Carmel River Steelhead Association

Advocating for Steelhead Since 1974

Fish Tales

Monthly Newsletter

AUGUST 2020

CRSA Membership

PRESIDENT'S MESSAGE

Steve Park

When writing this monthly newsletter, I think back about my grandfather who I watched as he wrote for The Salt Lake Tribune. He wrote a daily column similar to the one Herb Cain wrote at The San Francisco Chronicle. There was always plenty to talk about, but there was that looming deadline. Fortunately in my case, being a monthly writer, I have plenty of time to consider my topic and develop the story and there are plenty of stories to be told.

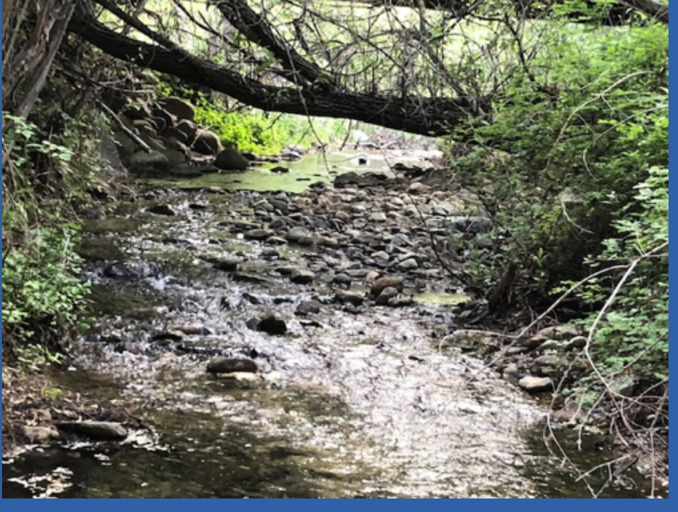
The story today is one that is decades old. It is a Cease and Desist Order (CDO) story which actually had its beginnings somewhere back in the mid twentieth century. So let's say we are talking about seventy years ago. Seventy years ago when the Carmel River (CR) flowed to the sea most of the time. A result of those more consistent flows was a healthy population of sea going trout that we know as steelhead.

Recently, I read an editorial piece which was written last year in the Carmel Pinecone. The piece spoke about the steelhead in the CR and how they were a problem for the CR water users. Those fish were determined to be a threatened species and that was the beginning of serious water use problems for the CR. The writer goes on to say in a round about way that the water is more important to the users than the fish are to nature. The writer at one point actually refers to the species as pests in some parts of the world. The article goes on to conclude that if it's the steelhead that are causing the CDO, then they need to move on. Maybe find another river? The writer concludes that it will be less expensive to get rid of the fish than to build a desalination plant. Get rid of the fish so they won't have to build an expensive desalinization plant. Is that even a conversation?

One cannot treat these misconceptions about nature, in particular steelhead, as though they are expendable. They are not expendable. The water users will not die from the lack of water; they will find away around the problem. Steelhead have always found their way through challenges, it's one of their many amazing qualities. However, they simply cannot overcome a continued loss of water.

The over drafting of the CR is proven. The loss of CR Steelhead populations is proven. The fact that animals like Steelhead have come back from challenges even though science said they shouldn't is proven.

If there is to be a solution for the over drafting of the CR, then it has to be a solution/source of water that is dependable. A source of water that has no contracts attached to it. A source that can accommodate current water needs and those of the future. This dependable, new source of water should be a desalinization plant. The idea that recycled water, water conservation and a consortium of other sources will be a dependable water source going forward is not fail safe. The fail safe solution is a desalinization plant.



This planet is at a cross roads. Things can continue as they are and the planet will continue to die. Humankind can change this planet's death march. Like the steelhead, our planet is capable of overcoming its death. Renewable resources are part of the solution, new technologies are part of the solution and finding water sources that are dependable and not water sources that suck the life out of rivers is doable. Water as we have come to know it is in trouble. We have used up most of it in the Western United States. The rivers are dammed, the valley aquifers sucked dry, the watersheds shredded, and people write articles about it being the 'right of water users' to kill a river and its inhabitants.

As true and dedicated advocates for steelhead, CRSA should take the position of supporting a water source that is dependable and not reliant on non dependable sources. After decades of looking for a solution to the CR water users dilemma, it is time to end the search and bring the desalinization plant on line.

