

HUMBOLDT AREA SALTWATER ANGLERS

A VOICE FOR SALTWATER SPORTFISHERS



2024 FALL
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Represent. Advocate. Educate. Promote.

The mission of Humboldt Area Saltwater Anglers is to *represent* North Coast fishermen's historic and ongoing right to sports fish along the Northern California coast; *advocate* reasonable and rational sport fishing seasons and regulations; *educate* our members and the general public about the economic and cultural contributions of sport fishing to our local economies; and *promote* sustainable stewardship of the resource.



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HASA Newsletter

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Want to Contribute?

Send your article ideas and photos from your fishing adventures to clderidder@hotmail.com. Comments are always welcome too!

Past Newsletters

All past HASA newsletters can be viewed at humboldtasa.com.

This Issue

Issue #56. Edited by Larry De Ridder & Rachel D'Ambra.

President's Message

Today we are faced with many issues in the fishing community. It has been difficult to keep up with what is going on and why. Often times it leaves us discouraged. From salmon closures, to rockfish restrictions, to not enough Pacific Halibut quota, it can be down right frustrating!

I could talk about all three of these issues at great length, but today I just want to touch on one – rockfish. Specifically, releasing rock fish, and a little of what I've been doing over the last several years to contribute to data collection. Releasing rockfish that can't be kept, and those that we don't want to keep takes a little time out of our day, but it is paramount for a healthy stock.

New law requires that everyone have a descending devise aboard the boat. Back in the old days, we made our own descender. Today they make a pressure release devise, and that is what type I'm going to talk about.

There are a few different ways to use these. You can have your device hooked up to an extra fishing rod with a cannon ball to get the fish back down. This requires the angler to drop down the fish to a determined depth and then retrieve the ball and device back manually. Is this problematic? For me, it's problematic because I own and operate a 6 pack charter service, and if we get into a school of fish that I need to release, it becomes a big problem very fast. The same thing could happen when you are fishing with friends. And who suffers more than the guy behind the descending devise? Well, it seems obvious to me, the fish do, right? So let's talk about a way that I have found to mitigate that burden.

I'm sure that there are other ideas that will work, but my way works best for me as a charter captain when fishing up to six at the same time. I hope that you can take this idea and use it for yourselves and our fish stocks. First, there is nothing more frustrating than pulling up that gigantic yelloweye with what looks like a volleyball sticking out of its mouth.

You frantically try and get her back down only to realize that you don't have a big enough weight to descend.



Every minute that the fish stays out of the water is a minute closer to her death. Say you pull up two or three at the same time, and now you're under the gun to get them down, now what?

Here are a couple ideas that can help: 1) For multiple fish, it is nice to have a small tote full of water to put your fish in while descending them. 2) Since your down riggers are not doing you any good sitting there in the garage, take one and put it on your boat before you go rock fishing. You will see a down rigger on my boat "Fishy Business" with a descending devise hooked to the down rigger ball.

Sometimes you will see up to three devises at slightly different lengths hanging from the ball. You want to make sure that they are all set to the same release depth. I find 100ft is best if possible. This allows you to do several fish at the same time cutting down on the time the fish are out of the water. Your down rigger also allows you to monitor the depth as you let them down, so it takes the guesswork out of doing it with a rod and reel, and takes some relief off of the shoulder, elbow and wrist.

As soon as you hit the determined depth you can retrieve it back and be ready for the next round. If you have to do one at a time the bucket or tote of water is a good way to give the fish their best shot at survival.

We don't recommend popping what some people think is the swim bladder poking out of their mouth, because first of all it is their stomach, and second it will get infected and eventually kill the fish.

Since it's inception, the last 15 years or so, I have been taking marine biology students, working on their masters degrees, that head the California Collaborative Fisheries Research program here in our region, to monitor the rockfish stocks in the MPA (Marine Protected Area). We also fish outside of the MPA in what are called control areas. All of the areas we fish are randomly picked by a computer. This data is directly tied to our fishery and is now being partly implemented in making the recommendations for our seasons. It has taken some time for the powers that be to come around to using this data, but it will help for future seasons. To be clear, this data was not used for the current decision making process that is going to carry on for the next two years. This brings me to the next task.

