



NORTHERN ROCKIES
CONSERVATION
COOPERATIVE

Conservation for the Common Good

— Since 1987 —



2019 YEAR IN REVIEW

Photo: Mitchell Griffin



“A livable planet is the right of every child.”

- Greta Thunberg, 16 years of age

Sept. 18, 2019. Testifying before the US Congress

We can all agree we want a world that will nourish and sustain our children and grandchildren. NRCC’s researchers, writers, educators, artists, and students speak powerfully and beautifully in this issue about what is happening to wildlife and human communities, and the methods they are developing and sharing so we can all be more effective stewards and deliberative coinhabitants of earth.

NRCC Research Associate Michael Whitfield, who leads NRCC’s longest running project, received The Kingsbury Browne Conservation Leadership Award for “innovation” and “collaboration” in conservation and a “generous spirit: sharing ideas, experiences and knowledge with others to nurture and mentor the next generation of conservationists and leaders.” Michael offers a compelling case for collaboration among citizens, scientists, elected officials, and public land and wildlife managers.

Research Associate Seth Wilson talks about his work with hunters, local communities, and national forest managers to restore endangered lynx in Slovenia and Croatia. Other Research Associates share their projects: protecting and restoring frogs, toads, and native amphibians in the Northern Rockies and the desert Southwest (Erin Muths, Blake Hossack, Deb Patla, Ross Hinderer); promoting safety for humans and migrating wildlife on rural roads (Corinna Riginos); restoring populations of pronghorns

and wolves in Mexico (Carlos Lopez Gonzalez); and sustaining Clark’s nutcrackers and the conifer forests that support and depend on the birds (Taza Schaming).

NRCC Resident Experts and Research Associates continue to innovate ways to educate and communicate for better conservation outcomes. Contributors in this issue include Todd Wilkinson, R.J. Turner, Katie Christiansen, Richard L. Wallace, Allyson Mathis, Tani Hubbard, and Trevor Bloom, who are engaging partners in new ways through interpretation, workshops, publications, and films.

We also hear from NRCC’s emerging leaders—interns and visiting researchers Meghanlata Gupta, Jess Greenburg, Dorian Baldes, and Eve Barnett.

Most exciting of all, we introduce our new Executive Director Ben Williamson. Ben brings skills and experience in environmental education, ecological and social science, community conservation, and stakeholder governance. We look forward to Ben’s leadership as we move into 2020.

Many thanks to our collaborators and donors who work with us to make a better future possible for humans and wildlife.

Sincerely,

Payton Curlee Griffin

From the Executive Director



Dear Friends,

Since I arrived in Jackson in early July, I’ve met and become acquainted with many in the NRCC community. The obvious takeaway from these conversations is a shared commitment to NRCC’s vision. In my new role, I’m honored to represent this community.

NRCC’s early years were forged in traditional ecological objectives, having done some of the ground-level work on migrations and large carnivore

research in the late 1980’s. As the Greater Yellowstone Ecosystem rapidly changes, NRCC continues to evolve and consider what this 21st century moment requires—to ask ourselves questions like who we are and what do we want to become. Similar to NRCC, I started from an ecological background and have expanded my skillset to meet new challenges. This story parallels my own and that’s why I saw this position as a great fit.

Growing up in Colorado, my early interest in ecology began with a curiosity for the ever-changing landscape that surrounded me. I developed an interest in wildlife and plants—and an interest in how humans interact. In many ways, those experiences have animated an important question since: what is my relationship with nature? After years of working across Montana, and time spent studying with NRCC Founder Dr. Susan Clark, my answers to this question have multiplied. It’s become a lot less about understanding what’s out there, and a lot more about learning how to share and recognize our own perspectives—a process of co-generating

previously inaccessible ways of thinking. Susan refers to this as the process of discovering the ‘common interest’.

With this in mind, I’d like to quickly summarize my priorities:

- First, I want to continue to amplify the voices of our Research Associates and facilitate an environment and attitude of collaboration. Basically, I want NRCC to continue to invest in people, including students, professionals, and interested citizens.
- Second, I want to provide skill building opportunities to improve the problem-solving capacity in our community. I see this happening through workshops, small group discussions and participating in public dialogue. Personally, I’m working on a project that focuses on conflicts that arise at the boundaries of land designations.
- Third, I’m working closely with Susan on what it means to promote alternatives to the current rapid change in the GYE. The challenges we face will require all of us to clarify our own viewpoints, the ways we interact with each other and landscapes, and understand how that manifests in policy and action.
- Fourth, I want to advance the institutional health of NRCC to ensure that it is able to function well now and into the future.

Each of these aims requires the partnerships of many of you and many other groups. I thank all of you for your support. Please visit our Jackson office and email me at ben@nrccooperative.org. This is a thrilling new chapter for me and I’m looking forward to sharing it with all of you.

Sincerely,

Ben Williamson

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BY THE NUMBERS

36

ACTIVE PROJECTS

47

RESEARCH ASSOCIATES

59

PROJECTS SUPPORTED IN LAST FIVE YEARS

64

PARTNERING ORGANIZATIONS

69

INTERNS

25

AVERAGE NUMBER OF EMPLOYEES ON PAYROLL LAST FIVE YEARS

\$639,011

AVERAGE ANNUAL INCOME IN LAST FIVE YEARS

48

TOTAL NUMBER OF WORKSHOPS & CONFERENCES

96%

PERCENT SPENT ANNUALLY ON PROGRAM

32

YEARS OF LONGEST-RUNNING PROJECT
(Michael Whitfield’s Bald Eagle study)

12

STATES AND

14

COUNTRIES LOCATIONS OF PROJECTS IN LAST FIVE YEARS

NRCC Welcomes New Advisor and Researchers

NRCC is pleased to welcome **Bernard J. McHugh** to the Board of Advisors, **Molly Loomis Tyson** and **Jesse Callahan Bryant** as Research Associates, and **Ross Hinderer** as a Project Partner. Bernie, Molly, Jesse, and Ross bring valuable leadership, research, policy, organizational and communication skills to NRCC.