It is unfortunate that water should cost so much. Hopefully, continued advances in efficient water use, water reclamation and other future technologically advances in water supply management will help bring those costs down. Until then, build the desalinization plant for a technologically advanced and dependable water source.

Photos are provide by Steve Park.

Photos Below: **Fish Heros in Masks!**
Saving fish while protecting each other.

Donate

CONSERVATION REPORT

Brian LeNeve

Fish Rescues in a Pandemic

I have mentioned before that CRSA did receive a permit to rescue stranded steehead this year, but we were somewhat hampered by the whole Covid-19 problem. We agonized for a while and came up with a plan to minimize exposure by primarily working only with people who have rescued in the past, dedicating boots and gloves to the regular crew, daily temperature checks, no carpooling, hand sanitizer available, and masks required at all times. After getting used to the new normal, we had a very well-oiled machine where 27 different people (some only observers) volunteered 170-man days for 892 hours and made 28 rescues over all.

With rescuing two creeks on the same day several times, we rescued Cachagua Creek 25 times, Finch Creek 7 times and James Creek twice. We rescued 10,238 fish from the Earth Station Bridge on Cachagua to where Finch and James Creeks come together to form Cachagua Creek. We rescued 356 fish on tiny James Creek and 1,588 fish on Finch Creek for a total of 12,182 fish. We rescued 1,809 fish over one-year-old on Cachagua, 820 fish over one-year-old on Finch and 2 on James for a total of 2,631 fish over one-year-old.

The Monterey Peninsula Water Management District (MPWMD) rescues Cachagua from the confluence of the Carmel River to the Earth Station Bridge and they rescued 4,339 fish with 79 fish over one-year-old, bringing the total fish rescued on the whole Cachagua watershed to 16,521 fish of which 2,710 were over one-year-old. This was the second largest number of fish rescued in my records, only surpassed by last year.

With the lagoon possibly developing into poor quality fish habitat and per our permit, all of the CRSA rescued fish were released at two locations on the Carmel River below the confluence of the Carmel and Cachagua and the MPWMD fish were released in the Carmel either at the confluence or just above the confluence.

I mention the fish over one-year-old (technically called age 1+) because they have already proven they are survivors escaping predators and other fish killing events for over a year, thereby increasing the chance they will survive to reproduce. This was the largest number of fish age 1+ that I have a record of, surpassing the 2,441 rescued in 2012. It also is more about some of Cachagua and a lot of Finch running year-round last year, than it is about individual fish surviving. Next year we will rescue very few age 1+ fish because all of Cachagua, all of James and all but 1/3 mile of Finch Creek are already dry in the middle of August. It does not matter how strong a fish is or how adapted it is, when the creek goes dry, they all die. It is nice to imagine what the creeks would look like with water every year.

In October last year, National Marine Fisheries Service (NMFS) did two fall steelhead population surveys on Finch Creek in areas CRSA did not rescue. One site was on the Harkins property low down on Finch Creek and the other site was on Hastings in the middle of Finch Creek. The number of fish counted, while very much in keeping with the number of fish rescued from other parts of Cachagua and Finch, was outstanding. They counted 1.5 fish per meter on Finch Creek while on the Carmel River during the same time, only 0.25 to 0.45 fish per meter were recorded. Finch Creek had 1.3 to 6 times more fish per meter than the Carmel. My understanding is 1.5 is not outstanding for a river but really outstanding for a small creek, while 0.25 to 0.45 fish is very poor for any river but typical for the Carmel. Not to beat a dead horse, but this shows just how important Cachagua Creek really is and why we need to keep it running.

The reason I bring this up is NMFS installed PIT tags on a number of fish they captured (I do not know how many). MPWMD recaptured two of the tagged fish and CRSA recaptured 16 fish. One of the MPWMD fish was tagged on the Hastings site and it moved all the way down Finch and most of Cachagua. I do not know about the second MPWMD fish. Of the fish CRSA recaptured, one was tagged on Harkins property and it moved upstream to Hastings. One fish was tagged on Hastings and it moved down to Harkins, the other 14 were recaptured within 100 yards of where they were tagged. The more I learn about steelhead the more I am baffled and the more I realize we (especially I) need to know. The one fish that moved upstream about two miles probably is or is becoming a resident trout. The two fish that moved down a little I am not sure about, but the 14 that did not move at all really goes against what I think of as normal steelhead behavior which is starting to move downstream right after they are born to eventually move out to sea. If that is the case, why did 14 of 18 fish not move? If staying in Cachagua for a year is normal behavior then with Cachagua drying so many years, not many will survive to return as adults making our rescues even more important. All of this just increases my desire to learn more.