We tag fish next to the dorsal fin with a little yellow tag. It is usually on the left side of the fish right below the dorsal fin. We are very interested in retrieving these tags if you happen to catch a fish that is legal to take. We would like to know the Latitude, Longitude numbers of where you caught it and the date it was caught. If you happen to catch a fish that is a no take fish and you see a tag, please take the tag number, Latitude and Longitude, date you caught it and email it to me. We are giving a prize to you when this information is reported.

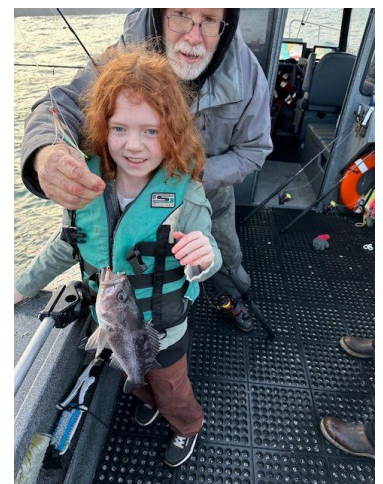
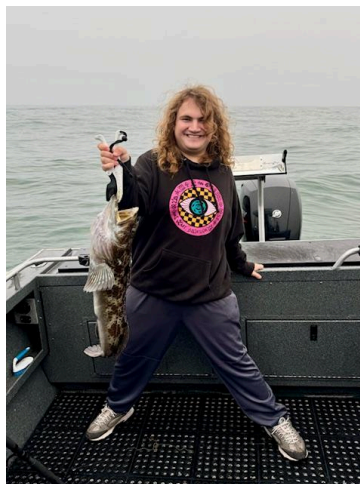
It's important to know that the data shows the MPA is working for us, and that is good news! If the data

doesn't agree it could mean more closed areas for the State and we don't want that to happen! So, we can see how important it is to take good care of what we have by giving our fish the best chance for survival. This isn't a "they" problem, it's "our" problem and we must be good stewards of our fisheries.

I hope that the couple of ideas I have laid out help you in refining your method on your boat by continuing to take the best possible care of our fishery. I love fishing, and taking people fishing, no matter if they are experienced or the first timer! For this reason, I'm reaching out to my fishing community and asking for your help in what can only be described as our responsibility to be the most ethical sportsmen and women. Together we can make a difference and shape the future we want to share with friends, family, our children and their children's children and futures to come.

If you would like to express your concerns or ideas to me, I can be reached at hookup@northwindcharters.net. All I ask is to be respectful, because we are all in this together! I look forward to hearing from you and your ideas, or just to introduce yourself! With Gratitude, your new President and owner operator of Northwind Charters Sportfishing,

 *Matt Dallam*
HASA President



China Rockfish

ABBREVIATED FROM WIKIPEDIA

The China rockfish (*Sebastes nebulosus*), is also known as the yellowstripe rockfish or yellowspotted rockfish. It is a species of marine ray-finned fish belonging to the subfamily Sebastinae, the rockfishes, part of the family Scorpaenidae. It is native to the waters of the Pacific Ocean off western North America. The specific name *nebulosus* means "cloudy" a reference to the yellow body usually mottled with dark brown, though sometimes bluish or black.

The China rockfish has a compact body with a small mouth. They have a concave intraorbital space and robust spines on the head but there are none above the eyes. The dorsal fin has deeply incised membranes between its long spines. There are 13 hard spines and 13 or 14 soft rays in the dorsal fin while the anal fin has 3 spines and 6 to 8 soft rays. Their caudal fin is rounded. The main distinguishing feature of this species is the clear yellow stripe which starts on the dorsal fin near the third dorsal fin spine and extends obliquely to the lateral line then runs along that line to make a shape like an ice hockey stick. The pelvic, anal and caudal fins are dark colored.

The China rockfish is found in the eastern Pacific

Ocean off the western coast of North America from Kodiak Island in Alaska to Redondo Beach and San Nicholas Island in California. It is most common from central British Columbia south to central California. It is associated with reefs at depths between 10 and 420 feet but it is typically found in water less than 300 feet deep.