BOARD OF ADVISORS



BERNARD J. MCHUGH is an experienced executive in both the private and non-profit sectors with a long commitment to wildlife conservation. He's presently the Board Secretary of Montana Audubon and advisor to the William Wharton Foundation. Bernie served as Executive Director of the Massachusetts Land Trust Coalition for twelve years and was a Director of the Jackson Hole Conservation Alliance, Manomet Center for Conservation Science, and Environmental League of Massachusetts, among other groups, and is a co-founder of the Religious Lands Conservancy Project. Bernie and his wife, Frances Clark moved to Wilson, WY in 2011.

RESEARCH ASSOCIATES



MOLLY LOOMIS TYSON has been a Teton resident since 2001. She has melded her passion for exploring the natural world, writing and teaching through a mix of journalism, mountain guiding, outdoor education and rangeland management. She's published more than 300 articles for publications such as *Outside*, *National Geographic*, *The Wall Street Journal* and *The Boston Globe*. Her stories focus on conservation, outdoor recreation and environmental issues. Currently, Molly is pursuing a Mid-Career Master of Environmental Management through Yale's School of Forestry and Environmental Studies. Molly's areas of interest are problem solving, conflict resolution, communication and education as it pertains to human-wildlife conflict and public land management. She is also passionate about using connection to place ("sense of place") to instigate environmental advocacy and protection.

7th JH Wildlife Symposium



Photo: R.J. Turner

On March 8th, 2019, NRCC hosted the 7th Jackson Hole Wildlife Symposium at the Center for the Arts. Despite challenging winter weather, 125 researchers, agency personnel, educators, students and

citizens gathered to discuss the challenges and opportunities for human-wildlife coexistence in the Greater Yellowstone Ecosystem.

The conference began with a keynote address from Director of the Brown Institute for Environment and Society, Amanda Lynch, who used climate science and policy analysis to examine a more likely possibility of coexistence in an altered climate system. Next, Todd Wilkinson provided an overview of the major challenges to the health of the ecosystem. P.J. White, Brian Glaspell, and

PROJECT PARTNER



ROSS HINDERER joins NRCC as a project partner for the *Greater Yellowstone Cooperative Amphibian Project*. This is a joint project between NRCC and the National Park Service's Greater Yellowstone Inventory & Monitoring Network (GRYN). Ross has worked in the conservation field since 2008, with a focus on amphibian research for much of that time. In 2016, he received an MS from Montana State University where he focused on understanding how the threatened Chiricahua leopard frog moves across desert landscapes. This fall, Ross is starting a PhD at the University of Montana in Fish and Wildlife Biology, co-advised by Lisa Eby and NRCC Research Associate and USGS researcher Black Hossack.



JESSE CALLAHAN BRYANT is a graduate of the Yale School of Forestry and Environmental Studies and field instructor for the National Outdoor Leadership School. His work focuses on the cultures of recreation and their growing impact on the rural West. His current case study is in Ten Sleep, Wyoming, where rock climbing usership of the National Forest is experiencing exponential growth—and with it, impact and conflict. His future work with NRCC will expand upon his Ten Sleep case study in hopes of better integrating new recreation cultures with those already present.

Mark Newcomb discussed the complicated nature of wildlife management and decision making. Molly Loomis Tyson and Franz Camenzind asked the attendees to think about what it means to have a sense of place and how it alters our sense of responsibility.

The afternoon featured 20 'quick talks' from researchers on topics ranging from American Kestrels to water quality to collaboration. Before the afternoon concluded, the Craighead Conservation Award was presented to Yellowstone's Chief of Wildlife Resources, P.J. White and the Raynes Citizen Conservation Award to local author and conservationist Susan Marsh.

The evening keynote presentation was given by retired Yellowstone National Park Superintendent, Dan Wenk. Nearly 150 listened as Dan gave a personal account of his time at Yellowstone and provided insight into the future of the park amidst growing visitation numbers.

The day prior to the symposium, NRCC hosted a workshop for 45 local and regional educators, interpreters and guides from both formal and informal environmental education settings.

Thank you to all of our participants and event sponsors!



Photo: Janaz Tarman

LIFE Lynx: Project Update

BY NRCC RESEARCH ASSOCIATE SETH WILSON

By the early 20th century, the Eurasian lynx population in the Dinaric Mountains of Slovenia and Croatia went locally extinct due to habitat loss, lack of prey, and human persecution. For nearly seventy years, lynx were absent in south-central Europe's former Yugoslavia. However, in 1973 a small group of hunters and foresters brought six lynx from former Czechoslovakia for reintroduction to Slovenia. The lynx reproduced and the population expanded—but remained isolated. By the mid-1990s, the lynx population declined, mainly due to genetic deterioration or inbreeding since the original six lynx were related. Currently, the population is small, inbred, and remains isolated. Although robust population estimates are lacking, there are likely 10-20 lynx left in Slovenia and 40-60 lynx in Croatia.

