

# HUMBOLDT AREA SALTWATER ANGLERS

A VOICE FOR SALTWATER SPORTFISHERS

2017 SPRING NEWSLETTER



Telling a Fish Story

# President's Message

By Scott McBain



What a winter! After three years of drought, the heavens opened up and provided us with record rainfall all across California. While the news for salmon fishing over the next two years is bleak, there is some bright spots in that juvenile salmon production in all of our California rivers this spring will likely be some of the best on record for those adults that did make it back to spawn last fall. Floodplains in the central valley have been under water for most of the winter and spring, providing excellent rearing and growth for young salmon. In addition, the coastal watersheds have largely been spared from huge scouring floods, and spring temperatures and flows have been excellent. Hopefully there will be a strong return to ocean salmon fishing in two years when these fish mature.

Despite the lack of an ocean salmon season, there are still lots of opportunities for other species once the weather improves (see Tom's page 4 article on additional rockfish and halibut opportunities). I hope that everyone has a chance to land a Pacific halibut this year!

As most of you may know, with the wetter water year and lack of dredging near marinas in Humboldt Bay, launching your boat and using certain areas of the marinas is difficult to impossible. There are a variety of factors involved that have led to this crisis (see Casey's article on page 12). There are a series of immediate short-term needs (make the ramps functional, make the marinas functional), as well as a long-term need of where to deposit the spoils for annual maintenance. Developing a short-term and long-term plan is critically important to HASA and our members, as well as the economic engine of Humboldt Bay. HASA is gearing up to try to help on a solution to both the short-term and long-term dredging needs; however, the short-term dredging needs are going to be very difficult to achieve this summer. It is important that you express the importance of maintaining our boating facilities to City of Eureka and Humboldt Bay Harbor District representatives, so this stays at the top of their priority list.

Cliff provides a very nice summary of our annual fundraising dinner on page 15, it was a great success. Next year's event will also be held at the Arcata Community Center, on Saturday April 14. We will continue to improve on the dinner, and if you have suggestions, please e-mail them to us at [hasa6191@gmail.com](mailto:hasa6191@gmail.com) and we'll add it to our list. Many thanks go out to our volunteers and sponsors, and especially our organizer Cliff Hart. It is a lot of work to organize and conduct this event, and we have a great team of volunteers and sponsors to make it happen. I am looking forward to seeing everyone at the 2018 event.

As usual, Casey and contributors have put together some very interesting articles in the following pages, which you should enjoy. If you would like to contribute an article to future newsletters, or have suggestions on a topic you think would be interesting to HASA members, please share with Casey ([longfish@humboldt1.com](mailto:longfish@humboldt1.com)).

A handwritten signature in black ink that reads "Scott McBain".

The mission of Humboldt Area Saltwater Anglers is to represent North Coast fishermen's historic and ongoing right to sport 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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All photos and articles in this issue are donated by HASA members and interested parties.

Submission ideas and photos should be sent to [longfish@humboldt1.com](mailto:longfish@humboldt1.com).  
Comments are always welcome. Send to [hasa6191@gmail.com](mailto:hasa6191@gmail.com)

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All issues can be viewed online at <http://humbolddtuna.com/smf/index.php>

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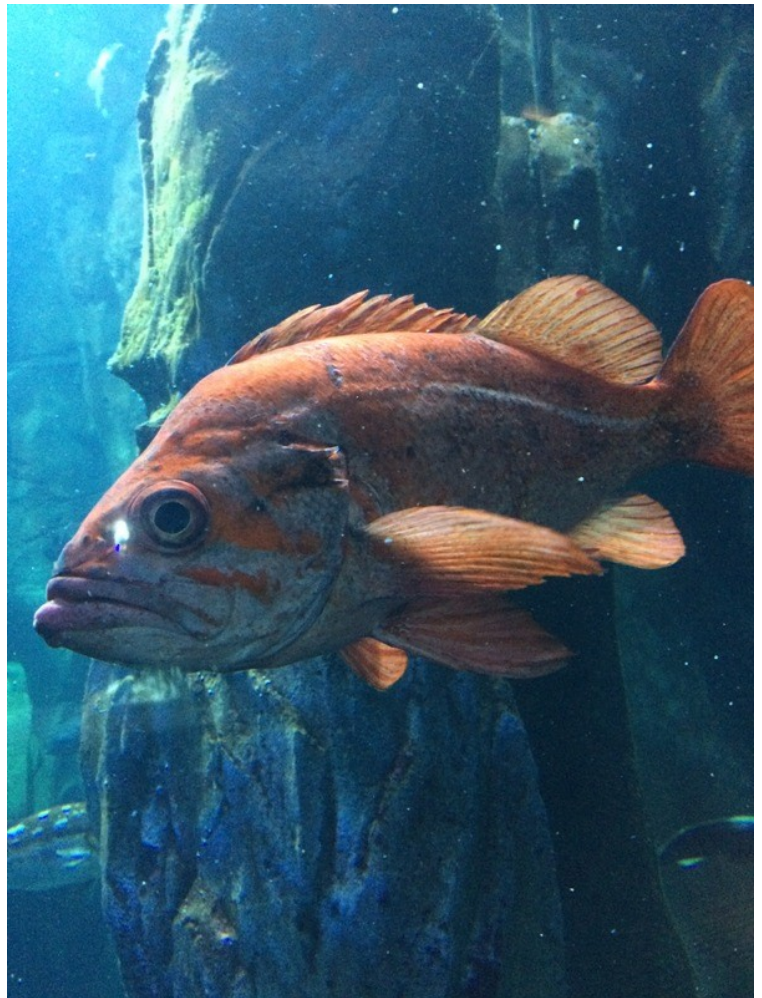
# 2017 Spring Groundfish Outlook

By Tom Marking



I always enjoyed the scene from “Fiddler on the Roof” where Tevye is having a discussion with himself up in the barn loft; “on the one hand”....but “on the other hand”...and so it would go, debating the pros and cons of various decisions he was faced with. I can relate: We are open for fishing for groundfish and halibut on May 1, but the weather is so crummy, hardly anyone can get out. We can keep one Canary in our bag limit of ten fish, but we have been cut back to three blacks. We have been cut back to two lings, but we can fish petrale sole at all depths and all season...and so it goes. This year is full of changes and modifications. No salmon season, but halibut is open all of May, if you dare to get out on the water; we get to fish to 30 fathoms and we get to fish all depths during November and December. The concern is whether we can fish the ten extra fathoms and fish all depth the last two months of the year and still avoid Yelloweye Rockfish (YE). To address that concern, we all need to have release devices on our boats and to use them if any shorts or YE are hooked up. YE are really tough fish and survive barotrauma well, if you get them back to depth without delay. And let’s not forget the boat ramp concern, where we need a swamp boat to slide across the mud flat upon launch. That is atrocious and hopefully can be corrected sometime this summer, but it doesn’t look promising. Lots of agencies, all with their respective permits and applications, little time and lots of dollars ground up in the planning and permitting process. Sigh!!!