The China rockfish is a solitary and territorial species and if alarmed they will quickly take shelter in a cavity or crevice in the reef. They become sexually mature when they reach a total length of about 12 inches but can reach 18 inches and about 3.7 pounds. They are known to live for up to 79 years. They are ovoviviparous and the females extrude their larvae from January to August. The pelagic larvae leave the plankton to settle between one and two months after being born. The spines in the dorsal and anal fins are mildly venomous and are also used to wedge the fish in narrow hiding spaces in the reef. The China rockfish is a sedentary species and studies have shown they rarely move more than 30 feet from their preferred shelter. They have been known to live in the same rock crevices as the Giant Pacific octopus. The larvae feed on plankton and the juveniles prey largely on crustaceans. The adults also eat crustaceans but in addition prey on brittle stars, mollusks, and small fishes.





China Rockfish Status off the Pacific Coast

BY TOM MARKING

China Rockfish is one of the Minor Seashore Rockfish in a complex with 13 other rockfish. Currently, it is a species of concern along with Quillback and Copper Rockfish. As you are aware, Quillback is currently designated as overfished, and China has been below the 25% biomass target in the near past, though now slowly improving. The following summary is taken from the 2015 Assessment performed by Dr. E.J. Dick et al. I'm sure there have been minor updates since then, but this full assessment has very good historical information on this species. The information is posted on the Pacific Council website and is available for any who want to read the entire report, though it is quite lengthy. I will give you a synopsis of the high points.

China Rockfish (*Sebastes nebulosus*) is found all along the Pacific Coast and is a highly sought after

fish due to its taste, and is of particular interest to live fish commercial fisherman to sell to restaurants, due to its attractive coloration. The assessment is broken up into three zones, the Northern zone is Washington, the Central Zone consists of Cape Mendocino to the Columbia River, and the South Zone is below Cape Mendocino (40 degrees 10 minutes).

I won't get into the assessment methods, but essentially, the northern and central zone biomass amounts were not a concern at the time of the assessment, but below the 40d10' line there definitely is a concern with a history of overfishing that caused depletion below desired biomass levels.

Catches: In California recreational anglers catch the bulk of China, with the commercial harvest much lower (10 mt recreational and 2 mt commercial). The total landings in the 1990's peaked at over 60 mt but then dropped down to

about 10-12 mt/yr. Oregon and Washington have harvest rates of about 10 mt and 3 mt respectively. Of interest is that OR commercial harvest is about 70% of their harvest, the opposite of CA. WA does not have a commercial harvest.

At the time of the assessment the total harvest was about 25mt. The time series of relative spawning biomass is of particular importance. Two numbers are critical in these comparisons. The target biomass is 40% and the minimum stock size threshold (MSST) is 25%. The catches substantially increased over the time series since 1900, with a dramatic increase about 1960. The biomass North is holding steady at about 75%, the Central Zone biomass has dropped to about 62%, (but leveling off), whereas, the South Zone dropped rapidly downward from about 80% in 1960 to about 17% in the late 1990's, well below the MSST of 25%. It was definitely overfished at that level and reduced harvest levels brought the biomass back to 25% by about 2010 with the current biomass levels about 28%. This is above the MSST but considerably below the Management Target amount of 40%. Thus, there is reason to treat this species in the precautionary zone and restrict harvest with strong recommendations to release any China rockfish caught. That is our current recommendation -- to descend any China rockfish caught to allow the biomass to rebuild back to the 40% level. We should note that there are a number of species in the Minor Nearshore Rockfish Complex that are subject to overfishing -- this is but one of several. The difficulty in getting good assessment data is due to the shallow habitat these fish live in, and the inability to use trawl gear to provide data. In the southern part of the state they utilize a hook and line survey for nearshore fish, but that has never been implemented in the Northern California Area. We are in a peculiar situation up

here in the far north, inasmuch as we are north of the 40d10' line but below the 42 d line separating us from Oregon. As we found out with Quillback, if they separate us at the CA/ORE border, we get caught up in the overfished concern from the South, even though we are biologically in the Central Zone. It gets confusing, but basically OR and WA don't want to get tied to CA in assessments if it will affect their fisheries and harvest levels. This has happened in the past with Ling Cod and more recently with Quillback.

So, for the time being, it is best to avoid China, Copper and certainly Quillback as that fish is now designated as overfished. The other two are considered precautionary. It's in our best interests to use descenders and treat this fish gently to keep them alive and reproducing.

The Assessment has extensive data concerning harvest history, biomass levels and relative spawning biomass predictions and projections. If interested, go to the pcouncil.org website and search for China Rockfish Assessment.