All in all, I feel this was a very successful rescue season. We saved lot of fish from dying, added to the chance some of them will return as adults, and collected a lot of information that starts to increase our understanding of Cachagua/James/Finch creeks and how fish use the creeks.

I would be remiss if I did not mention the **Golden Net Award**. Last year I instituted an award for the person I felt was the hardest worker, most dedicated and most enjoyable on rescues that year plus the person we would miss the most if he/she did not come. This year the Golden Net Award goes to JJ, **Jim Jeffery III**, who made 24 of the 28 rescues and was always willing to do any job, regardless of how difficult, that we needed him to do. *Jim, thanks from all the crew for a job well done!*

CRSA RESCUES 2020

	Cachagua Creek					Finch Creek					James Creek					Anastasia Creek						
date	YOY	age 1+	total	Morts	% Morts	YOY	age 1+	total	morts	% morts	YOY	age 1+	total	morts	% morts	YOY	age 1 +	total	morts	% morts	number of volunteers	volunteer hours
6/14	392	15	407	18	4.4%					#DIV/0!					#DIV/0!					#DIV/0!	5	30.5
6/16	187	28	215	3	1.4%					#DIV/0!					#DIV/0!					#DIV/0!	6	42
6/18	250	8	258	10	3.9%					#DIV/0!					#DIV/0!					#DIV/0!	5	23
6/20	407	36	443	23	5.2%					#DIV/0!					#DIV/0!					#DIV/0!	9	48
6/21	281	26	307	15	4.9%					#DIV/0!	139	2	141	2	1.4%					#DIV/0!	8	35
6/23	242	43	285	5	1.8%					#DIV/0!					#DIV/0!					#DIV/0!	5	26.5
6/27	229	27	256	5	2.0%					#DIV/0!					#DIV/0!					#DIV/0!	5	24.5
6/28	264	106	370	3	0.8%					#DIV/0!					#DIV/0!					#DIV/0!	9	46
6/30			0			182	136	318	6	1.9%					#DIV/0!					#DIV/0!	6	25.5
7/1	496	140	636	14	2.2%					#DIV/0!					#DIV/0!					#DIV/0!	9	47
7/2	148	47	195	2	1.0%	91	3	94	0	0.0%					#DIV/0!					#DIV/0!	4	20
7/4	386	32	418	11	2.6%					#DIV/0!					#DIV/0!					#DIV/0!	6	26
7/5	433	73	506	12	2.4%					#DIV/0!					#DIV/0!					#DIV/0!	8	43
7/7	218	172	390	4	1.0%					#DIV/0!					#DIV/0!					#DIV/0!	5	27
7/9	625	103	728	9	1.2%					#DIV/0!					#DIV/0!					#DIV/0!	7	38
7/11						323	260	583	9	1.5%					#DIV/0!					#DIV/0!	9	57
7/12	409	41	450	8	1.8%					#DIV/0!					#DIV/0!					#DIV/0!	7	37
7/15	252	67	319	8	2.5%					#DIV/0!					#DIV/0!					#DIV/0!	3	13
7/16	564	163	727	9	1.2%	18	2	20	0	0.0%					#DIV/0!					#DIV/0!	3	16
7/18	224	106	330	6	1.8%			0		#DIV/0!					#DIV/0!					#DIV/0!	6	33
7/19	421	220	641	13	2.0%	38	28	66	0	0.0%					#DIV/0!					#DIV/0!	6	33
7/21	253	58	311	5	1.6%			0		#DIV/0!					#DIV/0!						8	41
7/23	640	101	741	13	1.8%			0		#DIV/0!					#DIV/0!						6	32
7/25	362	66	428	4	0.9%			0		#DIV/0!					#DIV/0!						5	27
7/26	45	5	50	0	0.0%	69	139	208	0	0.0%	215		215	1	0.5%						9	47
7/28	401	105	506	12	2.4%			0		#DIV/0!					#DIV/0!						6	32
7/30			0		#DIV/0!	27	252	279	4	1.4%					#DIV/0!						5	22
8/1	300	21	321	9	2.8%			0		#DIV/0!					#DIV/0!							
			0		#DIV/0!			0		#DIV/0!					#DIV/0!							
					#DIV/0!			0		#DIV/0!					#DIV/0!							
					#DIV/0!			0		#DIV/0!					#DIV/0!					#DIV/0!		
total	8429	1809	10238	221	2.2%	748	820	1568	19	1.2%	354	2	356	3	0.8%						170	892

