



**COPPER RIVER**  
**WATERSHED PROJECT**

COPPER RIVER

*Runner*

SPRING 2018



Photo ©Patrick Endres



Photo CR/PWS Marketing Assoc.

## FIRST COPPER RIVER SALMON HARVESTERS' ROUNDTABLE

*Held at Alaska Board of Fish Meeting, December, 2017*

BY KRISTIN CARPENTER, EXECUTIVE DIRECTOR

“No shots were fired”—that’s how I described the first Copper River Salmon Harvesters’ Roundtable meeting, held during the Alaska Board of Fish’s five-day regulatory meeting, to folks who wanted to know how it went. That’s not the usual benchmark for meeting success, but according to a book called *Crucial Conversations*, this gathering met all the criteria for a tense situation: stakes are high, opinions vary, and emotions run strong.

The resource at the center of this gathering is Chinook salmon: for the past decade, Chinook (king) salmon runs across the State of Alaska have been below average (Alaska Department of Fish & Game, ADF&G). Contention among user groups over who gets to harvest Chinook salmon and other salmon during periods of decline consumes a lot of energy among the Copper River’s salmon harvest user groups. Borrowing heavily from the approach used by the Island Institute of Maine and its work with the lobster industry, we proposed to host a forum that provides a venue for fishermen to share their observations of on-the-water conditions and changes over time in a non-regulatory setting. The Island Institute makes a point of creating a setting for fishermen to talk with each other that is not dominated by fisheries management or scientists.

Individually, tens of thousands of fishermen make up the collection of Copper River “stakeholders.” The term is defined as “anyone significantly affecting or affected by someone else’s decision-making authority” (Chevalier, 2001). Users fall into four groups of fishermen for which the State of Alaska issues salmon fishing permits in the Copper River watershed: subsistence fishermen, personal use fishermen, sport fish anglers, and commercial fishing permit holders.

Altogether, 19 people representing salmon harvest user groups, a mayor, a Board of Fish Commissioner, Native Village of Eyak tribal council fish biologists, and ADF&G fish biologists spent an evening together, and all agreed that the dialogue was worthwhile and should continue. “This is one of the most productive meetings I’ve been to” commented Mark Somerville, the ADF&G Sportfish Biologist for the Copper Basin. In planning for this meeting last fall, someone suggested we take two to three minutes for one person from each user group to describe that fishery. What was budgeted for 15 minutes on the agenda lasted an hour and a half! But that speaks to the value of the exchange.

We plan to make the Roundtable an annual gathering at which dipnetters, sports fishing anglers, fish wheel operators, and commercial fishermen can meet in a non-regulatory setting to ask the questions that matter to them about the trends that affect all salmon user groups. We’ll include researchers or managers to make presentations in response to those questions, and work to build relations among the user groups.



## LETTER FROM CRWP

# FOUNDING DIRECTOR RIKI OTT

Every watershed has its beginning story when Earth's crust crumpled into vales and ridges, rain fell on the land and spring water found its way to the surface, and gravity guided the surface water back, eventually, to the sea.

So, too, does every watershed project have its beginning story when someone cares a "whole awful lot," in the words of the Lorax, and an idea comes to that person and is able to flourish, because the communities in the lucky watershed also care a whole awful lot.

The Copper River lies in a lucky watershed. In summer 1994, I was visiting my parents in Wauwatosa, Wisconsin, when Greg Septon, a friend of my father's, dropped by. Dad suggested we all go out for lunch. As Greg and I set out together, he asked if I could help him with a project. Greg was working with the Artists for Nature Foundation based in the Netherlands, and they wanted to do their first North American project – in the Arctic National Wildlife Refuge. Hadn't I been to the Refuge? Could I help by organizing ground logistics to support the visiting artists?

My heart leaped. I probed: What were the qualifications for project selection? Greg explained: it had to be a little known region of international importance to migrating wildlife that was threatened by industrial development, and where the local people cared about the area and made a living in harmony with the region's natural world. The artists lent their support by visiting the region, producing paintings, drawings, prints and sculptures, and a coffee-table book. The art is a medium to draw attention to the region and the need to support the local communities that depend on sustaining the natural resources.



CRWP staff Kristin Carpenter, Christina Cinelli, Becky Clausen, and founder Riki Ott, summer, 2002, with sign painted by Jen-Ann Kirchmeier.

I asked: What about the Copper River delta instead? Greg said: "Where's the Copper River Delta?" I replied: That's qualification number one: little known. "Tell me more," said Greg.

Sometime later, Greg said, "Where are we?" We had driven in a straight line for nearly 45 minutes! When we finally arrived at the local restaurant near my parent's home, Dad spotted us and called across the room, "Where in the hell have you kids been?"