For the current harvest specifications numbers, you have to go to the Nov 2021 meeting for ABC (allowed biological catch), AFL (annual fishing limit) and OFL (over fished limit). The action at that meeting set the harvest amount for 2023 and 2024. For China they are as follows:

	OFL	ABC	AFL
2023 (40d10' to 46d16')	20.64 mt	17.05 mt	17.05 mt
2024 "	20.25 mt	16.56 mt	16.56 mt
2023 (south of 40d10')	16.39 mt	13.54 mt	13.54 mt
2024 "	16.823 mt	13.76 mt	13.76 mt

As you can readily see, the harvest allocation is being reduced each year there is not a new full assessment, the last being in 2015. This is why the recommendation is to release all China, even though there is a bag limit of 1 fish.

CDFW Releases Chinook Salmon Into Klamath River and Napa River

FROM CDFW NEWS RELEASES DATED 5/24/24 and 6/15/24

On May 15, CDFW released approximately 1.3 million fall-run Chinook salmon smolts below Iron Gate Dam and carried out another release of approximately 800,000 fish from the same location on May 22.

The salmon smolts were trucked about 7 miles to the release point from CDFW's new, state-of-the-art Fall Creek Fish Hatchery. The fish carried coded-wire tags and had their adipose fins clipped to later identify them as being of hatchery origin and provide scientists and hatchery managers with data about their life histories and the success of the release.

Although still undergoing the final phases of construction, CDFW's new Fall Creek Fish Hatchery, which replaces the 63-year-old Iron Gate Fish Hatchery on the Klamath River, has already exceeded its production goal of 3.25 million salmon in its first year of operation, the combined result of the excellent water quality in Fall Creek, a tributary to the Klamath River, along with improved efficiencies of the facility itself.

CDFW plans another release of 250,000 to

300,000 yearling fall-run Chinook salmon later this year. If dam removal proceeds at its current pace, CDFW expects to release the fish directly from its Fall Creek Fish Hatchery into Fall Creek, which was previously inaccessible to salmon due to its location behind Iron Gate Dam.

June 10, the California Department of Fish and Wildlife released approximately 1 million fall-run Chinook salmon smolts at the Cal Maritime campus in Vallejo. These fish were from the Feather River Fish Hatchery in Oroville. Twenty-five percent of the smolts carry coded-wire tags and their adipose fins are clipped to identify them as being of hatchery origin.

It was the first release of Chinook salmon from this location in almost four decades and among the final releases of hatchery fall-run Chinook salmon taking place in San Francisco and San Pablo bays this spring and summer.

CDFW has increased fall-run Chinook salmon production at its four Central Valley anadromous fish hatcheries in 2024. The increase in hatchery production aims to compensate for poor environmental conditions in recent years that have contributed to low salmon stocks and the closure of recreational and commercial salmon fishing seasons. In 2023 CDFW hatcheries raised and released just over 24 million fall-run Chinook salmon. In 2024 that number increased to almost 28 million fish.



CalTrout and Partners Release Eel River Watershed Restoration and Conservation Plan

[HTTPS://CALTROUT.ORG/EEL-RIVER-WATERSHED-PROGRAM/REPORT](https://caltrout.org/eel-river-watershed-program/report)

“The Eel River epitomizes everything about salmon in California. Lying at the heart of California’s North Coast Region, the Eel River spans five northern counties and 3,684 square miles making it California’s third largest watershed. The Eel was mis-named by European explorers who mistook Pacific lamprey as “eel” and named it the Eel River. In addition to copious runs of Pacific lamprey the Eel River historically supported the third largest runs of salmon and steelhead in California, exceeded only by the Sacramento, San Joaquin, and the Klamath rivers. In a 2010 study commissioned by CalTrout, UC Davis scientists estimated the historic run sizes from the early cannery records and concluded that combined runs of Chinook salmon, coho salmon, and steelhead likely totaled more than a million adult fish annually in good years, of which there were likely many.” That is the opening paragraph of the Eel River Restoration and Conservation Plan, but there is far more. Be sure to visit the site, educate yourself and look for ways to support the program.