I just came back from three days of halibut meetings with the International Pacific Halibut Commission (IPHC) in Seattle and the halibut world is in for some dramatic changes. The IPHC Commissioners made it very clear this past January they did not like the “risk table” using the Blue Line that has been the basic model for the Commissioners for the last several years. The Exploitable Biomass as the baseline was a confusing and controversial concept, not well understood and thus rejected. As of 2018 Spawning Biomass Potential (SPR) will be used to guide the Commission in the distribution of *P. halibut* over the North Pacific between the US, Canada and Alaska. Since this is the initial roll-out of SPR as the guidance tool for distribution, I’m certain there will be confusion and angst when the numbers develop next January prior to the annual meeting. SPR has been used for the past decade in many other fisheries, but halibut are a different critter with migration and recruitment a very big part of the equation. The Canadians and the U.S. Tribes are not happy campers at this point because they really



dislike the survey results and the distribution model that has been used since 2006 when they changed from a Regional Model to a Coastwide Model. Suffice it to say, changes are in order, but I don't know what the outcome will be at this point. And, we need to contend with the newly instituted "hook competition" methodology, and the Time-Space model implemented this year. It's difficult to make historical comparative analyses with so many recent high impact modifications. Also, the new surveys in California this year, and the expanded surveys in the Tribal areas north of the Columbia River to Canada could be significant in the distribution and harvest control scenarios.

It should be noted that the P. halibut population is shifting more east into the Gulf of Alaska, and south down the coast. The Trawlers inform me that they are starting to pick up halibut down the Coast, substantially below the Cape Mendocino area. This is important news and is definitely a shift in behavior from the past decade. Hopefully, the new survey sampling being done this summer will pick up some of these fish and help substantiate our case for building up our abundance numbers for higher harvest rates in the California area. This is a multiyear process, but the survey is the first step.

Enjoy the summer, try to avoid salmon as by-catch, good luck with halibut and petrale and hope for improved halibut surveys in the North and the Mendocino area. We won't know until December of this year how the season modifications will impact the fishery. Get your release devices ready to go and be prepared to use them when appropriate.  
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# Lessons from the Drought

By Larry De Ridder

We're finally coming out of a seemingly endless winter. The drought appears to be over. But, have we learned any lessons when it comes to our fresh water demands?



As we're all aware, Governor Brown and various Southern California water user groups are working diligently to modify how water is transported from Northern California to Southern California. That plus declaring "a water emergency" appear to be Sacramento's solution to water shortages in Southern California. The two biggest political efforts underway are to raise the height of Shasta Dam as much as 18 feet, and to dig two 40-foot tall tunnels beneath the Sacramento River to transport large volumes of water south without the water ever entering the primary Delta ecosystem. There are a host of social, environmental, economic and engineering issues surrounding both plans. Note that neither of these engineering projects would actually produce more water. Building desalination plants would produce more water, so why the huge push to build the tunnels and raise the dam?

Literature reviews indicate there are at least three primary forces driving the plans to ship more Northern California water to SoCal. The first is, as they say, "follow the money trail". The second is the claim that projects like desalination plants are a "knee-jerk reaction" to climate change but don't really solve the problem. The third is simply a case of NIMBY (not in my back yard).

Let's start with the first issue – "follow the money trail". This past December marked the one-year anniversary for the Claude Lewis Carlsbad Desalination Plant, in Southern California. The plant was dedicated on December 14, 2015. Four months later it was honored with the Global Water Award as the Desalination Plant of the Year by Global Water Intelligence. They called it "the most impressive technical or ecologically sustainable achievement in the industry." In June 2016 it was recognized by the San Diego County Taxpayers Association for stretching taxpayer dollars through cooperation between the public and private sectors. A month later it was recognized by San Diego Gas & Electric for its "commitment to sustainability, energy efficiency and conservation." During its first year the Carlsbad plant produced 15 billion gallons of fresh water (45,000 acre feet) for local use in San Diego, before ramping up to 56,000 acre feet per year. Now, that's actual new fresh water produced on-site, without messing with the ecological systems elsewhere in the State. The new facility is part of San Diego's overall plan to improve water use efficiency, recycle more, and incorporate water from multiple sources. Construction costs were about \$1 billion. The final product costs about ½ cent per gallon, somewhat higher than if they had simply shipped in more water from other watersheds. That translates into about \$5/month for the typical San Diego household. In terms of actual water supply, the new desalination plant produces about 7% of San Diego's fresh water. Obviously, if San Diego is to fully address projected population growth and associated water demands, more plants must be built, but the supply of ocean water is essentially unlimited and there is plenty of land available if the political will and financing sources can be harnessed. It would seem that in San Diego, at least, residents and local government officials are planning for the future, and those plans don't simply amount to taking someone else's water. There is already a possible second facility planned for Huntington Beach.

The builders of the Carlsbad plant saved some construction funds because of the location chosen. The Carlsbad facility was built to take advantage of some infrastructure already in place for the Encina Power Station. Other plants can be built, but they may have to be slightly further inland, and with a more extensive piping system, so future plants are likely to cost more. Or, they may have to buy out someone else's location and remain on the coast, such as the Huntington Beach proposal. Still,

with Governor Brown pushing to spend nearly \$16 billion simply to move water from one place to another, desalination does seem to present a strong argument for actually increasing how much fresh water is available. The cost of the desalination plant is being paid for by the users of the water, those users are in relative proximity to the plant itself, and the end result is less dependence on water taken from a remote watershed.

But what about other users – such as subsidized farmers in places like Westlands Water District? Some of these water districts are affluent and influential in Sacramento. Obviously they would be unlikely to experience a benefit from coastal desalination plants. Given the quantities of water some of these agribusiness interests consume, they are far more interested in simply importing someone else's water than producing it themselves. Ah, but then there's more! Associated Press published a revised economic evaluation of the proposed tunnels by David Sunding of UC Berkeley, in September 2016. This analysis showed the tunnels wouldn't help some of the water districts as much as Governor Brown has promised, *unless the Feds pick up the tab for about 1/3 of the costs* (italics mine). So here is another "follow the money" clue – actual desalination plants are ultimately entirely paid for by the local water users, but Brown's tunnels might get to be subsidized! If enough voters and government officials are convinced that these water districts deserve more water from Northern California watersheds they may get someone else to pay for a hefty chunk of the bill. As for-profit enterprises that's a substantial motivator for these water districts to push for more and bigger dams, plus the tunnels, rather than the more expensive solution to make more water.

An LA Times article (4/24/15) implied that desalination plants are a mistake because they are strictly a knee-jerk reaction to a drought, rather than a long-term water availability solution. That's a curious position given newspapers generally hype anything that smacks of "global warming", now recast as "climate change". The article basically implies that "once the rains return" the higher-cost desalinated water will be excess, and the plants will be moth-balled. It fails to acknowledge that a functional desalination process would permit cities to permanently reduce their water import demands. There is some evidence to support their argument. Long Beach has an unused desalination plant built after a previous drought. Once the rains returned, it was shuttered because imported water was cheaper. They're now in the process of spending \$70 million to restart the facility and plan to spend \$4.1 million per year to operate it going forward. The United Nations predicts that by 2025 2.4 billion people will live in regions of intense water scarcity. Maybe Long Beach residents will decide to keep the plant operating in spite of the costs, and rely less on imported water going forward. That might help keep them from participating in that 2.4 billion-person water shortage. Analyses of historic Central Valley rainfall patterns show this state has experienced droughts lasting as long as three decades, so we're certainly not immune from a repeat of the last five years. If you truly believe that our climate is changing, and for the worse, then droughts such as what we've just experienced can reasonably be expected to become more common. That means we must prepare now, not wait till "knee-jerk reactions" become mandatory. Further, coastal city residents must accept desalination plants as a way to permanently ease the stress on those ecosystems where they currently take their water, not merely as short-term crisis solutions.