The rest is history. Artists visited the delta in 1995 and 1997 and told the delta's story through their work. As community interest grew, so did the hope that our vision for an intact watershed would take root. People stepped up to take turns guiding the new watershed project, C.S. Mott Foundation stepped in with 4 years of funding, and a new caring, competent leader was emerging. It was a perfect time for me to step out. Thank you all, Copper River watershed stewards, young and old, for taking care of something I still care very much about. Thank you, Kristin, for your loving, guiding hand and heart. *Happy 20th birthday, Copper River Watershed Project.*

*Riki Ott*

### CRWP BOARD OF DIRECTORS

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Shae Bowman, *Operations Manager*



## 10 YEARS

of STEWARDSHIP

estd 2009

The Copper River Stewardship Program (CRSP) is the foundation of our watershed education programming. Ten years ago we first joined with partners in the Copper Basin to create a watershed-wide program that connects up and downriver students through field-based adventure. Our goal was to engage youth in active explorations of their backyard to expand their awareness of the interconnectedness of all things, and to prepare them as the future leaders and caretakers of the Copper River watershed and beyond. Ten years later, this is what they have to say about those experiences.



“CRSP was an experience that put me right in that sweet spot where learning happens: on the edge of my comfort zone, yet still within safety; in unfamiliar surroundings, yet with a framework to get to know them; and where understanding comes from an appreciation of complexity. Learning how to be a steward of the land and water couldn’t be a more important endeavor for young people today, and experiencing these changing landscapes and listening to the people who care for and are nourished by these lands and waters is how to foster that stewardship.” **DANI HESS 2009**

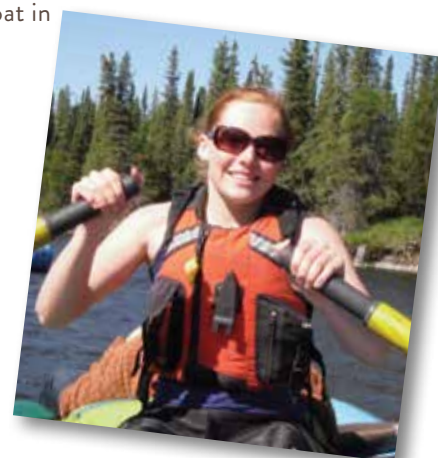


“CRSP was definitely a formative experience that I am grateful to have had at that time in my life. It was really important that it happened at the beginning of my teenage years so that through high school and college I could continue to explore the interests that CRSP piqued in me. Some things that have continued to form since that trip: a deep care for the environment (I’ve actually adopted a zero waste life recently!), an interest in fisheries management, a care for outdoor education (president of my university’s outdoor club!), and memories of joyful and hilarious times on the river with friends.” **SHANNON LINDOW 2009**



“The Copper River Stewardship Program (CRSP) was the first time I connected my passion for outdoor adventures with science, which helped me select a major that combined those two passions. I will be graduating this spring with a bachelor’s in Geography and plan on applying to the NOAA Corps to become an officer on a research vessel. The program also developed a deep interest in Alaska fisheries, which helped me seek a job on a drift boat in Bristol Bay and an exchange program to Norway to understand salmon aquaculture.” **TREVOR GRAMS 2011**

“[The CRSP] really helped me understand the scope of the watershed as a natural resource. I think people downriver often get stuck thinking that the fish are managed for the commercial fishery, and often think only about their own profit and community. It’s important to understand that fish support many communities in multiple ways. They feed families and traditions further upriver than many of us in the Program had ever gone. The Stewardship Program is a powerful lesson in sharing resources, and understanding the watershed and its many connections. It also helped me understand how many organizations and people were actually connected to the watershed.” **ANGIE KELLY 2010**







## RICH WATERSHEDS, RICH COMMUNITIES

### *A Universal Challenge*

BY KRISTIN CARPENTER, EXECUTIVE DIRECTOR

AT THE COPPER RIVER WATERSHED PROJECT, we talk often about the value of the Copper River watershed's salmon fisheries. Both in terms of employment and in terms of revenue generated by the commercial harvest of salmon, the figures are impressive:

- Statewide, seafood harvesting and processing is the State's fourth largest employment sector (Alaska Dept. of Labor, 2016);
- Subsistence and sport fishermen on the upper Copper River harvest over 200,000 salmon each year, with contributions to the Copper Basin economy estimated between \$3 - 5 million (Ecotrust, 2009);
- Copper River salmon generate between \$20 - 38 million in seafood sales of sockeye, coho and Chinook salmon annually from the commercial salmon harvest (AK Dept. of Fish & Game).

That makes salmon a quantifiable, market resource that our intact watershed provides. And like trees and other plants, ground water, soil, and wild game such as caribou, salmon are a renewable resource – they replenish their population every year.