Over the past two years, I've been working to reverse this population decline under a European Union funded effort called the LIFE Lynx project (<https://www.lifelynx.eu/>). The goal of this effort is to rescue the remnant lynx population by translocating 14 new lynx from the Carpathian Mountains of Romania and Slovakia and releasing them into the Dinaric Mountains and eventually a portion of the southeastern Alps. Releasing new individuals will reduce genetic inbreeding and eventually help the lynx population rebound. While this may sound straightforward from a scientific planning perspective, many historic efforts to restore lynx in Europe have failed largely due to 'top-down' approaches that lacked support from local people. Ideally, successful carnivore reintroduction relies upon the support of communities of place and communities of interest—where local and broad public support converge. This is even more critical in Europe where the scale of

large carnivore life histories transcends national borders, cultures, and management jurisdictions.

In the LIFE Lynx project, we have invested tremendous time and energy into building meaningful relationships with local people in Slovenia and Croatia. Using formal and informal means, we have involved people from the early stages of developing the project. For example, local hunters in Slovenia helped our team identify release sites for lynx that meet biologically and socially acceptable criteria. Additionally, Slovenian hunters were willing to locate the first lynx enclosure on their private land, feed a lynx for nearly three weeks during a quarantine period in the enclosure, and

physically open the gates to free the first lynx named Goru, onto their hunting grounds on June 11th. In Croatia, the first lynx named Doru was released on June 4th where hunters are also playing an important role in lynx monitoring and conservation.

Currently, Goru and Doru are both doing well—our latest GPS tracking data indicate that these two males have established territories. They are both hunting successfully and are in excellent condition. Our team is also working to help the lynx population expand

its range over time, and we have future lynx releases planned for the southeastern Alps in northwest Slovenia.

After two years of planning and now with the successful release of the first two lynx, I am optimistic that our relationships with hunters and local communities have resulted in mutual trust and respect—a foundation for long-term recovery of the lynx population. Coupled with broad public support for this project in Slovenia and Croatia, I'm confident that this emerging 'bottom-up' approach to large carnivore conservation will be a success model for Europe.

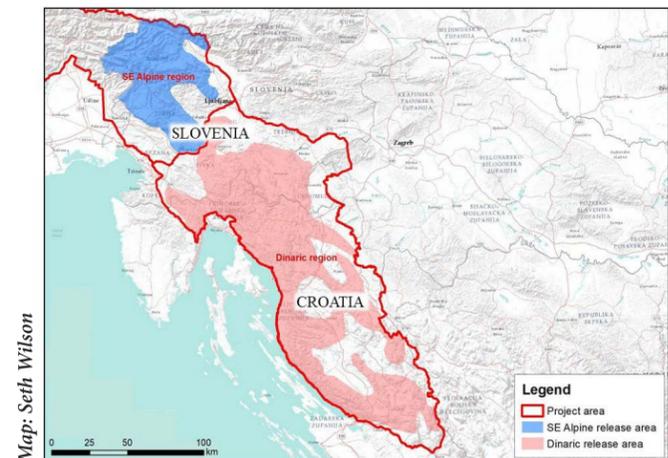




Photo: Michael Whitfield

In 2018, NRCC Research Associate Michael Whitfield was named the Kingsbury Browne Fellow at the Lincoln Institute of Land Policy and the winner of the Kingsbury Browne Conservation Leadership Award from the Land Trust Alliance, a national organization representing more than 1,000 land trusts and their 4.6 million supporters.

Toward Holistic Landscape Conservation

BY NRCC RESEARCH ASSOCIATE MICHAEL WHITFIELD

I recently submitted a working paper for publication by the Lincoln Institute of Land Policy as a part of the Kingsbury Browne Fellowship, which I was awarded last fall. The paper, titled *Toward Holistic Landscape Conservation in the 21st Century*, is a call for response to the environmental and social crisis now being experienced in America and across the globe. We enjoy an amazing conservation legacy in the United States. However, all human and non-human life is threatened in the midst of ongoing human-induced mass extinction. Yet, I'm encouraged by the emergence of holistic landscape conservation initiatives, in my home landscape and across the country. Challenging national and local politics remain, and so, we must dramatically up our game.

Conservation practitioners in the United States often see conflict between efforts to conserve nature in the face of massive loss of biological diversity versus efforts to provide people with the basics of individual human dignity, such as suitable housing, access to adequate food, clean air and water, and outdoor recreation. Yet both of these challenges are symptomatic of the same threats: a burgeoning human population with out-of-scale environmental impacts, ecological and social fragmentation, and the ever more

serious threat of climate change. In our current time we have allowed our diversity of perspectives and needs to divide us, rather than enrich our work together. There are multiple barriers to our work together: rural versus urban, rich versus poor, working landowners versus recreationists, and on and on. We need more bridges and fewer barriers. True conservation collaboration that is broad in participation and comprehensive in goal setting can build those bridges.

It is a critical time for finding ways to couple stewardship of our natural landscapes with stewardship of our society. I see the emergence of landscape conservation through robust human community collaboration that provides for the non-human interests of wildlife and nature, as a necessary approach to meet these daunting challenges. Across the country, there are many examples of conservation successes through landscape collaboration—but the concept is hindered by incomplete application and a lack of suitable measures of program outcomes. In my paper, I make a case for holistic landscape conservation efforts, as I discuss proposed elements that meet ecological and social goals, and examine the consequences of their implementation in multiple settings.

Sense of Place Along the 43rd Parallel

BY NRCC RESEARCH ASSOCIATE MOLLY LOOMIS TYSON

So where are you from? It's a common enough question and one of the first bits of information a stranger will offer up. After all, place is integral to who we are.

But the question I'm more interested in underlies that—what does your place mean to you?

And finally, the question that fascinates, nearly agitates me—what lengths would you go to protect this place, even if it means setting limits on pursuing a personal passion?