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Critics of desalination plants often claim that they cause substantial environmental damage – it's just conveniently out of sight under water. Certainly there are environmental effects, beginning with a large underwater intake for salt water. After extracting pure water, the extra-salty residue is mixed with more seawater and returned to the ocean. Certainly the intake sucks in some organisms, and the extra-salty return line will take some time and water volume to dilute. The weaknesses with this argument are two-fold. First, the location and screening of the intake can be made to minimize impacts to marine organisms, and I suspect that most people simply don't have a real notion of just how vast the ocean is compared to the amount of water processed by one of these plants. Natural desalination (evaporation) removes so much more water from the ocean than any number of desalination plants ever could that in the big scheme it won't be a huge issue. Second, the current scheme of bringing in water from the Sierras, the Colorado River and the Delta have all created their own ecological damage and somehow that damage doesn't appear to matter to many SoCal water interests, perhaps because that ecological damage is in someone else's back yard.

The NIMBY argument is at least more easily understood. After all, each of us generates trash but no one wants to live next door to the dump. We all want fuel for our boats but don't relish the thought of offshore oil wells and tankers where we troll for salmon. As the LA Times put it in 2015, "as big industrial facilities, desalination plants can't be plunked down just anywhere on the coast *without destroying the qualities that attract people to the shorelines*" (italics mine). Did you catch that? Basically the Times conceded that SoCal residents want a beachfront lifestyle, but don't want to share said beachfront property with anything, even water-producing infrastructure that detracts from their lifestyle. So perhaps we've identified another truth on the issue – a classic case of Not In My Back Yard.

Ultimately it will be up to the citizens of California, and their political leaders, to spend our money on a long-term water-production solution. We've seen the damage to our salmon producing rivers that the current water distribution scheme has created. Minimizing water losses and water recycling are important, but by themselves will not resolve the problem. Moving more water from Northern California, Sierra watersheds or the Colorado River to SoCal cities and Central Valley farming districts would simply create more ecological stress to previously affected areas. As California prepares for the future, more cities will need to follow the lead of San Diego and invest in the necessary infrastructure to obtain water from the ocean. With the \$16 billion Brown wants to spend on tunnels he could probably have a dozen desalination plants built and actually make a difference in the state's water supply for generations to come.

### **How Modern Desalination Plants Work**

Critics of extracting fresh water from the Ocean do have one thing correct. Desalination is a power-hungry process. Old-style desalination plants basically heated raw sea water to steam, then collected and cooled the steam back to pure water, recycling some of the energy in the process. That's how ships produce water. Modern commercial desalination plants use a process called "reverse osmosis". This process forces high-pressure seawater against a membrane with such fine molecular-sized holes that water molecules can squeeze through, but salt molecules can't. By the time the process is completed, two gallons of sea water have been converted into one gallon of fresh water plus one gallon of doubly salty residue. The residue is then diluted with other raw seawater and pumped offshore to mix back into the ocean. The new fresh water then has chlorine added to keep critters from growing in it during storage and distribution.



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# Help Plan Humboldt's Fishing Future!

By Rob Dumouchel and Laura Casali  
Graduate Students, Environmental and Natural Resource Science  
Humboldt State University  
Fishing Community Sustainability Project for Eureka and Shelter Cove

If you had \$5 million what would you do to improve commercial and recreational fishing opportunities on the North Coast? That's a question that Humboldt State University researchers will be asking fishing community stakeholders this summer as part of a three-year Fishing Community Sustainability Planning project.

Fishing Community Sustainability Plans (CSPs) are a way for fishermen to have a direct impact on the future of their port and the fishing industry. This is a proactive process which engages recreational and commercial fishermen, fish processors, boat builders and mechanics, local governments, and other waterfront stakeholders to capture their vision for the future of our ports. The ports of Morro Bay and Monterey have both recently created CSPs and are starting to see some benefits from engaging in the process. There will be two separate plans created as part of this project, one for Shelter Cove and one for Eureka.



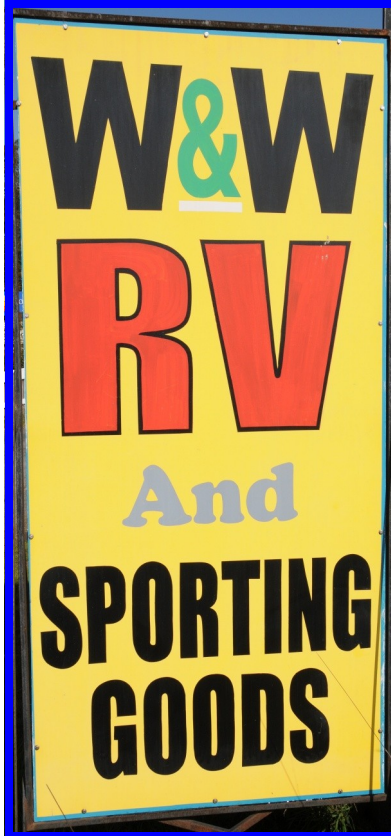
A team from Humboldt State University, led by Dr. Laurie Richmond, along with [Lisa Wise Consulting](http://www.lisawiseconsulting.com/) (<http://www.lisawiseconsulting.com/>), a firm that specializes in waterfront planning, will be collaborating with fishing community stakeholders in Eureka and Shelter Cove to develop strategies for the future of each port. The work is funded by the National Marine Fisheries Service's Saltonstall-Kennedy grant program with additional support provided by a California State University Agricultural Research Institute grant.

The research team is looking for commercial and recreational fishermen, mariculture representatives, as well as fishing support businesses (such as processors, fish markets and tackle shops) to volunteer to be interviewed one on one, or to refer people in these businesses to us. This year we will also be holding public meetings for waterfront stakeholders, fishermen, mariculture, and local government representatives to open up the conversation to the people from the port and ask: What improvements does your port need to be prosperous in the future?

You can learn more about this project at [HumboldtFishPlan.com](http://humboldtfishplan.com) (<http://humboldtfishplan.com>). You can also follow the project at [facebook.com/humboldtfishplan](https://www.facebook.com/humboldtfishplan), or [sign up for our email newsletter](https://rjd255.wixsite.com/humboldtfishplan/fcsp-newsletter) (<https://rjd255.wixsite.com/humboldtfishplan/fcsp-newsletter>). If you're interested in being interviewed by the project team we would love to hear from you. If you fish out of Shelter Cove, please contact Laura Casali at [lrs35@humboldt.edu](mailto:lrs35@humboldt.edu). If you fish out of Eureka, please contact Rob Dumouchel at [rjd255@humboldt.edu](mailto:rjd255@humboldt.edu).