Main Stem Carmel	
7/9	PIT tag 900 226000324116
6/30	PIT tag 900 226001570656
7/11	PIT tag 900 228000689221
7/11	PIT tag 900 226000324167
7/11	PIT tag 900 226000327192
7/11	PIT tag 900 226000324176
7/18	900 226001570507
7/18	900 226004570668
7/18	900 226001570719
7/18	900 228000689374
7/27	900 228000689285 8" fish
7/27	900 226001570738
7/27	900 228000689386
7/27	900 226001570691
7/27	900 226001570723

YEAR TOTALS

	YOY	AGE 1+	TOTALS	MORTS	% MORTS	Number of rescues
Cachagua			10238	221	2.16%	
Finch			1588	29	1.6%	
James			356	3	1.6%	
Anastasia			0			
			12182	253	2.08%	
MPWMD Cachagua	4263	76	4339	24	0.50%	
			16521			

Image copy of the 2020 CRSA Rescue Results.xls

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The Lewiston Tribune

Research sheds light on fishing, steelhead survival

Data may prove a win-win for fish, anglers; tag return rewards offered

By Eric Barker of the Tribune
Aug 14, 2020

University of Idaho graduate student Will Lubenau collects data on a recently caught and tagged steelhead. The fish is part of study seeking to learn how many wild steelhead are encountered by Idaho anglers and how well those fish survive after being released.

Preliminary data from a wild steelhead study, if it holds, could make it easier for fisheries managers to balance protections for wild fish while also allowing anglers to target those raised in hatcheries.

The University of Idaho and Idaho Department of Fish and Game are partnering on the two-year effort aimed at measuring the degree to which wild fish are encountered by anglers and how those fish fare after they are released.

To do so, they are intercepting returning wild and hatchery steelhead at Lower Granite Dam and placing visible tags on them and also implanting them with tiny PIT tags, or passive integrated transponder tags.

Anglers are being asked to clip off the visible tags when they land a marked fish and return them to the agency or otherwise report the catch. Some of the tags are marked as carrying rewards of $100 to $200 and are designed to entice angler participation in the program.

PIT tag detectors, known as arrays, are positioned at the mouths of about 60 percent of the streams where wild steelhead spawn. Their presence allow researchers to determine how many of the fish in the study ultimately reach spawning grounds.

“Right now it does seem like our wild fish are being encountered at a slightly lower rate than hatchery fish, of course the second year will definitely help validate everything, and I still have a lot of data to go through at this point," said Will Lubenau, a UI graduate student leading the effort.

Idaho fisheries managers assume that wild fish and hatchery fish are encountered at the same rate by anglers. They use that rate, combined with information gleaned from angler interviews, to determine how many wild fish are incidentally harmed in the steelhead fishery.

Wild steelhead are protected as threatened under the Endangered Species Act and must be released by anglers who catch them. The state has a permit that allows a small number of wild fish to be incidentally harmed during fishing seasons for hatchery steelhead. But managers must track the harm to wild fish and shut down fishing if quotas are surpassed.

The study could make measuring wild steelhead impacts more precise. During the first year of the study, Idaho wild steelhead were encountered at a rate of about 35 percent compared to 40 to 45 percent for hatchery steelhead.

The study also showed that wild steelhead reported as caught survived slightly better than wild steelhead that were not reported as caught during the fall and spring fishing season. But the survival rates were close enough to each other to be considered statistically equal.

About 200 of the tagged fish were reported as being caught by anglers. Of those, 84 were detected at upstream PIT tag arrays, weirs or showed up at hatcheries. Another 46 of the 200 caught fish were detected at Snake River dams attempting to return to the ocean. In total, 65 percent of the caught fish were detected later. There were about 675 tagged fish that were not reported to have been caught. They were detected at a rate of 62 percent.