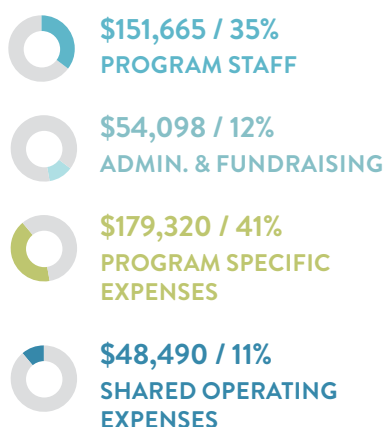
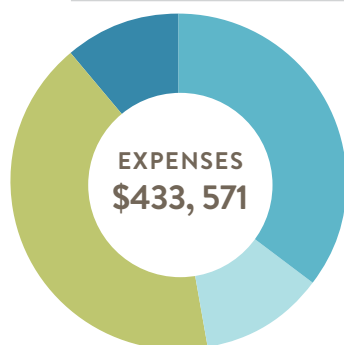
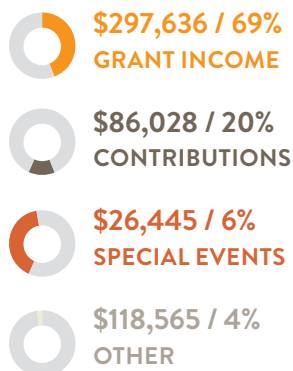
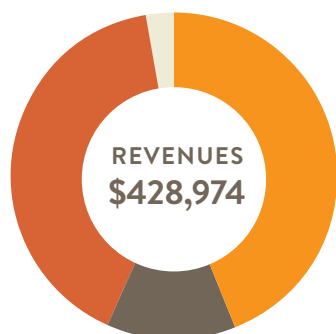
Salmon can be considered an ecosystem service, defined as “benefits people obtain from ecosystems” (USDA Forest Service, Valuing Ecosystem Services). The Millennium Ecosystem Assessment, a four-year United Nations assessment of the condition and trends of the world's ecosystems, categorizes “ecosystem services” as:

- Provisioning services, or the provision of food, fresh water, fuel, fiber, and other goods;
- Regulating services such as climate, water, and disease regulation as well as pollination;
- Supporting services such as soil formation and nutrient cycling; and
- Cultural services such as educational, aesthetic, and cultural heritage values as well as recreation and tourism.

In its current, intact state, the Copper River watershed ticks off everything on that list. Beyond salmon and their nutrient cycling from marine waters to fresh water streams, the benefits include providing fresh water to 5,000 watershed residents and 40,000 visitors annually, flood control, agricultural lands with excellent soil, and backcountry hunting and recreation lands – resource rich watersheds can make rich communities!



# 2017 ANNUAL REPORT



Note: CRWP funded accrued vacation liabilities which resulted in negative net income for 2017.

## ASSETS

Current Assets	
Checking/Savings	39,157.70
Accounts Receivable	56,687.67
Other Current Assets	13,117.28
<b>Total Current Assets</b>	<b>108,962.65</b>
Fixed Assets	7,378.32
Investment Reserve	52,837.62

**TOTAL ASSETS** **\$ 169,178.59**

## LIABILITIES & EQUITY

Current Liabilities	
Accounts Payable	-753.68
Credit Card	3,688.91
Other Current Liabilities	
Vacation Accrual	5,831.15
Deferred Revenue	12,406.60
Payroll Liabilities	594.73
Sales Tax Payable	90.52
<b>Total Liabilities</b>	<b>21,858.23</b>

Equity	
Retained Earnings	119,678.15
TR Net Assets Contributions	32,239.08
Net Income	-4,596.87
<b>Total Equity</b>	<b>147,320.36</b>

**TOTAL LIABILITIES & EQUITY** **\$ 169,178.59**

## 2017 FUNDERS

Alaska Conservation Foundation

Alaska Department of Environmental Conservation

Alaska Department of Transportation & Public Facilities *(in kind)*

Antioch International, Inc. *(in kind)*

Alyeska Pipeline Service Company, Inc.

Bureau of Land Management, partnership agreement

Copper Valley Electric Association

Larry Lewis, Engineer *(in kind)*

National Fish & Wildlife Foundation

North Pacific Research Board

U.S.D.A. Forest Service,  
SRS Title II projects and partnership agreements

U.S. Fish & Wildlife Service

Wrangell-St. Elias National Park & Preserve

We'd like to recognize to the following business who generously supported CRWP events and educational programs with significant gifts in 2017. Please support these businesses that support sustainable economic development in the Copper River region.

### WATERSHED STEWARDS, \$500+



MIDNIGHT SUN ENVIRONMENTAL, INC.  
AND FACILITY CONTRACTORS



WILSON CONSTRUCTION

### TRIBUTARIES, \$250 - 499



KLAM/KCDV



RIVERSIDE INN &  
AIRBOAT TOURS



# HOW DO WE SUPPORT A HEALTHY WATERSHED ECONOMY?



**\$6,049,000 IN GRANT FUNDS AWARDED**  
for watershed-scale action!



**MAINTAIN HEALTHY SALMON HABITAT,**  
the backbone of watershed economies

**CRWP**  
**20 YEARS**  
OF IMPACT  
on the **GROUND**



## ENHANCE VISITORS' EXPERIENCES

- Restore or build **5 recreational trails**.
- Construction of **salmon viewing platform** on the Gulkana River.
- Construct **5 tent platforms** at Shelter Cove in Cordova.
- **Install 21 watershed-themed interpretive signs** throughout the region.