[See more in a video segment on the Lost Coast Outpost!](https://lostcoastoutpost.com/2017/apr/25/video-humboldt-state-launches-two-year-study-devel/)  
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# Dredging up an answer

by Casey Allen

We have two serious yet separate dredging issues in Humboldt Bay. Both are largely caused from sediment produced by the Eel River. The first is the heavy, large particles that flow on the winter currents that surge north. The heavy sediment collects in the entrance of Humboldt Bay after confronting the jetties. This results in shoaling where sand piles up creating a bar that limits deep draft ships from entering the bay and creates dangerous waves that threaten smaller craft. Each spring, the Army Corps of Engineers (ACOE) contracts a large dredge to scoop up the sand and deposit it offshore. It normally costs around \$4.5 million each year but in 2015 the shoaling was so bad the costs soared to \$7.5 million.

During the mid 1990s, the ACOE and others came up with a number of options for a long term sediment management plan. They ranged from continued dredging, to collection pits to trap the sediment offshore, to barrier reefs to redirect the sediment away from the harbor entrance. HASA supports the sediment barrier reef option utilizing derelict barges and other material because it could deflect the sediment to deeper water, reuse the derelict barges, and create rockfish habitat. The ACOE needs a three year, \$3 million study to decide which option is best. They have asked the Harbor District to split the cost of the study. I feel the Harbor District should not be asked to put up \$1.5 million, which they don't have. The ACOE is spending millions in dredging costs and could save much of that with a long-term solution. In the meantime, nothing is happening except the sediment is still moving and dredging is still occurring.

This year, some entrance and channel dredging has been contracted, but not enough funding is available for what is needed. Work to secure more funding is ongoing but there is a lot competition from other West Coast ports that are also in dire need of dredging.

The second issue is caused by the small, light sediment particles that suspend in the water column and ride the current and tides into Humboldt Bay from offshore sources, from streams entering Humboldt Bay, and wind generated sediment from the mud flats. The muddy water flows into the bay and the light sediment settles to the bottom in the upper reaches of the bay and eddies where the current slows. This includes locations like the marinas, boat ramps, and any other calm spots. It also settles in the channels during slack tide, but the tidal currents flow enough to lessen the buildup. This material has historically been removed by a suction dredge and deposited on the beach to be dissipated by the waves or temporarily deposited in upland fill sites.

Studies estimate the Eel River produces an average of 2.3 million cubic yards of sediment per year that reaches the ocean. The river sediment is caused by heavy rain, erosion, and human activities like logging, road building, gravel mining, and other agriculture. When the sediment reaches the ocean, typically in winter, the currents along the beach flow north. During the summer and low river flows, the beach currents are slower and flow south. The streams that flow directly into Humboldt Bay do not contribute nearly as much sediment as the Eel and Mad rivers. There is also some redistribution of sediment during windy periods when the bay is frothed; stirring up the mud and the tide moves it elsewhere.

In 1998, the Environmental Protection Agency (EPA) issued a permit to dredge the light sediment from Humboldt Bay and deposit it on the beach. In 2007, the 10 year dredging permit was still in effect and the sediment was again disposed of on the beach. This time there was substantial opposition from Baykeeper and Surfriders. An agreement was made to never use beach disposal again, and the Harbor District was tasked with finding an alternate disposal method. It is unclear if this was a binding agreement but Baykeeper and the Surfriders are still opposed to beach disposal and the EPA has indicated they would not permit beach disposal. Their argument is beach disposal denies access and wrecks the aesthetics for beach goers during the period of beach disposal.



Now 10 years later, the fine sediment has again inundated the marinas, boats are sitting on the mud, and the boat launch ramps are unusable at low tide. Commercial fishermen are moving to Crescent City and the tall ships that visit during the summer tourist season may not return. The Harbor District has been busy, but has not nailed down an alternative dredge disposal method that has support from both the community and regulatory agencies. Now we are in crisis.

On May 3<sup>rd</sup> 2017, the Harbor District and City of Eureka held a meeting at the Warfinger Building to discuss the options for fine sediment dredging. The discussion was led by Miles Slattery from the City of Eureka and Jack Crider, CEO of the Harbor District. They described each option for dredge disposal, the associated costs and environmental impact. They said the beach disposal was the most efficient and environmentally friendly disposal method. But because of the prior agreement and objections from Baykeeper, Surfriders, and the EPA, that option appears to have been taken off the table.

The next best option was in-bay disposal where the dredge spoils are moved into the flow lane or shipping channel, a large proportion would naturally flush out of the bay on the outgoing tide, with the remaining heavy sediment being scooped up and taken offshore by the ACOE dredge. This method is used in many ports on the West Coast, but the ACOE is working to move away from this method due to funding limitations. Another problem is that the spoils are too fine and there is no opportunity to remove the beer bottles and other garbage before it is taken offshore.

The other options were pumping the dredge spoils to upland disposal sites. This was the most costly option as the material would have to be handled more than once. The spoils would be moved to a contained site for de-watering and then removed to be used at some restoration project. Unfortunately, the EPA has identified the material as too fine to be reused in most restoration projects even though it is the same material deposited on local beaches by the Mad and Eel Rivers.

The upland sites each have their own drawbacks. The site called the “superbowl” near the Samoa Airport and drag strip was created for dredge spoil disposal but now has an endangered plant growing there. White’s Slough cannot receive the large amounts of dredge spoils, and the pumping distance from Eureka marinas makes it expensive to purchase the pipe and pumps necessary to get the sediment to the south bay.. The most likely place is the Samoa Lagoons that are located between the Samoa Bridge and the turnoff to the Samoa Cookhouse. Of course, that is one of the most expensive locations as the existing lagoons will need to be cleaned out to make room for the new spoils and the dewatering will have to go through clarifiers before being pumped back into the bay. Its limited volume may require dredging to be spread over a few years.

The use of the ocean outfall pipe from the pulp mill is possible, but will incur large capital costs. It would also take space in the pipe more suited to other uses, like transoceanic fiber telecommunications cables, wave generated electric cables, and a grey water disposal pipe from the City of Eureka (this would improve overall water quality in the bay).

The Harbor District and City of Eureka have been working on this every day and recently had a meeting with all the permitting agencies except the EPA. From my sources, it appeared the agencies present were close to agreement that beach disposal was best, because of the large amount of material to be dredged, around 230,000 cubic yards. But the EPA announced in a later conference call that they could not grant a permit for beach disposal because it would be a violation of law.

Once this large amount of dredging is completed, it should be affordable to maintain a dredging cycle with the new dredge, utilizing upland disposal sites. There are projects on the horizon that may be able to reuse the material, but we can’t wait for them. The community is losing revenue as we struggle with this crisis.

The Harbor District has been criticized for seemingly doing nothing since the 2007 dredging agreement that tasked the District to find an alternate disposal method. But since then, they changed CEO’s, saved the bay from disaster by acquiring and cleaning up the pulp mill, acquired and refurbished a suction dredge, and overcame the unprecedented and extreme shoaling at the bay entrance in 2015. All this, while slowly improving their economic outlook.

It appears to me the solution will be a political one. When the agencies are at odds or the laws prohibit doing the right thing or the situation is so dire the cost is unaffordable, then it is up to our elected officials to find an answer. You can help by reminding them how important a working bay is to the entire community.