The comprehensive report pulls together the best available scientific information to plan for native fish recovery, riparian corridor restoration, and conservation across the watershed. The Eel River Watershed Restoration and Conservation Plan is authored by nonprofit research and conservation organization California Trout (CalTrout), UC Berkeley, Applied River Sciences, and Stillwater Sciences. The effort is funded by the California Department of Fish and Wildlife. It was also

supported by a technical advisory committee consisting of representatives from National Oceanic and Atmospheric Association (NOAA), National Marine Fisheries Service (NMFS), US Fish and Wildlife Service (USFWS), Bureau of Land Management (BLM), UC Berkeley, California Department of Fish and Wildlife (CDFW), the Wiyot Tribe, and others.

The Plan recommends key recovery actions and an action prioritization framework across the seven major sub-watersheds of the Eel River watershed. The Plan also proposes a management approach that is informed by a monitoring and assessment framework, all of which is built from existing restoration and monitoring efforts. The Plan concludes with a menu of recommendations and next steps needed to get this important work off the ground. The Plan is the first step in a new Eel River Restoration and Conservation Program and includes an interactive web map to share preliminary analyses to view landscape features across the watershed. A more detailed overview of the Plan can be viewed on their website.

Past and current land and water use practices have significantly impaired aquatic and riparian habitats in the Eel River. Dam construction, aggressive timber harvest, and road and railway construction, followed by large floods in the 1950s and 60s, resulted in extensive and long-lasting disturbances and impacts throughout the watershed.

The decommissioning and removal of the two PG&E-owned Potter Valley Project dams will restore anadromous fish access to hundreds of miles of high-quality habitat in the upper Eel River. Coupled with federal and state recovery plans, and a strong community of regional partners who are implementing restoration actions throughout the basin, the Eel River is poised for transformative change.

HUMBOLDT HISTORY: Can You Identify the Weird Fishes That Baffled Early White Settlers?

FULL ARTICLE AT
[HTTPS://LOSTCOASTOUTPOST.COM/AUTH
OR/ALAN-LUFKIN](https://lostcoastoutpost.com/auth/or/alan-lufkin)

Among the various species of fish commonly found in Humboldt County, unusual specimens resembling ones found in other parts of the country occasionally showed up in fishermen's catches. When newsmen reported the strange fish, they often included the adjective genuine before the name, imparting a sense of awe that such fish were actually found in Humboldt waters. Here are several such reports, gleaned from the Humboldt Times by Duane Wainwright:

December 19, 1874. Devil Fish. "One of that somewhat rare, at least in these waters, and ungainly looking aquatic animals was captured on the bay shore near Pearson's Foundry yesterday. The arms, feet or whatever else they may be called, measured some eight feet from tip to tip. An accurate and intelligible description of this curious specimen is beyond our power...."

December 7, 1878. Sun Fish. "Mr. W. Morrill, of this city, has a genuine sunfish, which was cast ashore on the beach and captured a short time since. It fills the description given of that fish to a nicety, being nearly circular in form, shining surface and soft finned - two very small in a line with, and about four or five inches back of the eyes; and two long and narrow near the tail - one above and the other below...."

December 27, 1879. A Queer Fish. "Somebody reports...the finding of a queer fish in the Klamath

River which is called the 'candle fish.' It is only about eight inches long when grown, is impregnated with oil throughout, and when thoroughly dried can be lighted at either end and will burn like a candle and give an excellent light. It also makes palatable food."

July 11, 1885. Unknown. "At the fish market on H Street, yesterday afternoon, there was a fish that none of the fishermen could name. Even Geo. Heney, who is familiar with every 'monster of the deep,' from shrimp to sperm whale, gave it up. The fish resembles in shape a shark, and is about one foot in length. It is of a dark color with small white spots. The head resembles an animal's more than that of a fish, and has a set of teeth like a weasel. It has been preserved in alcohol."

April 17, 1890. A New Edible Fish. "The USS Albatross, while making soundings from Point Reyes to Point Arena, found a new fish, unknown to the markets, in deep sea soundings from 100 to 400 fathoms. It has been named "deep sea sole," and it belongs to the family of flounders. It has been pronounced a very delicate, fine-flavored fish."

A Rare Fish "Ed Nichols, of Arcata, sent to the Times yesterday a fish that struck our local anglers dumb with amazement. It is about four feet long, the head being nearly round and armed with a mouth full of long fang-like teeth. The body is long and tapering. Altogether the thing is a regular piscatorial nightmare...."