- **Surveyed 82 culverts** and conducted **214 habitat surveys** to prioritize fish passage improvement projects.
- **Restored access to 11.43 miles** of upstream habitat through **8 culvert replacements**.
- **Collected 9,500 willow shoots** for re-planting stream banks
- **Added 72.1 miles and 167.76 acres** of salmon habitat to State of Alaska's Anadromous Waters Catalog, statewide fish habitat inventory record.
- **Surveyed 810.1 acres for invasive plants** and **treated 263.31 acres**, including 3,728 lbs pulled by volunteers at the annual Copper Basin Weed Smackdown.

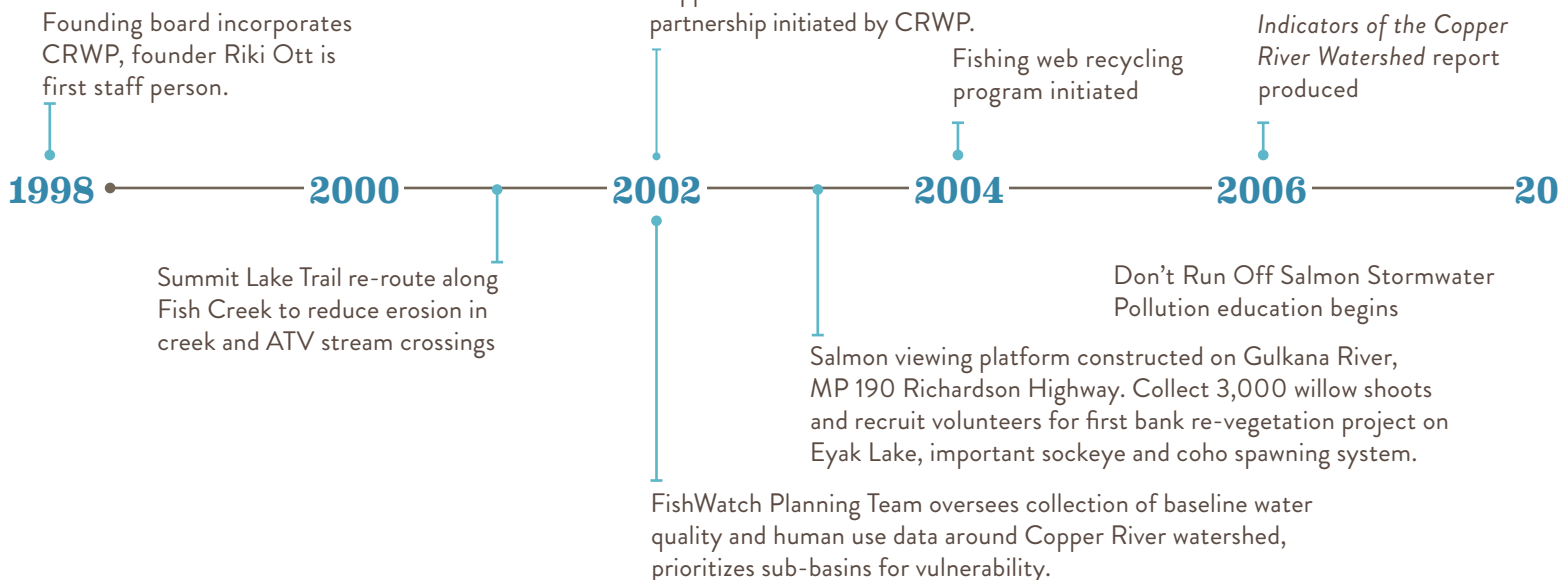
Kristin Carpenter and Riki Ott in Chitina, Alaska, ca. 1999. →



Steven Swartzbart on nearly completed Gulkana River salmon viewing platform, 2003.



## CRWP TIMELINE



## HOW MANY PEOPLE HAVE WE ENGAGED in hands-on restoration activities?



ENGAGED VOLUNTEERS

**806** (so far)

## HOW ARE WE PREPARING THE FUTURE LEADERS of the watershed?

Using 30 pairs of waders, we literally immerse them in surrounding wetlands, creeks and ponds. Currently we are reaching approximately 310 students in the Copper Basin and Cordova annually through 40 programs.