The 10<sup>th</sup> Annual  
**SkyCrest Lake Youth Fish  
Derby & Firewise Day**

"Hosted by the Willow Creek Fire Safe Council"

**June 10, 2017**

**SkyCrest Lake, Burnt Ranch-Underwood Mtn. Rd**

(Directions: [skycastlelake.com](http://skycastlelake.com))



Fishing and Prizes

**Free Event for Youth 3 yrs to 15 yrs**

**Times: Registration 8 am - Fishing 9 am to Noon**

**FREE HOT LUNCH FOR ALL - 10 am to 12:30 pm**

**Shore fishing only - No Pets - No Alcohol**

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# 8th Annual HASA Dinner - What fun in 2017!

By Cliff Hart, Fundraising Chair



We had another successful HASA fundraiser on April 15, 2017 at the Arcata Community Center thanks to a great fundraiser committee, awesome donators, and all you loyal supporters. HASA is your local voice for saltwater sport-fishing issues and it would not be possible without all of you. The new location was great, lots of room, great sound system, great food, lots of prizes, and lots of fun was had by all.

I would like to recognize our fundraiser committee and volunteers: Cliff & Leslie Hart, Ben & Sue Doane, Jimmy & Brenda Yarnall, Megan Yarnall & Will Gannett, Michael & Tami Davies-Hughes, Jim Hall, Mike Beck, Aaron Martin, Tamara Camper, Seth Naman, Dirk Pedersen, Scott & Becky McBain, Tom & Mary Marking, Kent Hulbert, Eric Stockwell, Gene Morris, Ross Taylor, Larry & Carol De Ridder, Tim & Sherry Klassen, Bob Stewart, and Casey & Marlene Allen. Also thanks to all who sold tickets for HASA, including our partners at Bucksport Sporting Goods Eureka, Englund Marine Eureka, Mad River Tackle Arcata, Pacific Outfitters Eureka, and W&W RV & Sporting Goods Eureka, and fundraiser committee and HASA board members.

We had 269 dinner tickets turned out for the event, including 23 children. The food was provided by Ramone's Catering and was awesome, and the linens were donated by Mission Linen. The beverages were donated by Mad River Brewery, Six Rivers Brewery, Redwood Curtain, North Coast Mercantile, Del Reka Distributing, Septentrio Winery, and John's Fine Cigars/Myrtlewood Liquors. Our auctioneer was Fred Van Vleck who did a fabulous job for us and was a lot of fun.

We raised \$32,000 with an approximate net income of \$20,000 that will be used for projects and representing us North Coast sportfishers during the 2017/2018 fiscal year. The live and silent auctions raised \$13,000 and raffle ticket sales were \$7,500. We had 10 live auction items and 50 silent auction items, including but not limited to a 7-day Maui trip from Trips for Charities, recliner from Arcata Exchange, GoPro package from Pacific Outfitters / HASA, goose hunt from Mitch Ferro/Don Banducci, drift boat fishing trip for two with Kenny Priest sponsored by Shalise Miles of Caliber Home Loans, six pack boat charter in Shelter Cove with Sea Hawk Sportfishing, 250-pounds of beef donated by Crazy River Ranch / HASA, and two rod/reel combos donated by Accurate Reels, Pacific Outfitters, and HASA. We also had the Zulu Nyala Africa trips once again that were bought for a bargain at \$1,200 each by Tamara Camper-Dart and Glenn Hurlburt. These are just a small sample of all the wonderful donations from our sponsors (see list of sponsors below). The Super Raffle prize was an awesome Accurate reel/Seeker Rod combo, and the door prize was a Bradley smoker donated by Englund Marine Eureka.

We had around 60 raffle items that were provided by various donors. Please remember to patronize and say thank you to those businesses and individuals who donated to our fundraiser: Crazy River Ranch, Pacific Outfitters, B2Squid, Living Styles, Englund Marine Eureka, Kokatat, Accurate Fishing, Trinidad Rancheria, Arcata Exchange, Shalise Miles / Caliber Home Loans, Rick Urban, Fish Brothers, Mid-City Motor World, West Coast Bait, Sea Hawk Sport-

fishing, Green Water charters, Mission Linen, Mad River Brewery, Six Rivers Brewery, Redwood Curtain, North Coast Mercantile, Del Reka Distributing, Septentrio Winery, John's Fine Cigars, Laytonville Chevron, RipCharts, A-Z Eye Care, Aldaron Laird, Redwood Coast Spreader Bars, Tim & Sherry Klassen, McKinleyville Office Supply, Bob & Charleen Hoopes, Curtis Wilson/Wind Rose Charters, Humboldt Moving & Storage, Rob & Stephanie Freeman, HealthSport, Keenan Supply, W&W RV & Sporting Goods, Lima's Pharmacy, O&M Industries, Michael & Jeffrey Holland DDS, Ken Cunningham, Englund Marine Crescent City, Scott & Becky McBain, Arcata Stay, Les Schwab McKinleyville, Cliff & Leslie Hart, Leon's Car Care, T's Cafe Arcata, Kreation's Auto body, Lithia Dodge, Bucksport Sporting Goods, Ben & Sue Doane, Degrees of Green Landscaping / Mike Beck, Rick Alexander / Almqvist Lumber, Bedliners Plus, Conti Auto, Ray's Old Town Auto, Gold Rush Coffee, Harper Motors, J's RV Center, Mitch Farro/Don Banducci, Mobile Marine, Mr. Fish, Old Town Coffee & Chocolates, Oregon Trail Foods Roseburg, OR, Titan Knife Technology, Trips for Charities, Zulu Nyala Game Preserve Africa, Steve's Septic Service, Kent Hulbert, Phil Grunert, Redwood Coast Spreader Bar, Migration Clothing, Sustained Designs, Oregon Trail Foods, Green Diamond Resource, Red & Nancy Jioras, Papa Murphy's Pizza, Coast Central Credit Union, Central & Mane Hair Supply, and Jason Bonhote.

We received \$700 in donations for the kids raffle. All 23 kids walked away with at least two items, such as a rod/reel combo, tackle box, tackle bags, snorkel sets, a Kindle Fire, among others. Special thanks to Lima's Pharmacy, O&M Industries, Michael & Jeff Holland DDS, B2 Squid, Phil Grunert, and Pacific Outfitters for donating to the kids raffle. And thank you to Bob & Charleen Hoopes who provide a large cash donation to HASA every year to support the kids raffle.

We had several vendors this year that displayed their products or services, including the Coast Guard Auxiliary, B2Squid, Redwood Coast Spreader Bars, and Migration Clothing.

Thanks again for everyone who contributed to, supported, and attended our annual fundraiser. We are always looking for more volunteers to assist with pre-planning or assisting on the night of the event, so if you're interested and/or have suggestions for improvements in next years' event, please contact me at [HASA6191@gmail.com](mailto:HASA6191@gmail.com).





# Update: Mercury Testing of Sport-caught Food Fishes within Humboldt Bay

By Ross Taylor

In August of 2016, Humboldt Baykeeper contracted with Ross Taylor and Associates to assist in implementing a study to test the methyl-mercury levels in commonly sport-caught food fishes from Humboldt Bay. This current study is funded by the California EPA as a follow up to a statewide study conducted by the State Water Resources Control Board's Surface Water Ambient Monitoring Program (SWAMP) in 2009 and 2010 which tested methyl-mercury levels in commonly caught coastal fishes. The SWAMP study tested nearly 3,500 samples collected from 46 fish species captured at 68 locations along the California coast. SWAMP documented high levels of methyl-mercury in several species commonly caught along the north coast, including a leopard shark from Humboldt Bay that had one of the highest concentrations of methyl-mercury of all the fish tested.