And from the Ferndale Enterprise on November 26, 1891: A Curious Fish. "Mr. Fred Kendall, of the Eel River cannery, sent us the other day a very curious looking fish, evidently a stranger in Eel River waters. It is about eighteen inches in thickness. It has a big hump on its back, five under fins and a partial hawk-bill."

Man Sentenced to 30 Days for Poisoning 18K Salmon at Southern Oregon Hatchery

STORY BY SYDNEY DORNER

One man's crime, led to hundreds of hours worth of labor down the drain. On April 21, Joshua Heckathorn broke into a fish hatchery, the Gardiner Reedpsort Winchester Bay Salmon Trout Enhancement Program (STEP). He poisoned 18,000 young salmon with bleach.

"They were all dead," said Deborah Yates, the president of STEP. "They had been murdered by bleach being poured into it."

Court documents show that Heckathorn told an officer that he was high on marijuana. He also admitted to removing the bleach from a shed, but couldn't remember if he poured it into the tank.

"I was super angry and in disbelief," Yates told KGW over the phone. "You just can't wrap your head around why somebody would do that."

Heckathorn was sentenced on June 7. The judge ordered him to pay \$15,000 in restitution and avoid all Oregon hatcheries. He also had to serve 30 days at the Douglas County Jail and will be on three years of supervised probation.

"It's just devastating," Yates told us. "You can't replace them, they are just gone."

Yates said his penalty does not match the amount of damage Heckathorn left behind.

"He caused harm to the fishing industry in Alaska, Washington, Oregon, and British Columbia," said Yates. "So, not only did it impact our hatchery but it affected two countries."

Meetings With RWE Representatives

August 1 representatives of RWE were in town, in part to meet with HASA. Board member Tom Marking took RWE personnel Lucia Ordonez, Ricky Alexander, Alex Sloan and Tribal Liaison Jaclyn Robinson on a floating tour of the bay so they could get a different perspective on the project. Later that morning some of the group broke off to introduce HASA newsletter editor Larry De Ridder to Dr. Khalid Kamhawi, CEO of Ithaka Clean Energy. He is developing software to assist with communications between local fishers and project staff. He demonstrated software which can be accessed either online or via a free phone app, and HASA members are encouraged

to try it out. The online site is waterfrontapp.com. The app is still undergoing final development, but it has some interesting features. For small boaters without radar or an AIS-capable VHF radio, this could be an excellent safety resource while offshore in limited visibility. If you have a cell signal you can log onto this app with your phone and the app will show you where you are on a navigational chart, plus all the commercial traffic in your area, as reported by AIS. Commercial traffic data includes vessel name, course and speed. If there is need to contact a commercial vessel you can't see due to limited visibility, you will know who to call. Dr. Khalid also expressed interest in incorporating a method for local boaters to report and document lost or abandoned crab traps that could become safety hazards.



Shark Bites in 2023

ABBREVIATED FROM SCIENCE NEWS

Just 91 people were bitten by sharks in 2023 and only 10 of those bites were fatal, according to a new report from the Florida Museum of Natural History in Gainesville. Out of all bites, 22 were provoked, defined as a human-initiated interaction such as trying to touch or feed a shark. The other 69 were unprovoked. These numbers are consistent with the five-year global average. Of the 69 unprovoked shark bites, 36 happened in the United States. That's down from 41 in 2022. Nearly one-quarter of all unprovoked bites occurred in Florida. This is believed due to the state's ample coastline, abundant prey fish and year-round human swimmers.

Four of the 10 fatalities last year were caused by great whites: three in southern Australia and one in California. This is probably because "pockets of white shark populations are growing," particularly in areas where seals, a main food source for sharks, have rebounded from near extinction, says Gavin Naylor of the University of Florida.

Seal colonies are often found near surf breaks, which also attract surfers. While the odds of experiencing a shark bite are incredibly slim, Naylor offers simple advice for avoiding them: "Don't swim alone. Don't swim too far from shore. Don't swim at dawn or dusk."

Automotive Tires Kill Salmon

This is a more detailed follow-up to news we've covered in past issues. Last year the EPA granted a petition to review the use of a chemical with the short name 6PPD, that's been in use since the 60s to protect auto tires from ozone degradation. Tires are about 1% 6PPD by weight.