**30** + **310** + **40**  
WADERS STUDENTS PROGRAMS

## HOW HAVE WE LEVERAGED THE RESOURCES & EXPERTISE of the region to benefit the overall health of the watershed?

### By building these watershed scale and regional partnerships:

- Salmon Jam Festival
- FishWatch water quality monitoring
- Cooperative Weed Management Area, Copper Basin and Cordova
- Salmon Blitz stream surveys
- TAPS citizen oversight group
- Fish Passage prioritization & restoration
- Stormwater BMPs and education
- Watershed Education
- Recycling
- CR Salmon Harvesters Roundtable
- Copper Basin tourism planning
- Odiak watershed restoration
- Eyak Lake Restoration
- Copper Basin interpretive sign production



Becky Clausen training FishWatch volunteers, 2002.



Stewardship students helping with Dusky Canada goose nest island maintenance.

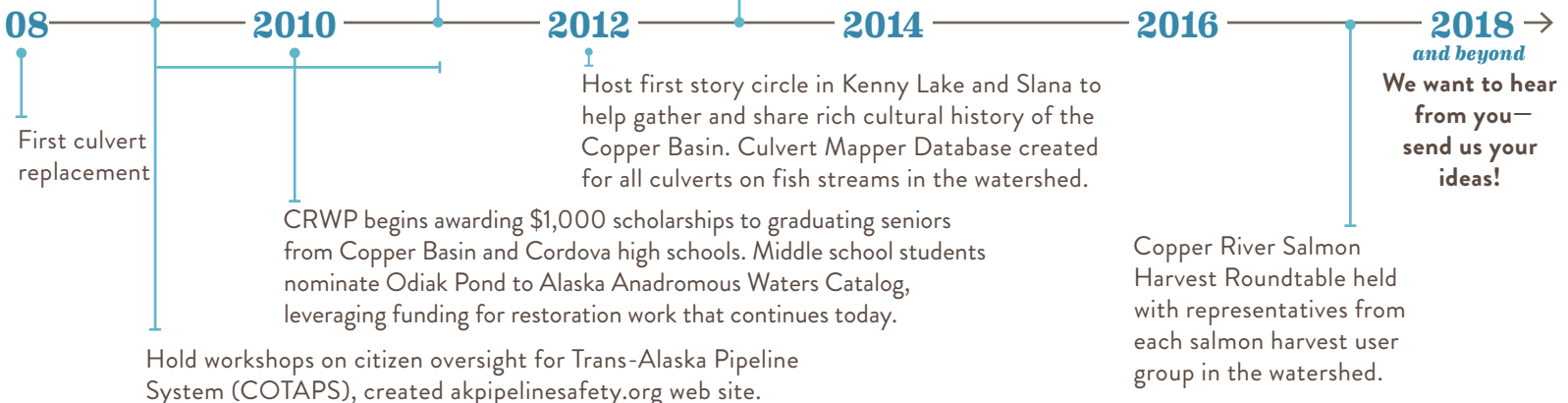


Becky Clausen, Andy Morse and volunteers working on Eyak Lake shoreline re-vegetation, 2005.

Copper River Stewardship program, initiated with Copper Basin partners, hosts 5 students from Basin and 5 students from Cordova on watershed exploration 10 day trip.

Receive Landscape Stewardship Award from Public Lands Foundation. Install 8 watershed-theme interpretive signs throughout Copper Basin. Cooperative Weed Management Agreements initiated for Cordova and Copper Basin

Salmon Blitz stream surveys throughout the watershed







Board Retreat,  
Cordova 1999



The organization gave birth after the Exxon Valdez oil spill. I remember the passion of founder, Riki Ott, to form an organization that would help protect the Copper River watershed. Her energy moved many people to assemble and make the dream come true. I ... remember the retreats and workshops that helped form the organization. The Foraker Group was a big influence in strategic planning. We would sit in a cheery room and Laurie Wolfe would lead us by brainstorming, hanging sheets of paper on the walls with our ideas. I think we even played a game or two. It was an exciting time to be a part of a commitment to keep the watershed healthy.

~~~~~  
Janelle Eklund, Kenny Lake, recreation planner (ret.) and community volunteer, Board member, 1998 - 2004

FishWatch Planning  
Team, 2002



In the mid 90s, everybody in the watershed seemed to have an iron in the fire so to speak and a history to protect. I thought a data driven organization that did not have an iron in the fire or a history of use was needed. Data or studies outside of agencies was not the norm. Alternate resource use and management was rarely spoken to on a community basis, it was clear to me that future planning needed on the ground information to effectively navigate oncoming community issues like school closures, outmigration and the like. My favorite memory was being called an unsuspecting U.N. dupe ... shades of the 70s when I was just a commie dupe.