"The take home point is there is no indication, at least based on this first year of data, that there is a major difference between fish that are caught and not caught in terms of survival," said UI fisheries professor Michael Quist.

The researchers don't know the fate of the fish that weren't detected after the fishery. Some may have returned to streams without PIT tag arrays and some may have perished.

The data indicated that 19 of the tagged steelhead were caught more than once and that 80 percent of those were detected post fishery, indicating they survived.

The study will continue this fall and in the spring and give researchers another batch of information. It also will help them determine if the closure of steelhead on the Clearwater River last fall skewed the data. Steelhead season was shuttered Sept. 29 because of low numbers of returning hatchery fish. The river reopened in January.

Lubenau said previous work by former UI graduate student Stacey Feeken indicates anglers encounter more wild steelhead in August and September, when fishing was still open last year.

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WATER ONLINE

Stanford Researchers Design A More Efficient And Affordable Desalination Process

News | June 1, 2020

Desalination – the conversion of saltwater to freshwater – has been limited by high operational costs. A new device capable of turning desalination waste into commercially valuable chemicals could make the process cheaper and more environmentally friendly.

Taking a new approach to an old problem, Stanford researchers have created a device that could make converting seawater to freshwater profitable and environmentally benign. Their research, published in ACS Sustainable Chemistry & Engineering, outlines an efficient method for transforming water with very high concentrations of salt and chemicals, known as brine, into commercially valuable chemicals as part of the desalination process. The approach avoids the need for disposing potentially hazardous chemicals in local ecosystems.

“Desalination could be a powerful tool to mitigate water scarcity around the world, but it is limited by energetic and monetary costs for treatment and brine management,” said study senior author Will Tarpeh, an assistant professor of chemical engineering at Stanford. “By reimagining brine as a resource, we aim to incentivize its collection and treatment before discharge.”

Desalination plants around the world produce about 27 billion gallons of drinking water each day – more than the daily total used by all U.S. households. However, this drought-proof approach of converting brackish or saltwater to potable water is costly because it requires a lot of energy. It also produces about one and a half times more brine than potable water.

Splitting Saltwater

For their new study, the researchers designed and tested a device that splits the components of brine through a method called electrochemical water-salt splitting. Water-salt splitting separates the brine into positively charged sodium and negatively charged chlorine ions with the use of an electrochemical cell – a device that employs electrical energy to kickstart chemical reactions. Once the bonds are broken, sodium and chlorine combine with other elements to form new chemicals including sodium hydroxide, hydrogen and hydrochloric acid.

Sodium hydroxide, also known as lye, is used in the manufacturing of many products including soap, paper, aluminum, detergents and explosives. Hydrogen has primarily been used for industrial purposes such as fertilizer production, and energy storage and delivery. Hydrochloric acid is used broadly across commercial industries as a component in battery production, as a food additive and even in leather processing. It also has the added benefit of on-site use for cleaning at desalination plants.

“Our research was able to identify a design that not only costs less but also outperforms conventional water-splitting methods,” said lead author Linchao Mu, a postdoctoral research fellow of chemical engineering at Stanford. “These insights can improve desalination design to save operating costs while generating revenue.”

Reducing Waste

The new approach could also help cut brine disposal costs, which can account for up to a third of total desalination expenses, and avoid damaging environmental impacts. Current brine disposal methods can cause salinity and acidity spikes along with oxygen-deficient conditions in waterways that kill or drive off animal and plant species.

While the current study did not produce chemical solutions suitable for commercial use – they were more diluted – the researchers note this is a first step in providing a foundation to inform future design and operation of electrochemical water-salt splitting. The researchers plan to continue their work while partnering with desalination plants to advance energy and cost-efficiency.

"Ultimately, this exemplifies our vision to design water treatment that recovers valuable products from 'waste' streams using selective separations," Tarpeh said.

Tarpeh is also an assistant professor (by courtesy) of Civil and Environmental Engineering, a center fellow (by courtesy) of the Stanford Woods Institute for the Environment, an affiliated scholar with Stanford's Program on Water, Health and Development, and a member of Stanford Bio-X. Additional author Yichong Wang is a chemical engineering undergraduate from Tsinghua University, China.

This work was funded by the Department of Chemical Engineering at Stanford University and the Stanford Linear Accelerator Center. The authors also thank the Stanford Linear Accelerator Center for support with electrode characterization (Grant No. 5474).

Source: Stanford University

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