of Missouri and the Gateway Region YMCA, Chris has dedicated his career to creating opportunities for people of all backgrounds to experience the outdoors. A former recreation supervisor for the City of St. Louis, he introduced young people to activities like fishing, tree climbing, and archery. Chris is also a fishing instructor and river guide in training with Big Muddy Adventures. Whether paddling the Mississippi or swimming in the ocean, Chris is driven by a vision of diversity, equity, inclusion, and justice in outdoor spaces.

Vision for RMS: My vision for RMS is to foster continued conversation around diversity, equity, and inclusion in the outdoor space. I want us to continue being the voice for those who love our waterways and who work hard to make them safe, clean, and accessible to everyone. I would also like to see us provide robust support for all chapters by meeting them where they are. Finally, I hope to continue providing training and education for the next generation of river managers.

New Members

Associate

Charles Rose
St. Cloud State University
St. Cloud, MN

Brandon Clark
Buddy Boy
Pine Mountain Club, CA

Sarah Lange
Planner, Independent Consultant
Everett, WA

Thomas Maier
Colliers Engineering & Design
Greenville, PA

Individual

Jeffrey Duncan
President and CEO
Long Man Ecological Solutions
Signal Mountain, TN

Organization

Conestoga River Club
Malinda Clatterbuck
Executive Director
Pequea, PA

Student

Sophia Daniel
Fort Lewis Scholars Program
Fort Lewis College
Durango, CO

Trey Kettering
Jack Lootens
Northern Arizona University
Flagstaff, AZ

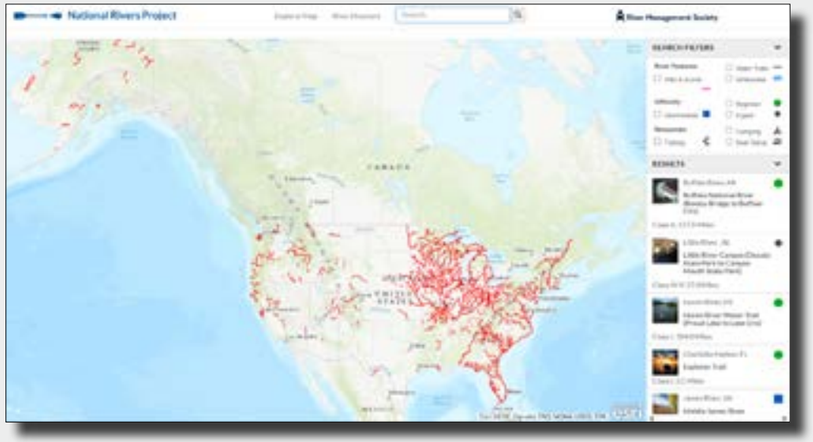
Melina Pakey-Rodriguez
University of Minnesota
St. Paul, MN

Andrew Dominguez
University of Northern Colorado
Aurora, CO

Ashlynn Mixon
Western Colorado University
Gunnison, CO

RMS News

Plan Your 2026 River Trips with This Boatable Rivers Database



by Bekah Price

There are thousands of boatable rivers in the United States, but finding the right trip for you hasn't always been easy. Unlike hiking trails or road trips, paddlers and anglers haven't had a reliable way to "shop" river reaches by experience and often don't know who manages their rivers. To solve this, the River Management Society created the National Rivers Project, an accurate, searchable database of recreational river reaches, mapped from put-ins to take-outs.

"We wanted to make it easy for people to discover new rivers and to get information directly from their local river managers," says James Major, National Rivers Project Coordinator with the River Management Society. "Now, you can start with the experience you want and quickly find the reaches that fit."

Developed in partnership with dozens of state, federal, and local agencies, the National Rivers Project website is a free and growing database of thousands of boatable river reaches and access points across the United States. Each year, it helps tens of thousands of paddlers and anglers plan trips based on geography, difficulty, and recreational opportunities, while also serving as a hub for water trails, wild and scenic rivers, and whitewater runs.

While search engines and social feeds tend to funnel people toward already crowded destinations, the National Rivers Project opens the door to those "rivers less paddled." Whether you're looking for a mellow float, a new fishing spot, or a whitewater run, the database makes it easy to branch out while reducing congestion at hotspots.

The site is easy to search and navigate, with filters on the interactive map and a state-by-state directory. River difficulty is color-coded like ski routes, and users can filter for amenities like campsites, fishing access, and boat ramps.

Each river reach has its own page with data provided by river managers, along with links back to their websites for more detailed, local information. ❖

Explore the database and start planning your next river trip at
https://www.nationalriversproject.com.

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(vacant)

PACIFIC

President
(vacant)

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President
(vacant)

Vice President
(vacant)

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Canadian River Management Society

(vacant)

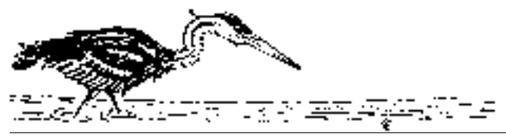
RMS Membership Auto-Renewal Now Available

Whether you're renewing your membership or joining for the first time, you can now opt in to auto-renewal. Save yourself time and avoid any lapse in benefits by enrolling. It's a simple way to stay connected and continue supporting the River Management Society without interruption.

We appreciate your membership, the time and expertise you contribute to our community, and everything you do for our rivers.

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

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



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

Who referred you to RMS? _____

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

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

River Management Society

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

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***Autumn on the Nowitna**: The Nowitna Wild and Scenic River flows across its broad floodplain toward the Yukon River. Photo: Lisa Hupp / USFWS*

RMS Journal Submission Deadlines

Summer 2026	Vol. 39, No. 2	Southeast	May
Fall 2026	Vol. 39, No. 3	Midwest	Aug
Winter 2026	Vol. 39, No. 4	Southwest	Nov
Spring 2027	Vol. 40, No. 1	Northwest	Feb
Summer 2028	Vol. 40, No. 2	Northeast	May
Fall 2028	Vol. 40, No. 3	Pacific	Aug
Winter 2028	Vol. 40, No. 4	Alaska	Nov

Alaska Chapter Focus