Over the past year, questions about place—What is “place”? What does “sense of place” mean to most folks? Does it even matter?—These questions have led me down a whirlpool of ideas, feelings, stories and sensations as explained by the Greek philosophers, gas station attendants, Native American artists, hotel clerks, university professors and radio disc jockeys. The answers have been fascinating and illuminating. And like all good questions, the answers have led to more questions and yet another trip on this obscure route across the country. These questions have me trying to comprehend the immensity of what constitutes space versus place and our culture's disposition towards the former.

The idea for this journey came with the decision to head East

for school—to leave my place—the place I'd spent the majority of my life. As with all relationships, it has morphed with time, deepening and weathering in ways never imagined. And I know I'm not alone in my connection to this part of the world. I think it's fair to say, sense of place is relatively well developed in the Greater Yellowstone Ecosystem.

Relatively. That's the part that has intrigued me.

With latitude being a driver of an ecosystems' traits, a key factor in the shaping of what makes Greater Yellowstone so special, I decided to follow the 43rd parallel—the location of my home in Idaho—east to the Atlantic, to see what other people had to say about their place.

Dinosaur bones; the Corn Palace; Flint, Michigan; the massive hydroelectric plant powered by Niagara Falls; The Adirondack Park—there's a lot to see in between Idaho and the Atlantic. I've now traversed the 43rd twice and the questions (and answers) keep coming. Stay tuned on my website www.mollyloomis.com for project, research and interview updates and the completion of the route's remainder—from Idaho to the Pacific—next summer. If you have a moment, think about your place, what that means and what that place means to you....



Photos: Molly Loomis Tyson



Ascending from Responsibility

BY NRCC RESEARCH ASSOCIATE JESSE CALLAHAN BRYANT

It's a long drive from New Haven, Connecticut to Ten Sleep, Wyoming, thirty-one hours to be exact. But last summer, thirty-one hours felt even longer with doubts and expectations hanging over my head. Bouncing back and forth was my essential question: Is rock climbing good for Ten Sleep? And if so, for whom?

Recently, rock climbing has exploded in popularity in the United States and evolved into a form nearly unrecognizable from the wilderness-obsessed 20th-Century climbing that produced some of the most famous American environmentalists, think John Muir, David Brower, or Yvon Chouinard. In its modern form, rock climbing is largely an urban, gym-based activity for millennials and younger. Some hang on to symbolic associations with environmental advocacy, but most climbers are primarily concerned with individual wellness, achievement, and the consumption of goods, curated by industry-sponsored athletes on social media. The urbanization and mainstreaming of the sport mean that rock climbing is today likely providing more value to Americans than ever before. But as the population of climbers grows and expectations of the experience shifts, the ways in which rock climbing impacts the land and local communities is in flux.

An economic study by *Maples et al.* in 2017 looked at the impact of climbing in Kentucky's Red River Gorge on the surrounding rural counties. The study found favorable evidence that climbers "contribute several million dollars to local businesses annually, [and] support an increase in jobs and wages in the area." However, buried deep in the study, the authors found that despite new financial flows, locals generally don't respect climbers, and see them as "outsiders" who "aren't part of the community" and "party all the time." In Kentucky, climbing may be economically advantageous, but it wasn't necessarily perceived as good by those who know the land best. I wondered if the same would be the



Photo: Jesse Callahan Bryant

case in the rural West, particularly in the exploding sport climbing destination, Ten Sleep, Wyoming.

In recent years, rock climbing has exploded in Ten Sleep Canyon, just a few miles from the small town of Ten Sleep (Pop. 260). During the biggest day last summer there were an estimated 600 rock climbers (and their dogs!). Located in Bighorn National Forest, the Canyon lacks a Climbing Management Plan. Toilet paper blooms throughout the Canyon and scenic pullouts along Route 16 have turned into Walmart-like lots. Most climbers stay at the Ten Sleep Rock Ranch, an apple orchard turned campground tailored to climbing needs, started by a couple from Orange County.

One local told me that the elk and mule deer have left the canyon because of the influx of people. I tell her that my data shows that each climber brings about \$200 dollars to the local economy. She says that she didn't move here to make money. Pointing to the silence around us, she says "I moved here for this!" She continues by saying that it's the exclusivity that gets her. "If you're not a rock climber then...oh...and they don't want to talk to you anymore." And she's right.

The problem in Ten Sleep is that rock climbing is effectively segregated from local patterns—ecologically, economically, culturally. As a result, the landscape and people are consumed and disposed of like another product in the climbing industry. Advocacy groups (Bighorn Climbers' Coalition & Access Fund) have attempted to mitigate the impact of a consumerist attitude toward nature in Ten Sleep but are largely failing. Ironically, these trends continue to be invisible for most climbers who believe the climbing community is a hotbed for environmental advocacy. To generations of Ten Sleepers however, the pattern is acutely seen.



Photo: Mount Vernon Leadership Fellows Program

Meghanlata Gupta is a junior at Yale University from the Sault Ste. Marie Tribe of Chippewa Indians. At Yale, she is a Mellon Mays Bouchet Undergraduate Fellow with a major in Ethnicity, Race, and Migration.

A Journey of Questioning: Identity and Indigenizing the News

BY NRCC INTERN MEGHANLATA GUPTA

At the beginning of the spring semester of my first year at Yale, I was in a state of apprehension and uncertainty. After passionately disliking every class that I had taken in the fall semester, I found myself questioning my intended major, my long-term career goals, and even more fundamentally, my place as an academic and human in the world. With these questions in mind, I decided to enroll in Environmental Studies 348: Yellowstone and Global Change with Professor Susan G. Clark—and it was through this course that everything fell into place.