It wasn't till the last couple of years that a previously unknown chemical was discovered to be the reason large numbers of mature coho salmon quickly die upon entering urban streams. The mystery began in 2000 when the freshly rehabilitated Longfellow Creek in West Seattle should have experienced a resurgence in salmon spawning success. Instead, returning adults were observed to die quickly, before spawning. Checks of multiple nearby streams showed adult coho pre-spawn mortality rates ranging from 60 to 100 percent. Reporting the situation to the government resulted in a two decades long investigation led by NOAA's ecotoxicology division. Experiments confirmed that the toxic mystery chemical was coming from roadway and parking lot runoff. But that runoff contained over two thousand different chemical suspects. 20 years later, researchers homed in on 6PPD-quinone, a previously unknown chemical. It turned out that as 6PPD did its job of stopping ozone-induced tire damage, it changed into 6PPD-quinone. When tiny tire fragments containing 6PPD-quinone wash into streams, coho salmon die at concentrations of less than one part per ten billion, making it the second-most toxic chemical ever discovered for fish. As a side note, the only known chemical more toxic to fish is a pesticide so powerful it is banned in the US and Europe. One article explained that an amount of 6PPD-quinone the

size of a rice grain would wipe out all the coho in a 1,500-gallon tank.

Coho salmon frequently spawn in smaller coastal streams, many of which experience roadway or parking lot runoff during storms. Toxic runoff is likely to worsen in the years ahead, because the government is pushing electric vehicles. Due to their weight and torque, EVs wear through tires much faster than combustion-powered vehicles. Thus, more EVs will result in more tire wear.

It's theorized that the lethality of this chemical was not detected for so long because most road and parking lot runoff occurs in urban areas. In those areas streams were frequently so degraded that there were simply no salmon present for people to observe dying as they entered the watershed. As streams were rehabilitated and fish returned, the lethal quality of the water became evident.

Just how the chemical kills fish is still unknown. It's also lethal to rainbow trout (and thus of course steelhead), and brook trout, though neither are as sensitive as coho. Interestingly, it doesn't seem to affect chum salmon, arctic char or brown trout, which could partially explain how browns often come to dominate stream systems previously dominated by rainbows.

Assuming that EPA does move to outlaw 6PPD, it could take years to identify a non-toxic replacement, and then another decade for existing tires to all wear out and be retired. Just how and where recycled tires may be used will also have to be reviewed. The EPA will likely issue an Advance Notice of Proposed Rulemaking later this year, though that doesn't actually do much beyond inform everyone that a regulatory change is being considered. In anticipation of legislation to come, the U.S. Tire Manufacturers Association has begun to search for a replacement ingredient, though no one can predict how long that search might take.

Trinity River Fish Hatchery

ABBREVIATED FROM THE CDFW WEBSITE

The Trinity River Division of the Central Valley Project in California included construction of Trinity and Lewiston dams that divert a substantial portion of the river's flow to the Central Valleys. Lewiston Dam, completed in 1963, is the upstream limit of anadromy, blocking access to 109 miles of salmon and steelhead spawning and rearing habitat. Trinity River Hatchery (TRH) was constructed at river mile 110 at the base of Lewiston Dam to mitigate for the loss of this anadromous fish habitat. The Bureau of Reclamation funds operation and maintenance of the TRH, which is operated and managed by the CDFW.

Mitigation goals for lost adult production were determined from pre-project studies of anadromous fish populations in the basin. The USFWS and CDFG in 1956 estimated that 5,000 coho, 3,000 spring Chinook, 8,000 summer Chinook, 24,000 fall Chinook, and 10,000 steelhead passed above the Lewiston Dam site prior to its construction. Total annual adult production goals (catch plus escapement) for TRH are periodically adjusted. Most recently, escapement goals to the hatchery were reduced in 1983 to 2,100 coho, 3,000 spring Chinook, 9,000 fall Chinook and 10,000 steelhead.

Trinity hatchery traps returning adult salmon and steelhead and holds them until the fish are ready to be spawned. Salmon and steelhead eggs are fertilized, and then incubated for approximately 50-60 days depending on water temperatures. When the young fish are ready to eat on their own they are taken directly to hatchery troughs or to



Trinity River Hatchery

hatchery raceways. The juvenile fish are reared and then released into the Trinity River to start their migration to the ocean.