~~~~~  
Wilson Justin, Chistochina, Ahtna Native, past hunting guide and tribal council administrator, founding Board Member, 1998 - 2000

Board Retreat,  
Glennallen, 2013



Being a Board member for Copper River Watershed Project was both a challenge and an honor. Board membership was challenging given the distances and travel logistics to hold our regular meetings, but well worth the effort and time, knowing that we shared a common goal of preserving and protecting the fishing heritage of people in the Copper River watershed. We learned from the past experiences of others and aimed our collective sight at current and future opportunities for maintaining and improving the health of the fisheries ecosystem. Being a Board member meant stepping up our ownership and responsibility for our watershed. What a challenge and an honor!

~~~~~  
Kari Rogers, Gakona, Wildlife Biologist, Board Member, 2004 - 2007

For me the board experience provided a tangible link to users and residents of the entire watershed. It was of great benefit to better understand how resources are viewed, utilized, and conserved by individuals throughout the watershed. While individual members of the board may not have always agreed on the same approach towards a given issue it provided a meaningful forum to have dialogue and better understand the differences and similarities of living within the Copper River watershed.

~~~~~  
Cory Larson, Gakona, BLM Recreation Planner, Board Member, 2006 - 2011



# RIDGELINES: AROUND THE WATERSHED

## ICE CAVE RESEARCH IN WRANGELL – ST. ELIAS NATIONAL PARK

Professor Andreas Pflitsch of Ruhr University in Germany recently gave a presentation in Copper Center about his visits to several caves in the Copper River watershed and in an abandoned railroad tunnel in Keystone Canyon, close to Valdez. Dr. Pflitsch looks at factors that influence ice build up in caves such as air temperature, humidity and airflow. Glacier caves provide a unique view into the complex interactions of the internal earth with the weather, and he hopes to establish long-term data sets that can provide a baseline as the climate changes. Previous investigations of glacier climatic conditions have focused mainly on a glacier's surface, or on moulins leading to its interior. But many glaciers have far-reaching cave systems inside the ice. Dr. Pflitsch has found that both geothermal activity and airflow between openings at the glacier terminus and higher moulins cause drastic melting inside a glacier – leading to significantly stronger melting from the inside than observations at the surface and models suggest. That melting can cause unexpected glacier collapse and glacial outburst flooding.

## ALASKA BOARD OF FISH ASKS FOR UPDATES TO 60 YEAR OLD LAW: HB 199 AND STAND FOR SALMON INITIATIVE

Salmon habitat regulation updates are moving forward on two tracks: Representative Louise Stutes, Chair of Alaska's House Fisheries Committee, has introduced HB 199 to add some enforceable standards to the State's permitting process, and to create a "major" and a "minor" track for permit applications from construction projects that would change a salmon stream. The Stand for Salmon coalition is also working on getting similar language added to the statewide election ballot for November, 2018. If the legislation is adopted first, the ballot initiative becomes moot. While a bill can be amended in the legislative process to add flexibility, the ballot initiative language – if approved by voters – stands for two years before it can be modified. Both efforts are in response to a letter from the State's Board of Fish to the Legislature asking for updates to the 60 year old law that requires the "proper protection of fish and game" but has no definition for that term. Learn more: [akleg.gov](http://akleg.gov) and [standforsalmon.org](http://standforsalmon.org).

## WISE LAUNCHES OWLS

Copper Valley students will have the chance to work toward careers in the outdoors while earning high school credit from Copper River School District with the new Outdoor and Wilderness Leadership Skills (OWLS) program from Wrangell Institute for Science and Environment (WISE.) A backpacking trip in Wrangell-St. Elias National Park will start off the program, and give students a chance to hone their outdoor skills and get to know their team. The middle part of the summer will be time for OWLS students to follow their passions, including assisting on WISE programs to gain work experience, documenting their own adventures, and job shadowing outdoor professionals. In August, the OWLS will collaborate as a leadership team to plan a 3-4 day expedition of their own choosing. Contact: [Mikaela Dalton](mailto:MikaelaDalton@wise-edu.org), WISE, [mikaela@wise-edu.org](mailto:mikaela@wise-edu.org).

**watershed**  
(wa'ter-shed)

the region or area drained  
by a river or stream:  
all the land that carries  
rain to the same river system

# THANK YOU, MEMBERS

## ANCESTORS' LEGACY, \$1000+

Bill & Marion Alexander  
Alyeska Pipeline Service Company  
American Seafoods Company  
Arthur J. Donald Family Foundation  
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Trident Seafoods  
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Wilson Construction

## WATERSHED STEWARDS, \$500-999

Keri & Vince Bailey  
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Katrina Hoffman & Mike Webber  
Jim & Maria Wessel  
Violet & Joe Whaley  
Bob & Doty Widmann  
John & Kate Williams

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Lee Rolfe & Tony Angell  
Michael Ausman  
Heidi Babic  
Alan & Diann Bailey