For the Humboldt Bay project, the primary criteria for selection of focal fish species included:

- The species is commonly fished for in Humboldt Bay and kept as a food source.
- The species resides within Humboldt Bay for a significant part of the year.
- The species is relatively long-lived, thus more susceptible to bioaccumulation of toxins.
- The species is already associated with methyl-mercury health advisories within coastal waters of California.
- The species is an important indicator to statewide tracking of methyl-mercury levels due to its wide distribution and abundant populations.

The fish species meeting these criteria included leopard shark, bat ray, California halibut, lingcod, and shiner surfperch. Several species of clams were also included in the study at the request of the Wiyot Tribe due to their cultural importance to the Tribe. These included Martha Washington, little neck and horse neck clams. For the Humboldt Bay study, flesh samples from five fish or clams of each species will be collected.

To avoid cross contamination of flesh samples, the Humboldt Bay study closely followed collection, handling and processing methods developed by the U.S. EPA. From each fish, approximately an eight ounce, skinless filet was kept, wrapped and frozen until being sent to a laboratory for testing. Each sample included a detailed label which identified the species, length and weight of the fish, and capture date and location.



**Photo 1.** Leopard shark caught in "Arcata" channel of Humboldt Bay.

In August of 2016, Baykeeper enlisted the services of Captain Phil Glenn and his boat the Bluefin to assist in collecting fish for the study. On two half-day trips we caught five legal-sized California halibut, three bay rays and one leopard shark (Photos 1-3). Numerous undersized halibut and brown smooth-hound sharks were caught and released. Additional sampling in September of 2016 conducted by Ross Taylor and Associates resulted in samples from two more bat rays and a lingcod. Clam samples were collected in south bay with assistance of the Wiyot Tribe on March 30, 2017. The remaining fish samples will be collected in May and June of 2017. If time and



**Photo 2.** Measuring a bat ray caught just north of the Samoa Bridge in Humboldt Bay.

budget allows, additional clams may be sampled from other areas of Humboldt Bay. A final part of Baykeeper's study is to interview fishermen around Humboldt Bay regarding fishing habits, species kept and how frequently they and their families eat fish caught from the bay. These interviews will include various user groups on Humboldt Bay, including the Latino and Hmong communities, the Wiyot Tribe, dock fishermen, jetty fishermen and boat-based anglers.

Eleven samples from Humboldt Bay were analyzed in the fall of 2016: five California halibut, five bat ray and one leopard shark. Consistent with the SWAMP report, the leopard shark was extremely high in methyl-mercury at 1.192 parts per million (ppm) (Figure 1). The California Office of Environmental Health Hazard Assessment's (OEHHA) no consumption advisory tissue level of 0.44 ppm provides an upper bound threshold for assessment of

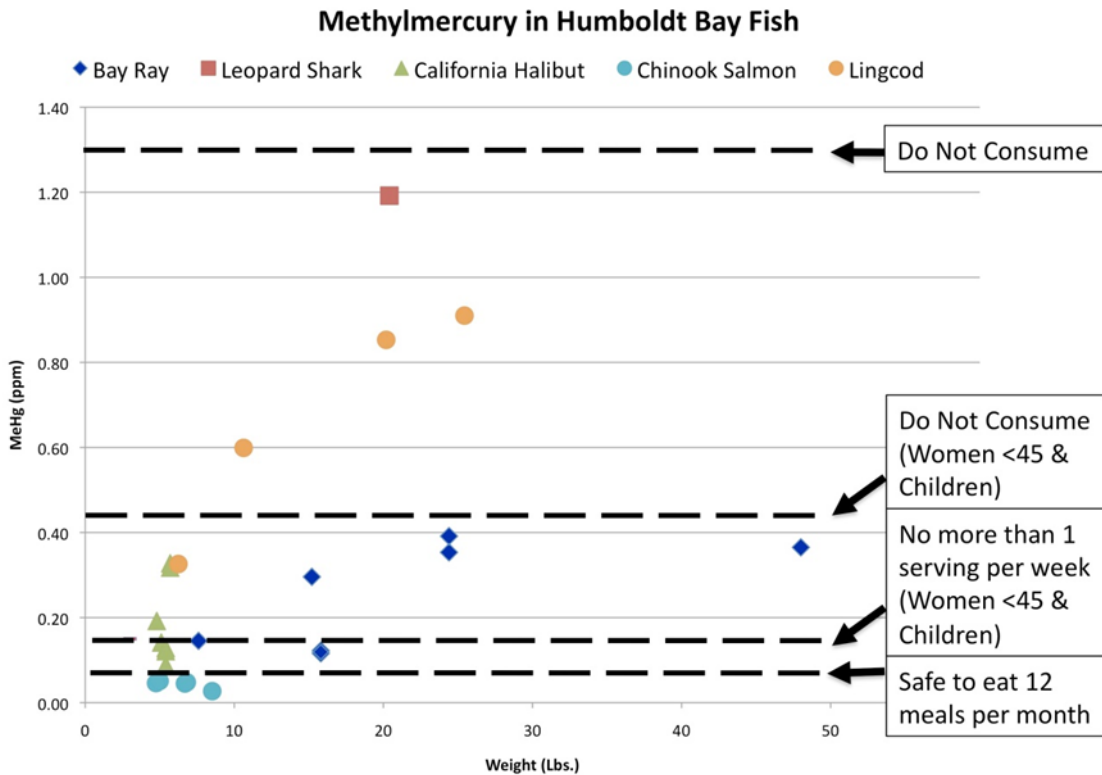
methyl-mercury in California sport fish. This value represents a relatively high concentration above which consumption is not safe for the most sensitive fish consumers (children and women of childbearing age) and was set to protect for developmental neurotoxicity. The 0.13 ppm threshold shown on Figure 1 was set as an overall “do not consume” advisory. The lowest line on Figure 1 equals 0.07 ppm and concentrations below this level are considered safe by both OEHHA and CA EPA for subsistence consumption (up to 12 meals per month). Ten samples from a CA Fish and Game 2005 study were added since these two species are commonly caught by our north coast anglers: five lingcod from Cape Mendocino and five Chinook salmon from just outside Humboldt Bay (Figure 1). Note as the size (weight) of the lingcod increases, so does the level of methyl-mercury.

Results from the SWAMP study that HASA members should be aware of were the elevated methyl-mercury levels of several rockfish species tested from Cape Mendocino and Shelter Cove. All samples taken from copper rockfish, China rockfish, gopher rockfish and cabezon had methyl-mercury levels exceeding 0.44 ppm, with several individuals >1.0 ppm. Additionally, copper rockfish and gopher rockfish from northern Humboldt County also had levels above 0.44 ppm. These species tend to be long-lived and are classified as benthic (bottom) feeders. In contrast, blue rockfish and black rockfish of comparable sizes, tested below 0.44 ppm, probably due to these species attaining similar sizes at a younger age and also tending to feed higher in the water column (pelagic feeding versus benthic). The full SWAMP report is available at: [http://www.waterboards.ca.gov/water\\_issues/programs/swamp/docs/coast\\_study/bog2012may/coast2012report.pdf](http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/coast_study/bog2012may/coast2012report.pdf)



**Photo 3.** HSU Fisheries professor Darren Ward with California halibut caught just north of the Samoa Bridge in Humboldt Bay.