In Yellowstone and Global Change, Susan encouraged me to grapple with internal debates of identity, worldview, and knowledge systems. As we worked through a case study of Yellowstone National Park through her unique process, I began to develop an understanding of my own personal approaches to sociocultural and policy-oriented issues. My work with Susan as an undergraduate research intern with the Northern Rockies Conservation Cooperative, and then as a student in her Foundations of Natural Resource Policy and Management graduate course, dove into tribal-state management of bison and their reintroduction onto Native lands in the Greater Yellowstone Ecosystem. Throughout the almost two years that I have learned with Susan, I have realized that it is impossible to separate my own position and values from the academic fields with which I involve myself. Rather, integrating my worldview in the classroom and in other educational spaces is the only way toward meaningful engagement.

As an Ojibwe woman and scholar entering my junior year at Yale, my current work sits at the crossroads of Indigenous histories, culture-based education, relationships with land and water, and critical race theory at large. This past summer, I founded Indigenizing the News, a curated monthly newsletter and educational resource with the intent of "elevating Native voices and educating non-Native allies." By sharing Native-focused articles, publishing pieces from all stakeholders, decolonizing terms and narratives, and providing resources for teachers, Indigenizing the News illustrates the fact that an education in Native nations, histories, and contemporary lives is important for everyone. Within environmental fields of study, it is especially important to recognize the original stewards of certain spaces, places, and landscapes, as well as prioritize their voices when discussing topics of conservation, biodiversity, and resource management. I'm actively recruiting both Native and non-Native writers who are interested in these intersections, so please do not hesitate to reach out to me at meghanlatagupta@gmail.com.

Susan's teaching and her mentorship have helped pave the way for Indigenizing the News to come into focus. Most of all, she has supported me in an ongoing journey of self-reflection and empowerment. As I begin this new school year, I hope to keep working through this journey of questioning and using my Yale privilege to elevate other Native voices from around North America.



To learn more and subscribe to Indigenizing the News, visit www.indigenizingthenews.com.

R.J. TURNER

PHOTOGRAPHER IN RESIDENCE

I continue to exhibit my photography across the United States. I had a solo show, “Wild Life,” at the Environmental Resource Center in Ketchum, Idaho this past December-March, and a photography show at the Center for the Arts during NRCC’s 7th Jackson Hole Wildlife Symposium. My work is also currently on exhibit at the Stanford in Washington Gallery, alongside sculpture by my father, Bart Walter. “The Wild West and it’s Denizens” includes many images I have produced in the American West. I was recognized as a Highly Honored Photographer in the Wildlife Category of the Nature’s Best Photography Awards. Following my lifelong dream of living in Africa, I moved to Kenya this August with my husband Sam and our newborn baby Tahlia. We are the new managers of Cottar’s 1920’s Camp at the edge of the Masai Mara. I could not be more thrilled to live in the Kenyan bush with my family, and for all of the photographic opportunities to come.



R.J. Turner



R.J. Turner

RICHARD WALLACE *EDUCATOR IN RESIDENCE AND BOARD MEMBER*

Over the past year, I have been working on three projects that are directly related to the NRCC mission. In the GYE, NRCC intern Jess Greenburg and I have been completing work on my four-year study of educational programming in the GYE. The goals of the study were to identify the ways in which the great diversity and number of educational programs in the GYE support the complex, integrative problem solving necessary to address large-scale problems of human-wildlife coexistence in the GYE. With NRCC board member emerita Susan Clark, Jess and I are now drafting both an NRCC report for broad distribution and a manuscript for journal submission, both of which will summarize our findings and make recommendations for strengthening the connection between education and complex problem solving. As well, I have recently published a Forum piece in the journal *BioScience*, entitled “Improving the Integration of Restoration and Conservation in Marine and Coastal Ecosystems: Lessons from the Deepwater Horizon Disaster” (<https://doi.org/10.1093/biosci/biz103>). The paper, co-authored with two colleagues at the Gulf of Mexico Research Institute, describes the challenges of learning and applying conservation lessons from the Deepwater Horizon and previous oil industry disasters, and culminates in our joining with the many voices who have long called for an ocean ethic. Finally, Jess Greenburg and I are analyzing the connections between teaching and learning in environmental studies and the mental health challenges of maintaining a professional focus on dire trends and conditions, such as now face us in the areas of climate change, habitat loss, and extinction. Our first manuscript based on this work is currently in review.

TODD WILKINSON

WRITER IN RESIDENCE

I continue to focus on how to elevate public awareness, both in the Greater Yellowstone Ecosystem and beyond, about the main transformative challenges facing the most iconic complex of public and private wildlands in the Lower-48. Last spring, I gave a presentation at NRCC’s 7th Jackson Hole Wildlife Symposium. Climate change, human population growth, and Chronic Wasting Disease rank at the top of the list of issues I am exploring through my work at Bozeman-based *Mountain Journal* (mountainjournal.org). I am working to move people in Greater Yellowstone past historic silo and divisive thinking to embrace a common vision. There is not another region on earth that Greater Yellowstone can emulate in order to save the things that exist here and nowhere else, because elsewhere similar natural wonders have disappeared. Greater Yellowstone must emerge as the region that others emulate, demonstrating a new way for achieving co-existence between wild places and human needs. The onus is on us. Join the conversation by reading and submitting work to *Mountain Journal*.