Baja Taco  
Dave & Laura Beam  
Teresa & Andy Benson  
Brittany Blain-Roth & Brett Roth  
Paul Boos & Janelle Eklund  
Jim Bovard  
Shae Bowman & Joe Hamm  
Mimi & Tim Briggs  
Brian Brockel  
Bruce & Karen Butters  
Dr. Rob Campbell  
Barbara Cellarius  
John Cholish III  
Yoke-sim Choong  
Bill and Diane Cobb  
Susanna Colloredo-Mansfeld  
Joe and Belen Cook  
Erin Cooper & Sean Meade  
Cordova Drug  
Peyton Coyner  
Arne Erickson  
Micah Ess & Michelle Dockins  
Gregory Evershed  
Michael Ferraro  
First National Bank Alaska  
Mark and Cindy Frohnafel  
Haley Gill  
Shawn Gilman  
Robert Glennon  
Toni Godes  
Kurt Goetzinger  
Kristen Gorman  
Claudia Hartley  
Phil & Audrey Huffman  
Margaret Hunt  
Dave & Annette Janka  
Julie Jensen  
Tim Joyce  
Jim Kassis  
Kendra's Creations  
Adam Kenyon  
Alyssa Kleissler & Curtis Herschleb  
Rodger & Gerri Koehling  
R.J. & Barclay Kopchak  
Ben & Kaitlin Kramer  
Pete Kramer  
Tom McGann & Sue Laird  
Ray Landgraf  
Liz & Bill Larzelere  
LFS Marine Supplies  
Sue Kesti & Dan Logan  
Kevin & Suzanne McCarthy  
Molly McCormick  
Caitlin McKinstry  
Kate McLaughlin  
Jackie & Bryan McMahan  
Julia McMahan  
Kim Menster  
Steve Moffitt  
Elizabeth Moohe  
Michelle Hahn O'Leary & Andrew Smallwood  
Pam Ore  
Beth Poole  
Rich & Laura Pribyl  
Monika Reghetti  
Cathy & Micah Renfeldt  
Julie & Brad Reynolds  
Rob's Woodcraft  
Randy & Darlene Robertson  
Elizabeth & Jim Robinson  
Al Rule & Jane Browning  
Alex & Tamara Russin  
Brian & Vera Rutzer  
Diana & Raymond Schaney  
Clair & Steffan Scribner  
Seaman's Hardware Store  
Judy Shaw  
Dave Siegal  
Matt Sloat  
Dustin Solberg & Ann Harding  
Carla & Mark Somerville  
John Stack & Barbara Solomon  
Thea Thomas  
Sarah Unknown  
Barbara Vaile  
Kirsten Valentine  
Rick Van De Poll  
Danielle Verna  
Whiskey Ridge Trading Co.  
Marissa Wilson  
Yang Wren Art

## KINGFISHERS, \$25-49

Ron Andersen  
Kris Anderson  
Mike Babic  
Jeff Bailey & Helen Howarth  
Karl Becker & Nancy Bird  
Andres Benitez Ospina  
Dan Bilderback & Christine Sager  
Mark & Janet Bloch  
Katy Boehm  
Alys Bowman  
Tyler Bowman  
Stan Bradshaw  
Ezekiel Brown  
Angela & Brian Butler  
Craig Campomizzi  
Danny & Kristin Carpenter  
Brian Charlton  
Erica & Dan Clark  
Alyssa Kleissler  
Pere Davison  
Judy & John Day  
John Egger  
Forget Me Not Fabric  
Signe & Jim Fritsch  
Stephanie Golden  
Chris & Leah Grey  
Tom Haddock  
David & Judy Heller  
Todd Hess  
Sarah Hoepfner  
Teresa & Jim Holley  
Mark Johns  
Kara Johnson  
Kinsey Justa  
Viktoria Kirillova  
Knot Crazy!  
Les & Joan Larson  
Robin Mayo  
David McLaughlin  
Corinne Mcvee  
Terry & Carol Merritt  
Mike Anderson Pottery  
Marleen Moffitt  
Amy O'Neill-Houck  
Linden O'Toole  
Glen Park  
Pet Projects  
Shauna Potocky  
Lynn and Carol Potter  
Frederic Reid  
Sarah Robinson & Chris Arp  
Shags Hair Salon  
Heidi Sheldon  
Dick & Sue Shellhorn  
Melissa Sikes  
Trey Simmons  
Robert & Chrissy Skorkowsky  
Jed Smith  
Dana & Anita Smyke  
Jessica Speed  
Tazlina River Trading Post  
Chistochina Bed and Breakfast  
David and Chris VanCleve  
Mae Vansant  
Linda & Henry Wall  
Gay & David Wellman  
Amanda & James Wiese  
John Page Williams

