



Word on the Waves

a publication of the Fisheries Observation Science Program at the Northwest Fisheries Science Center

Observer Spotlight:

Sean Sullivan

Observing since 2010
Currently stationed
in Astoria

Observers are adventure seekers. They like to roam, see new places, meet new people. Sean Sullivan is no exception.

Hailing from Newtown, Connecticut, Sean earned his Biology degree at Western Connecticut State University and then hit the road.

Sean's first stop was the Chesapeake Bay where he worked for the State of Maryland as a crew boat captain. After shuttling biologists around the bay for three years, Sean decided it was time to get back to being a biologist. This led him west and to the Observer Program.

Sean is one of the Program's first Catch Share observers. He transitioned to the non-catch share sector in 2012,

working in it 2014 and 2015. This year he'll also be covering the Electronic Monitoring EFPs (EM EFP's) a hybrid observer, who are non-Catch Share observers using Catch Share protocols on EM EFP vessels.

With almost eight years of water time under his belt, Sean's developed a healthy respect for the ocean and weather. He cites the danger associated with commercial fishing as his least favorite aspect of observing. "I used to be fearless of boats and the ocean, but over the years I have seen a lot of bad

weather and accidents at sea," he says. On the flip side, his favorite part of observing is interacting with members of the fishing community and seeing new places.

Sean's adventurous proclivities extend to land-based activities, specifically anything that puts him in the woods. Some of his favorites are long distance hiking,

camping, skiing, and snowboarding. He also enjoys kayaking and recreational fishing. Happily, his girlfriend, Angela, and their dogs accompany him on these excursions allowing Sean his other favorite activity: spending time with them.



From the Program

Greetings Observers!

In 2011, the West Coast Groundfish Observer Program (WCGOP) entered the first year of the IFQ Program, also known as the Catch Share program. It was a crazy year. We were busy, overwhelmed, and at times, daunted. We went from 40 observers to over 100, the amount of observer data and sea days skyrocketed and all our systems and protocols were stretched thin. It was hard, it was uncomfortable, and it seemed interminable.

Fast forward to 2015. Our operations are solid; we keep finding ways to fine tune and expand our data collection all the while improving our efficiency. We got here through hard work, tenacity, dedication and teamwork. Observers have been crucial to this process. There's no way we'd have gotten here without you.

The Catch Share program transformed WCGOP. It helped us change, adapt, improve. This fishing season brings a new challenge: Electronic Monitoring (EM). This year, four approved EFP's will be operating in the Catch Share fishery. They'll be testing the feasibility of using EM for compliance monitoring. In other words: Can sensors, logbooks and cameras ensure individual accountability and quota monitoring to the same level as that of an observer (the gold standard)?

Observers will be covering these boats (though not 100% of the time) and will be the primary source for fishery-dependent scientific data from these vessels. We look forward to working with you over the next two years to learn how we can adapt and expand our data collection protocols while working in concert with EM systems.

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Genetic Analysis of Morphologically-similar West Coast Rockfish

Vanessa Tuttle, At-Sea Hake Observer Program Manager

Remember those rougheye rockfish genetic fin clip samples you all collected last year for the A-SHOP? Well, we have preliminary results which indicate ~11% of the catch previously considered as rougheye rockfish (*Sebastes aleutianus*) are actually blackspotted rockfish (*S. melanostictus*) (see Table 1). These results may have implications for long-term data sets, including commercial landings and historical survey data.

Species determination	Samples run
Rougheye (<i>S. aleutianus</i>)	238
Blackspotted (<i>S. melanostictus</i>)	30
sample failed	5
Total	273

Table 1. Summary table of A-SHOP rougheye/blackspotted samples, 2014.

This year we will continue collecting genetic fin clip samples to increase our sample size. Starting this year, the WCGOP will also collect fin clips. We should be able to tease out differences in life history by analyzing the geographic and depth distribution of the two species. The bottom trawl survey this year will continue with fin clip collections and, collect ovaries for a maturity study. Once we have additional results in the fall or early winter, we'll begin working with the stock assessment scientists to use this data in future rougheye/blackspotted stock assessments.

Last year's collection of darkblotched rockfish (*S. crameri*) whole specimens and fin clips have also proved promising. Preliminary analysis suggests consistent genetic variation among samples at multiple loci. Voucher specimens were cataloged at the Uni-



Figure 1. Two *S. crameri*, photo by A-SHOP observer Andrea Hitschfeld

versity of Washington fish collection and are now being examined to establish a connection between observed genetic differences and various morphometric and meristic characteristics.

Thanks for going the extra mile in collecting the samples – the science behind these species is evolving right before our eyes. Keep up the good work!

Trip Data Update

Hard to believe we're halfway through 2015. Here's how the year's work compares to 2014 between January 1st to May 31st.

	2015 WCGOP trips 1/1/15 to 5/31/15	2014 WCGOP trips 1/1/14 to 5/31/14
Catch Share	521	523
Limited Entry	96	91
Open Access	291	167
EFP*	3	4

* TNC RCA EFP trips are counted as Catch Share trips in this table

Observer with most sea days (2015): Mike Findley - 62 days

Observer with highest vessel count (2015): Russell Adams - 19 vessels

From The Program - continued

Observers will once again be instrumental in helping the WCGOP learn and grow.

We all know change is hard. Working through uncertainty, evaluating results, and assessing benefits takes time, fortitude and, most of all, patience. No one knows if EM is going to work effectively, or in what fishing sectors. No one knows if it's truly economical. These EFPs are the first steps to determining if and how it fits into fisheries management and how it can help augment observer coverage.

I ask that you exercise patience, professionalism and perseverance as we enter this assessing process. Our work is valuable and is valued. That isn't going to change.