Baykeeper’s final report for the Humboldt Bay mercury study will be completed by the fall of 2017.



**Figure 1.** Methyl-mercury results for five bat rays, five California halibut and one leopard caught in Humboldt Bay, August-September 2016. **NOTE:** Chinook salmon and lingcod are from 2005 CA Fish and Game study and were captured in ocean in front of bay entrance (salmon) and at Cape Mendocino (lingcod).

# Monitoring Sacramento Pikeminnow in the Eel River: Summer 2016

By: Patrick Higgins, ERRP Managing Director



## Acknowledgements

The Eel River Recovery Project thanks the Salmon Restoration Association (SRA) for funding our work on the non-native Sacramento pikeminnow. In addition to supporting our Chinook salmon and pikeminnow monitoring in the Mendocino County portions of the Eel River, SRA also funds salmon habitat restoration projects in coastal streams and the Mendocino High School SONAR program. SRA raises these funds by hosting the World's Largest Salmon Barbeque on Fourth of July weekend each year in Fort Bragg, which is a tremendous community event.

Dr. Bret Harvey of the U.S. Forest Service Redwood Sciences Laboratory collected extensive baseline data on Sacramento pikeminnow of the Eel River. We are thankful for his oversight of our study and for training divers to differentiate between California roach and pikeminnow. His presentation at Standish Hickey State Park on the night prior to the June 27-28 dives was also appreciated by campers who attended the talk. Thanks also to the Standish Hickey State Park Interpretive Association for providing a beautiful campsite for two nights for divers.

The success of the pikeminnow dive, however, was largely owing to a very high quality dive team comprised of motivated volunteers and ERRP contractors. Phil Georgakakos and Noah Israel from the University of California Berkeley provided a lot of energy and expertise and their participation is greatly appreciated. ERRP volunteers Willie Grover and Dave Sopjes also had considerable experience from participating in many previous ERRP fall Chinook dives. Fisheries professional Tim Salamunovich of Normandeau Associates joined the team on the second day – thanks Tim! Pat Higgins, ERRP Managing Director has years of experience and kept the team on task. Although Barbara Sopjes did not join in the dives, her help with spotting vehicles helped the team a lot. ERRP also wishes to thank volunteer Mickey Bailey, who assisted with a 2 ½ mile pikeminnow census of the main Eel River survey above Woodman Creek. Sal Steinberg pulled together the More Kids in the Woods project that involved Van Duzen River 4<sup>th</sup> grade students in supervised dive observations; his efforts are much appreciated. We wish to also thank North Fork Eel volunteer Brett Lovelace for access and monitoring participation.

Eric Stockwell deserves special thanks for being the water Sherpa, dragging and floating a kayak with dry bags that contained note books, equipment and lunches. He did a great job photo-documenting the trip and taking GPS waypoints to establish the location of large groups of pikeminnow.

## Introduction/Background



Eric Stockwell readies his camera as he cruises through a SF Eel River pool

Since its formation in 2011, the Eel River Recovery Project (ERRP) has been concerned with the potential impacts of the introduced Sacramento pikeminnow (*Ptychocheilus grandis*) on the Eel River's native fish community (Smalley and Higgins 2011). Residents of the Eel River watershed are worried about predation by the pikeminnow on salmon and steelhead juveniles and would like to see action taken to control this invasive, non-native species.

Formerly known as squawfish, the pikeminnow is one of the larger members of the minnow family, *Cyprinidae*, with voracious pike-like feeding habits (Figure 1). Their native range is the Sacramento-San Joaquin, Pajaro-Salinas River, Russian River, and Clear Lake drainages in California. They have been introduced into the Eel River, Morro Bay tributaries, and southern California streams. Moyle et al. (2008) summarized the problem in the Eel River basin:

“In the Eel River, Sacramento pikeminnow were introduced illegally in 1979 and they quickly spread throughout much of the watershed (Brown and Moyle 1997). They are now one of the most abundant fish in the river and it is highly likely that they are suppressing Chinook salmon populations through predation on emigrating juveniles.... Pikeminnow not only prey directly on juvenile steelhead but they displace them from pool habitat into less desirable riffle habitat, presumably resulting in reduced growth and survival.”

Genetic analysis indicates the Eel River population came from upper Cache Creek or Clear Lake (Kinziger et al. 2014). They were likely introduced by fishermen who imported small fish as bait to fish for bass in Lake Pillsbury. High flows in 1983 and 1986 allowed rapid spread of the population downstream to the estuary. By the 1990s, the pikeminnow had colonized the entire Eel River stream network (Brown and Moyle 1991, 1997) up to waterfalls that prevented further migration. The growth of the population was exponential when first introduced (Clancy 1993), because the fish found little competition and optimal habitat in the main Eel River channels that had been profoundly changed by the 1964 flood. Harvey and Nakamoto (1999) found that adult pikeminnow in the Eel River occupy the same pools year after year. Substantial predation by pikeminnow on steelhead juveniles in the upper South Fork Eel River was documented by Nakamoto and Harvey (2003), and it was greatest during fall when water clarity was high. White and Harvey (2001) noted that predation by pikeminnow had substantially reduced native sculpin populations in the Eel River. Native Sacramento suckers also appears to be at low levels and patchy in distribution (Higgins 2013, 2015). Surveys since 2012 by ERRP suggest that pikeminnow have declined, possibly as a result of intensive otter predation (Higgins 2015).

Eel River pikeminnow surveys are necessary to gauge the potential level of predation on salmonids (Harvey and Nakamoto 1999, Harvey et al. 2002) and other native fishes. Nakamoto and Harvey (2003) noted that strategically cropping the largest adult pikeminnow in reaches of the river where there is high production of juvenile salmonids may be necessary to limit predation. There have been extensive plans for pikeminnow eradication or management in the past (Upper Eel Task Force 1992; NMFS 2002), and some actions to remove them (Downie 1992a, 1992b; PGE 2007), but none since the National Marine Fisheries Service (2008) halted PG&E control efforts within and immediately below the Potter Valley Project.

*Editor's note: The entire 22 page report can be seen on our website [humboldtasa.com](http://humboldtasa.com)*

# Humboldt Currents - Spring 2017

by Casey Allen



The Fourth Annual **Trinidad Kids Pier Fishing Tourney** has been set for Sunday, Sept. 17<sup>th</sup>. This fun event is sponsored by the Trinidad Rancheria, California Department of Fish and Wildlife, California Pier Fishing Association, International Game Fish Association, Humboldt Area Saltwater Anglers, and others. Tackle and bait are provided for those who do not have their own. This is a safe, easy fishing outing for kids of all ages and their families. The Trinidad Pier is a beautiful place and if not many fish are caught there are still plenty of prizes for all the participants. Be sure to put this on your calendar.