Species Raised at Trinity River Hatchery:

Chinook salmon - Spring run. Trinity River spring-run Chinook salmon enter the Lower Klamath River in late March and April and proceed up the Trinity River. They arrive in the upper river any time from the middle of May to the first part of July. Spring Chinook provide most of the salmon fishing opportunities for river anglers and are also important to the local economy. Although arriving early in the year, these fish do not spawn until about mid-September. The hatchery ladder is not opened until after Labor Day, because the fish hold better in the large deep pool below Lewiston Dam than they do in hatchery holding ponds.

Chinook salmon - Fall run. Trinity River fall-run Chinook enter the Klamath estuary from mid to late August and arrive at the hatchery in early October. This run is particularly important to both the commercial ocean fishery and the Native American fishery.

Coho salmon. Trinity River coho salmon appear at the Trinity River Hatchery about mid-October and spawning extends through December. While providing for a popular fishery in other areas of the Pacific Northwest, recreational angling for coho salmon in California is prohibited. The Southern Oregon / Northern California Coast's coho salmon population was classified under the Endangered Species Act as threatened in 1997. This includes all naturally spawned populations of coho salmon in coastal streams between Cape Blanco, Oregon, and Punta Gorda, California, plus the Iron Gate Hatchery, Trinity River Hatchery, and Cole River Hatchery coho programs.

Steelhead. Steelhead arrive at the hatchery from about the first of November through March. They are spawned and then returned to the river.

Steelhead are an anadromous form of rainbow trout. These fish return from the ocean after a few years to spawn in rivers and creeks similar to a salmon. They differ from salmon in that a steelhead may spawn and return to the ocean more than once.

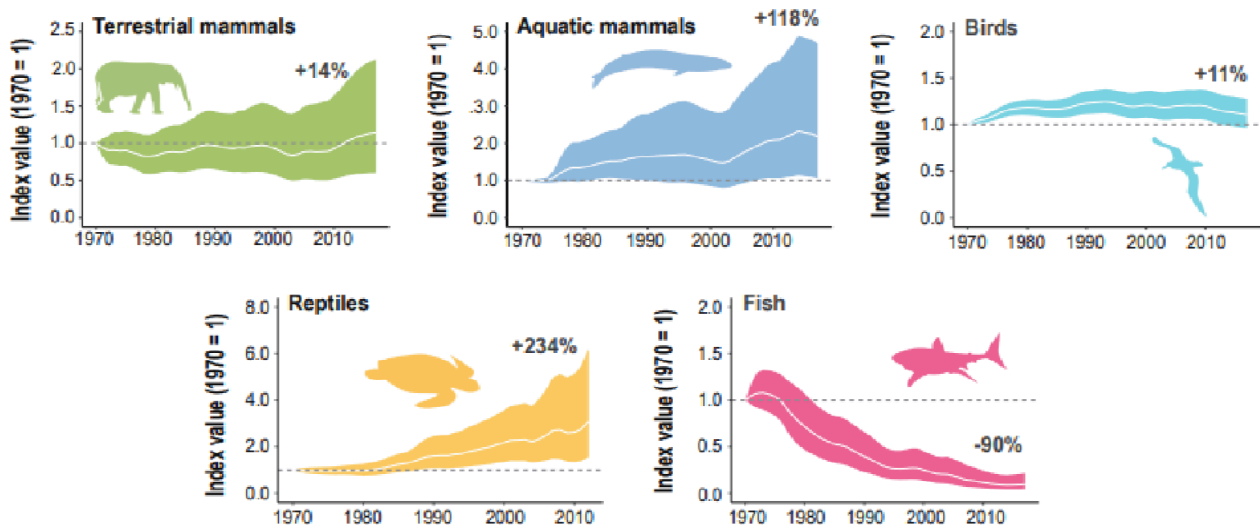


Healthy salmon eggs at Trinity River Hatchery

United Nations Migratory Species Report Results

Highly migratory species such as Canadian Geese and Albacore tuna face special challenges. Even if they are protected in one part of their annual range, they may not be protected in other regions. The graphs below come from the State of the

World's Migratory Species report published in February by the United Nations Environmental Programme. As you can see, highly migratory fish have been a particular concern for the last 50 years. For the full report go to https://www.cms.int/sites/default/files/publication/State%20of%20the%20Worlds%20Migratory%20Species%20report_E.pdf. The full explanation of these graphs is in the report, on page 17.



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