Todd Wilkinson

KATIE CHRISTIANSEN *ARTIST IN RESIDENCE*

I continue to undertake interdisciplinary arts and conservation projects, with the mission to inspire meaningful connection to the natural world. Recently this has led me to interpretive storytelling opportunities on public lands. This summer, I completed work on a natural history and cultural storytelling installation at Bozeman’s Story Mill Community Park. In partnership with the Trust for Public Land and dozens of community members, I created ten interpretive panels and an accompanying field guide to support visitor learning at this 60-acre park. Writing, illustrating, and designing each panel as individual compositions, I covered topics including wetland ecology and restoration, fisheries and wildlife, early settlement and Native American history, and community values. Funding for the project was supported by a grant from the National Endowment for the Arts. Additionally, my on-going project, *The Artists Field Guide to Yellowstone*, published by Trinity University Press, is set for release in Spring 2020. Inspiration for all of my work comes from time spent outdoors in contemplation and exploration, now from my new home in Colorado’s Front Range.



Katie Christiansen

DORIAN BALDES

NRCC INTERN

Wetu (spring)

I was not born a Lakota speaker,
Instead,
I was given it to hold
Like when the rain has left the summer cupped within my hands,
To hold my people in memory through the winter
And greet the rain when thunder sings again.

Watohanl sna thasiyagnunpa olowan wan nawahun,
Na wichooyake kin tukte zintkala k’un
Lakholiyapi kin oyate kin wichak’upi weksuya
na chante mawaste lo.

Sometimes when I hear the meadowlark song,
I think of the story of how that bird gave the language to our People,
and I am full of joy.

Eyas
Watohanl sna lakhol oyate wokakiza
He slolyapi weksuya na chante iyomakiphi sni,
Yunkhan nahanhci wichoiey lena nipi weksuye yelo.

But, sometimes I remember the suffering of the People and I am sad,
Then I remember these Words yet live.

Lehanl chanku wichoni kin otehike, eyas thathanka sece thate
abliheunkic’iyapi kta hecha,
Chante t’inza k’un he bluha kta wachin.

These days, the road of life is difficult,
Yet I tell myself we must brace ourselves against the wind
as the buffalo.
I want to have that strong heart.

Wetu channa wakinyan oyate aglipi nakun
Hehanl wakinyan hothunin kakhiothan omani blamnin kte yelo.

Whenever it is spring the Powers above will return,
and I shall walk in the direction of the rolling thunder.

Tohanl kichiksuyapi channa phezi tho woichaga unkiyechechapi kte.

When we remember each other, we will be as the growing grass.

Watuwan na omahomni othehi wanblake yelo.

I look and I see hardship all around me.

Hechetu hca eyas unkiksuyapi, na nahanhci othanin inaunzinp
hoyeunyapi lo.

But WE remember, and still we will stand
sending forth our voices.

Wanna unkichiksuyapi iyehantu kta hecha.

Now is the time for us all to remember.



Dorian Baldes

Dorian Baldes is a Lakota poet, artist, and musician from Fort Washakie, Wyoming. He’s currently a student at Oglala Lakota College and lives on the Pine Ridge Reservation in South Dakota.

EVE BARNETT

NRCC VISITING RESEARCHER

I spent the summer working with Superintendent Wade Vagias as a Management Analyst for the National Park Service for the three units in southern Idaho: Craters of the Moon National Monument & Preserve, Hagerman Fossil Beds National Monument, and Minidoka National Historic Site. I worked on a wide range of special projects including analyzing visitor preference data, transferring funds between third-party organizations, and commemorating survivors of the WWII-era Japanese American incarceration camps. One of my favorite projects involved helping facilitate listening sessions at Craters of the Moon, with the field staff and long-time subject matter experts, to understand the issues and opportunities facing the park as it looks toward its second century of stewardship. In my free time, I also discovered a love of morel hunting and mapping wild caves. I am currently beginning the second and final year of my graduate degree program at the Yale School of Forestry and Environmental Studies. I am studying environmental policy with a focus on the nexus between public land and climate change work. Prior to graduate school, I earned my undergraduate degree in political science from Princeton University and I worked as a field ranger for the National Park Service at Sequoia-Kings Canyon National Park and Mount Rainier National Park. After I graduate from Yale, I hope to devote my career to advancing the work of effective land stewardship.



Eve Barnett

JESS GREENBURG

NRCC INTERN

I’m currently a student at Ursinus College in Pennsylvania majoring in Environmental Studies. I’m involved in research on the effectiveness of environmental education, as well as the existential demands of learning about environmental problems like climate change. In my free time, I’m probably in the water, hiking, or cooking.

Working for NRCC is a dream come true! As an intern, I helped run a workshop for GYE educators in March, participated in the 2019 Jackson Hole Wildlife Symposium, and I’m currently assisting with writing and website maintenance. I get to blend together my interests in protecting our ecosystems, working with the people who depend on them to ensure their futures, and educating people about the incredible natural world around us. Having the opportunity to meet and learn from people who are living and working in Greater Yellowstone is so incredible—especially since it’s all happening in gorgeous Jackson, WY! I’m stoked to continue this work for a long time to come.



Jess Greenburg



Carlos Lopez Gonzalez

CARLOS LOPEZ GONZALEZ

This year has been an exciting one! We're currently doing a follow up on the pronghorns released last year in Chihuahua, Mexico estimating survival, dispersal and settlement. The Mexican wolf project has produced two litters maintaining a small but stable population of 30 individuals.

The most exciting news this year is the beginning of the jaguar research just south of the tourist town of Playa del Carmen, in the state of Quintana Roo; this is the second phase of the project to assess the effects of resource extraction and highways on the species. We have been monitoring the species using camera trapping and genetic non-invasive surveys, but this year we will place radio-transmitters on a few individuals to understand movements and needs for jaguars and other neotropical species.