The **Humboldt Bay Offshore Artificial Reef** project is still alive. The Department of Fish and Wildlife has received so many requests for artificial reef projects the length of the California Coast, they have decided to revamp their reefing program. Legislation needs to be changed because the CDFW is only chartered to place artificial reefs for fisheries enhancement. The requests for projects spans dive sites, surfing reefs, mitigation reefs, and sediment abatement reefs. These are much different from fishery enhancement reefs. Before they can develop a state-wide reefing plan they will need to inventory the existing reefs to see what worked and what did not work. Our reef is strictly a fishery enhancement reef and is much different than any of the reefs placed in Southern California. The habitat is different and the fish are different, so we are hoping we will not have to wait for a complete re-evaluation before our project can be heard. CDFW is an advisory agency to all the permitting agencies in California and key to the success of our project. Stay tuned!

**Marine Protected Area (MPA) Baseline Monitoring** project results are in! Billed as a single data point in time, the baseline studies are the beginning to a long term monitoring project comparing MPAs to non protected areas. The obvious goal is to measure the impact of human activity in the marine environment to areas off limits to human activity except for non-take observation. The initial results seem to be neutral in most cases. One finding was that the farther from port the better the fishing and the bigger the fish. Although this seems obvious, the researchers were happy to show that humans had a detrimental effect on fish populations and size. On the other hand, some MPAs had fewer abalone than outside the MPA because urchins were taking over without being checked by commercial harvest. Another finding was the unexplained decline of sea stars, which was obvious over the two year data collection period. Monitoring will continue each year and funding is supposed to be solid. The results and presentations can soon be viewed at [OceanSpaces.org](http://OceanSpaces.org). A future meeting between MPA managers and recreational anglers will be scheduled later this year, likely November.

I participated in the **American Fisheries Society** panel discussion on “Diverse Perspectives in an Era of Political and Environmental Change” during their Cal-Neva AFS Conference held in Eureka this year. The panelists represented different aspects of fishery interests. I represented recreational fishing, Laurie Richman academics, Aaron Newman commercial fishing, Greg Dale mariculture sales, and Eric Schlagenhauf mariculture farming. The audience included fisheries professionals and students. It was a great discussion that ranged all over the map and the main take away was that there is a future in fishery science. There is a strong desire to keep people fishing into the future and it will take bright new minds to figure out how to do that without harming the resource.

I also attended the **NOAA Recreational Fisheries Roundtable** meeting in Newport Oregon last March. It was much the same as the panel discussion described above. The roundtable included NOAA Recreational Fishing management, scientists, and economists; Pacific Fisheries Management Council members, recreational nonprofit reps, and tackle manufacturers and retailers. NOAA management was very concerned about a proposed 20% cut in funding by the new administration. This could mean NOAA’s National Marine Fisheries Service would not have the personnel to conduct stock surveys. That would have a potential affect on those fishery managers who rely on the stock assessments to set season and take regulations. If that is the case, the general thought was managers would err on the side of caution. That could translate into shorter seasons and reduced limits for recreational anglers. The roundtable had a long discussion on the use of artificial reefs. It seems all the fisheries entities have in their charter the clause “to enhance recreational fishing opportunities.” All are struggling to find a way to do this and because of this the use of artificial reefs is getting a lot of attention. In fact, the 2017 NOAA West Coast Recreational Fishing Implementation Plan lists our artificial reef project as part of their plan. The last interesting discussion item was the need for more young anglers participating in the sport. Most cited reasons why participation has waned (video games, internet, etc) with the most likely being a lack of easy and productive places to fish. The days when every body of water was stocked with trout are gone. Fishing has become harder so most parents are not up to teaching their kids. We need safe and productive waters where mom and dad can take kids fishing. The guy from Northwest Steelheaders said it best, “rainbow trout are the gateway drug to fishing.”

Concern was expressed for **California halibut** by Phil Grunert during a meeting of the Humboldt County Fish and Game Advisory Commission. He pointed out that the California halibut that reappeared in Humboldt Bay last year might be overfished this year due to effort shift caused by the closed salmon season. We posed his question to California Department of Fish and Wildlife marine biologist, James Ray. Here is his email response:

*First, there may be an effort shift to CA Halibut in the bay with the cancellation of the recreational salmon fishery. However, it's worth noting that really major shifts in effort into the bay only usually occur when other fisheries in addition to the salmon fishery are limited, such as Pacific Halibut and/or Groundfish.*

*It is believed that CA halibut in Humboldt Bay do not reproduce because the water temperature for them to do so is generally too cold. There has been no compelling evidence that consistent spawning occurs here. This explains why the occurrence of legal sized CA Halibut in the Bay is sporadic. Essentially, in warm water years, such as El Ninos, juvenile CA Halibut move up the coast with warm water from spawning areas further south (although exactly how far north spawning occurs is unknown). When the juvenile fish reach Humboldt Bay they take up some form of residency and grow. Once they reach a size that they can be caught on hook and line, fisherman start to take notice, although when this first occurs many of the fish are sub-legal and cannot be kept. Over a few years, all the while the fish growing, natural mortality (predation etc.) as well as removal through fishing pressure reduces the population. So, for a few years, folks are catching a lot of CA Halibut of a similar size, but then the numbers begin to dwindle, because there is no recruitment from local reproduction and there is very little immigration. The warm water events that bring new fish into the bay don't tend to last more than a couple of seasons at a time. After several years of this, you'll eventually only hear of the occasional capture of a large CA Halibut.*

*What does this mean?*

*From a fishery management perspective, because no reproduction is occurring in Humboldt Bay, production of future generations of CA Halibut in the bay does not rely on the fish present in the bay. Rather, continued occurrence of fish in the bay over time, albeit sporadic, relies on a healthy spawning population persisting further south. In this respect, it is highly unlikely that increased fishing pressure in Humboldt Bay, either from recreational or commercial sources, will negatively impact the overall CA Halibut population and more restrictive measures are probably not necessary. Therefore, adequate harvest control regulations to ensure sustainability of the population are better focused in geographic areas that encompass the spawning component of the population. However, increases in pressure will reduce the amount of time (in years) that CA Halibut are available in the bay as they will be fished out more quickly. Finally, it is entirely possible that some time in the future (possibly near future) CA Halibut will start spawning in Humboldt Bay as ocean water temperatures increase. That may necessitate a revision of current thinking.*

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**HASA is working** with the County of Humboldt, City of Eureka, CDFW, and the North Coast MPA Collaborative to place new kiosks at Humboldt Bay launch ramps. The goal is to consolidate the signage while providing more space for important notices and placing them in a location where folks can easily access them. Each organization has funding, labor, and permitting ability so the combined effort should succeed.

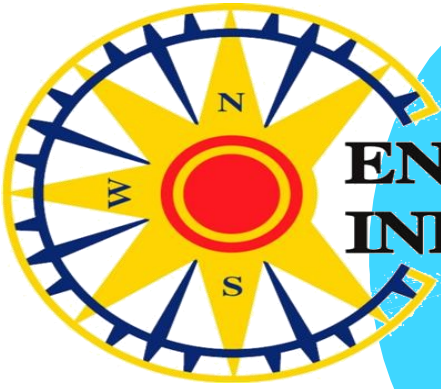
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