## SUBSISTENCE LIVING, \$10-24

Andrew Morin  
John Myers  
Paul & Mary Newcome  
Ruby & Cody Oatman  
Sarah & Stephen Phillips  
Bob Ralphs  
Pete Rand  
Robert Scribner  
Lori & Rob Van Sleet  
Dave & Sarah Abbott  
Carla Bloomquist  
Jake Borst  
Barb & Bill Bryson  
Carlos Comparan  
Copper River Record  
Shelly Crowe  
Nick Docken & Lisa Kennedy  
Rachel Ertz  
Melissa & Jason Gabrielson  
Heidi Hatcher  
Jim Jachetta  
Kathleen & Chris Jones  
Jared and Vivian Kennedy  
Marita Kleissler  
Kitty LaBounty  
Tom Lanini  
Mikie McHone  
Pete Mickelson  
Henry and Marcia Milette  
Larey & Lisa Miyatake



# CLIMATE CHANGE AFFECTS ON SALMON STREAMS

*Connectivity is a Key Buffer*

BY CHANTEL CALDWELL  
INVASIVE PLANTS PROGRAM MANAGER

WHEN PEOPLE THINK ABOUT ALASKA, wild landscapes, wild berries, and wild salmon probably come to mind. Many Alaskans rely on and appreciate these natural landscapes for harvest and subsistence living, so the impacts of climate change are a cause of concern. Alaskans from Utqiagvik (north slope) to Akutan (Aleutian islands) have noted changes in the ecosystem due to climate change, including changes in seasonal ice cover, receding glaciers, and alterations to wildlife migration patterns.

The magnitude of climate change will be greater at northern latitudes. Rising temperatures will shorten the duration of winter and dramatically increase stream water temperatures, affecting incubating salmon eggs. When discussing climate change impacts to coastal streams and salmon populations, two primary concerns are raised: water temperature, and scour (flushing large volumes of stream gravel). Models predict higher year-round water temperatures for southcentral Alaska, which will have a direct impact on salmon egg development. Seemingly small changes in winter water temperature will substantially decrease the

amount of time needed for salmon egg incubation. Scientists anticipate a four to eight month decrease in incubation time by 2100. This change could lead to earlier emergence, or later spawn timing, which may affect salmon survival and the availability of salmon to consumers, including fishermen.

Scour is also a concern for salmon bearing streams. Increased winter precipitation will arrive to much of southcentral Alaska in the form of rain, due to average winter temperatures hovering around freezing. Frequent winter rain events will lead to higher stream discharge and more flood events. Floods can scour gravel and salmon eggs, particularly in streams where roads or dikes prevent water from spreading out on the floodplain.

For all the wild Alaska salmon lovers out there, hope is not lost! Studies conducted in coastal Alaska have shown climate change will not affect all streams equally. Streams that have groundwater influence will show less fluctuation as air temperatures rise. Streams that have an undisturbed floodplain, allowing excess water to leave the stream channel, will see less scouring during flood events. Overall, we can limit the impacts of climate change by keeping an intact, diverse ecosystem. Here at the CRWP, we continue to work on maintaining an intact watershed and restoring connectivity in stream ecosystems where needed by removing old culverts and replacing them with fish-friendly culverts, allowing more natural stream flow and flood capacity while providing salmon access to spawning habitat.



Teal Barmore for the Prince William Sound Science Center, and Eccles Creek Culvert replacement construction, photo by Milo Burcham





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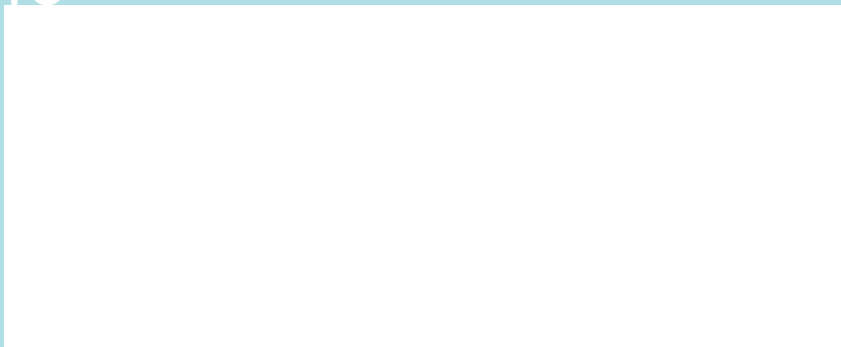
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# Newsletter SPRING 2018



- \* Salmon Harvesters Roundtable
- \* Rich watersheds
- \* 2017 annual report
- \* Climate change & salmon stream connectivity

TO



## CRWP MISSION

*The Copper River Watershed Project promotes a salmon-rich, intact watershed and culturally diverse communities by forming partnerships for watershed-scale planning and projects.*

## NORMA & DOYLE TRAW

CHISTOCHINA, ALASKA

### WHY WE SUPPORT CRWP



In 2000, we joined in the support of the Copper River Watershed Project. We continue to support and believe in the program. CRWP helps to make our younger generation aware of the importance of protecting our streams and lakes that will keep our land healthy and sustainable. The Copper River watershed is a majestic place but everyone must help in keeping it so. We will do our part to promote this program and ask that everyone helps!