Allyson Mathis

ALLYSON MATHIS

I work with the National Park Service's Chihuahuan Desert and Southern Plains Inventory and Monitoring (I&M) networks to provide support in natural resource communications. The I&M Division provides park managers and the public with information that measures the conditions of NPS natural resources and interprets the status and trends of monitoring data to develop a stronger scientific basis for stewardship of natural resources.

I partner with NPS biologists, ecologists and physical scientists to develop publications, ranging from formal peer-reviewed natural resource reports to newsletters, briefs, and species checklists. During the last year, I assisted in the preparation of a vegetation map report for White Sands National Monument, a springs monitoring protocol for the Chihuahuan and Sonoran Desert Networks, and several monitoring reports, in addition to developing newsletters and illustrated bird checklists.

For an example, visit <https://irma.nps.gov/DataStore/DownloadFile/621483> to see the incredible bird diversity of Amistad National Recreation Area, with 291 species.

The NRCC-NPS collaboration is a unique partnership that helps the public understand the importance of conservation, while adding to the body of knowledge about the status and trends of critical natural resources in national parks.



Tami Hubbard

TAMI HUBBARD

In partnership with several National Park Service Inventory & Monitoring (I&M) networks, my work focuses on communicating park science to broad audiences. The I&M networks conduct long-term monitoring of natural resources in order to better inform management in national parks throughout the country. As a science communicator I develop, write, and edit web content, resource briefs, newsletters, and resource status and trends reports.

This year, I've been developing web articles that summarize the status and trends of 'vital signs' in national parks. Vital signs are elements and processes in ecosystems that indicate the overall health or condition of natural resources. A recent example summarized long-term water quality and flow data that Greater Yellowstone Network scientists have collected in the Yellowstone, Lamar, and Madison rivers in Yellowstone National Park. Peak flows in these rivers are occurring earlier each decade. Increasing air temperatures that have resulted in earlier snowmelts may be responsible for this pattern, particularly in the Yellowstone and Lamar rivers because they are snowmelt-driven systems. You can read more about water in these rivers in the web article that will be updated as new data are collected and analyzed: <https://www.nps.gov/articles/river-monitoring-yell.htm>.



Corinna Riginos

CORINNA RIGINOS

This year I wrapped up a three-year study on speed limits and wildlife-vehicle collisions, funded by and in collaboration with the Wyoming Department of Transportation. The number one question I get is "why not just reduce the speed limit?" This question is logical. If people drive more slowly, they have a better chance of avoiding hitting big animals like deer, elk, and moose on roads. The question is, does reducing the speed limit translate to drivers going slower? Enough to reduce collisions? Surprisingly, there is almost no data available to make a case either way.

We studied driver speeds, deer behavior in the presence of vehicles, and number of wildlife-vehicle collisions over two years in six locations in SW Wyoming. We experimentally reduced speed limits from 70 mph to 55 mph in these locations, coupled with control locations where speed limits remained 70 mph. We found that drivers did slow down, but only to about 65 mph. There was no evidence that this small reduction in speed made roads safer for deer to cross. These findings are disappointing to some, but they make an important contribution to decisions around roads and wildlife. Wildlife crossings (dedicated under- and over-passes) are the best way to keep animals and people safe!

Pictured above left to right: Jaron Kolek, Liz Fairbank, and Corinna Riginos.



Trevor Bloom

TREVOR BLOOM

Bringing the worlds of conservation science and outdoor recreation together, *Climb-It Change* tells the story of my partner, Matt Kneipp and myself, as we traversed and rock climbed the entire Rocky Mountain chain, investigating the impact of climate change and increased wildfires on high elevation environments. We finished the film in August 2018. Since then, we've been honored to be selected for six international film-festivals! I attended and spoke on a filmmaker panel at the International Wildlife Film Festival in Missoula, MT and the Elements Film Festival at the Telus World of Science in Vancouver.

In October 2019, I was invited to be a guest speaker at Ursinus College in Pennsylvania. I gave a lecture to the student body on my work on phenology (seasonal timing of ecological events) in the Tetons, showing the film, and visiting various classes to speak on my experience with NRCC.



Taza Schaming

TAZA SCHAMING

Clark's nutcrackers are obligate mutualists of whitebark pine, and facultative mutualists of multiple conifers, playing an important role in forest regeneration and seed dispersal for at least ten conifer species. These birds are of considerable conservation concern to managers because of loss of habitat and seed resources throughout major portions of their range. Since 2009, I've studied Clark's nutcracker behavior and demography. In 2014, I began the first study of satellite-tagged Clark's nutcrackers—the first time Clark's nutcracker behavior has been studied at an ecologically-relevant spatial scale.

I'm currently analyzing data and writing a publication comparing behavior of seven satellite-tagged individuals in the Greater Yellowstone Ecosystem, Wyoming and seven in the North Cascades, Washington, two regions where whitebark pine, an important Clark's nutcracker food resource, is declining. I will return to the field in 2020 to satellite-tag additional nutcrackers. These results improve managers' ability to identify Clark's nutcracker habitat use and preference, connectivity between distant habitats, and high-priority locations for strategic local and rangewide restoration and conservation actions at an appropriate spatial scale for both species.



Erin Muths

ERIN MUTHS & BLAKE HOSSACK

Our projects with NRCC focus on amphibians in both the desert southwest, the northern and southern Rocky Mountains, and the Northern Plains. We're concluding one phase of our work at Blackrock Ranger Station at the foot of Togwotee Pass near Moran, Wyoming. This project focused on different aspects of amphibian response and community in wetlands built in response to mitigation requirements when the new road was built over Togwotee Pass. The main question was how well these created wetlands replicate the functions of natural wetlands and how amphibians use and colonize these wetlands. In the most recent publication from this project, we found that occupancy of barred tiger salamander and boreal chorus frog larvae was similar across wetland types but boreal toads occurred more often in created wetlands than natural wetlands. Boreal toads are a species of concern in Wyoming and our study suggests that shallow created wetlands with little aquatic vegetation may be attractive breeding areas for toads, but a bad choice for the animals if the pond dries entirely.

Our work at Blackrock is entering a new phase as part of the USGS' Amphibian Research and Monitoring Initiative's effort to assess relationships between disease and demography across amphibian populations in the U.S. This project will capitalize on our long-term demographic work on boreal toads. Such work can help to identify declines in ostensibly common species and provide information vital to identifying declines.

A second major project is focused on evaluating the extent of the geographic range of the Arizona Toad in the southwestern United States. We're using a two-pronged approach. First, we are investigating the genomics of Arizona toads from populations across its range using samples from museum specimens as well as recently collected buccal (mouth) swabs. Second, we are conducting visual encounter surveys and surveys using environmental DNA (eDNA) to confirm known locations and determine if Arizona Toads are present at suspected, but unconfirmed sites. eDNA is a useful metric because the animal does not have to be observed for us to find out that it is present at the site. We're fortunate to have knowledgeable collaborators and significant cooperation from local biologists, state and federal agencies, and a dedicated field team.



Debra Patla

DEBRA PATLA & ROSS HINDERER

This summer, new Project Partner Ross Hinderer and Research Associate Debra Patla led field crews in collaboration with the National Park Service's Greater Yellowstone Inventory & Monitoring Network (GRYN, Bozeman, MT). We completed the 14th year of formal amphibian monitoring in Yellowstone and Grand Teton National Parks. As in previous years, we surveyed 31 hydrologic "catchments" (small watersheds) to document sites used for reproduction by the Parks' four species of widespread native amphibians (Columbia Spotted Frog, Boreal Chorus Frog, Western Toad, and Western Tiger Salamander). The long-term dataset is used to analyze how climate patterns, beaver activity, and habitat changes affect amphibian occupancy. Our effort, unusual in terms of geographic scale and consecutive years of repetition, helps inform on-going research into amphibian declines across the US.

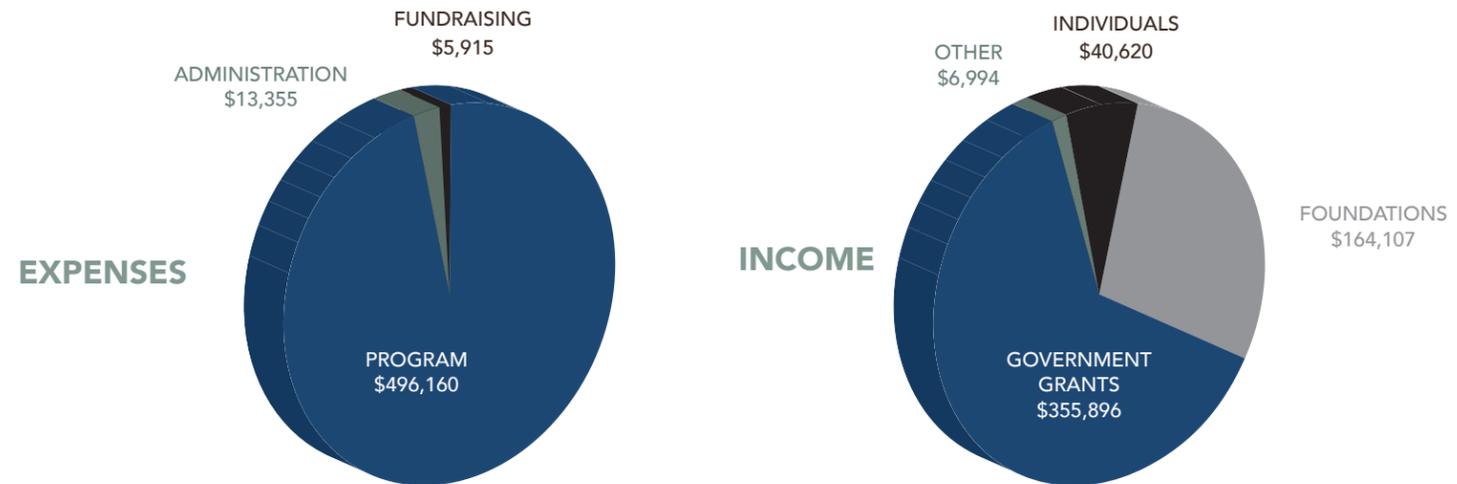
Western Toads are the most elusive to monitor, due to their spotty breeding occurrence in the GYE. This year, thanks to funding from the Meg and Bert Raynes Wildlife Fund, we were able to survey most of the previously identified toad breeding sites in Grand Teton NP. We found toad populations persisting in most areas, but high reservoir levels of Jackson Lake inhibited reproduction at some formerly productive sites.

Pictured above left to right:
 Chuck Peterson, *Idaho State Univ. & NRCC Research Associate*
 Jana Cram, *NPS*
 Elizabeth Rieger, *MSU Intern*
 Megan Doughty, *NPS Geoscientist*
 Kyle Marvinney, *NPS*
 Mindy Dottellis, *MSU Intern*
 Ross Hinderer, *NRCC Project Partner*

2018 Financial Report

NRCC is a 501(c)3 non-profit organization headquartered in Jackson, Wyoming. Our revenue comes from a wide variety of sources including foundations, government agencies, and individuals.

In 2018, 96% of all expenditures directly supported conservation projects.



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- | | | | |
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