My door is always open if you have questions and concerns.

Jon T. McVeigh
Program Manager



From the Galley

John LaFargue, CA Coordinator



Salmon are hitting the decks up and down the coast which makes it the perfect time to smoke salmon. It's not hard.

The secret is the brine. Salmon brining recipes are as varied as those for chicken soup. Some folks like a dry brine, others a

wet one. It can be spicy, sweet or savory.

The amount of smoke and moistness are hotly debated topics around the smoker. Our fearless leader, Jon McVeigh, is in the dry and spicy camp. He's also a big fan of Bourbon-laced brines. While I like the spice, I prefer my salmon less smoky and moister. That's the great thing about smoked salmon, you can make it anyway you like it.

Like brines, smokers can be as fancy or as simple as you like. You can spend a small fortune on a pellet smoker or make one from scrap lumber and a few screws. Some of the best smoked salmon I've tasted was made in a rusty 55-gallon drum converted into a smoker. An expensive smoker won't make up for a lousy brine or poor technique. I'm still using an electric smoker a family friend bequeathed me in the 1980s. I'm in the process of upgrading to a much bigger operation.

Below are three brine recipes to try. The first two are from Port Orford observer Bob Bettin. The third is from Oregon Lead, Brad Laird. Both men catch more fish than some small, coastal communities so they know a thing or two about smoking and brining. Let me know which one I should try first.

Salmon Candy

Bob Bettin

2 cups dark brown sugar

1/2 cup salt

Put salmon, brown sugar and salt in a gallon Ziplock bag. Brine 24 hours, mixing the bag every few hours. Smoke 8 hours or to your liking with alder wood. This is enough brine for a full Ziplock bag.

Wet Brine

Bob Bettin

2c rock salt	3 tbl lemon juice
1c brown sugar	3 tbl lime juice
1c white sugar	1 tbl onion powder
6 cloves fresh garlic diced	crushed black pepper to liking
1 tbl dry mustard	1 shot of Kahlua.

Mix everything in a liter of water. Brine skin up 8-16 hours. Smoke eight hours using alder and apple wood. This is enough brine for approximately four pounds of salmon.

Dry Brine Smoked Salmon Recipe

Brad Laird

1. Procure a salmon.
2. Fillet it. Pull the pin bones from the fillets if you want boneless smoked salmon. Leave the bones in if you don't mind them while eating.
3. Cut the fillets into desired sized pieces (1-1.5 inches wide by 3 - 4 inches long). Separate the thin belly pieces from the thicker upper back pieces.
4. Prepare your dry rub: two parts Morton's Tender Quick, Meat Cure to one part packed brown sugar with a dash of white sugar. Mix well in a large bowl.
5. Roll salmon pieces in the dry rub and place on racks. Monitor the time carefully. Soak the fish in the brine for 18 minutes, **NO MORE** than 20 minutes. The longer the fish sits in the dry rub the saltier it becomes. Rinse fish thoroughly. Return it to the rack to drip dry until a hard, tacky layer forms on the outside of the salmon.
6. While salmon dries, preheat smoker and start wood smoke. Add fish after tacky layer forms on the dry fish.

Optional: You can also baste the racked fish with teriyaki sauce every time you add wood chips (approx. every two hours). Baste with a light layer of maple syrup for a candy effect.

7. Smoke until done to your liking.





Observers and the Nature Conservancy in a Rockfish Conservation Area

Steven Rienecke, Fisheries Project Scientist, The Nature Conservancy

The Rockfish Conservation Areas (RCAs) were established over a decade ago in 2002 by NOAA Fisheries as a coast-wide depth-based spatial closure along the outer edge of the continental shelf and upper slope. The primary goal of the RCAs is to help protect overfished species that occur in these discrete depth zones and help with stock rebuilding efforts. These management efforts have proven effective; however, fishing opportunities, and the economic and social benefits associated with them, are constrained because of this large closure. Landings of many target species (Yellowtail Rockfish, Chilipepper, and shelf rockfish) are lower than quota allocations for the groundfish IFQ fishery due to efforts by fishermen to avoid encountering rebuilding species during exploratory fishing or fishing near the RCAs.

To date, there's been little research into the finer scale demographic and distributional patterns for rebuilding species that could help fishermen target healthy stocks while avoiding constraining ones, particularly within the RCAs. This research project included a diverse array partners (Central California Seafood Marketing Association (CCSMA), California Groundfish Collective, The Nature Conservancy, Moss Landing Marine Laboratories, California Sea Grant, National Marine Fisheries Service – Southwest Fisheries Science Center Santa Cruz lab, Environmental Defense Fund and Marine Applied Research and Exploration) whose goals were to develop a better understanding of the distribution of both target and rebuilding species within a portion of the RCAs in central California between Morro Bay and Half Moon Bay. The first step involved working with the NOAA Biogeographic team to develop coast-wide predictive distribution maps for important target and rebuilding stocks using existing fisheries-dependent and independent data. The second step involved ground-truthing those maps using two methods: 1) conducting visual surveys using a stereo-video camera ("video lander") to characterize

abundance, length, and habitat associations for target and rebuilding stocks inside the RCAs, and 2) pairing these efforts with directed hook and line fishing using hydraulic snapper reel gear inside of the RCAs in central California under an Exempted Fishing Permit (EFP) that was granted by the Pacific Fishery Management Council for the 2013 and 2014 fishing seasons.

Visual survey protocols and experimental testing of the video lander was done in 2012, and visual surveys and paired directed fishing occurred during 2013-2014. Visual surveys were conducted from the F/V Donna Kathleen and were paired with fishing surveys at pre-identified study areas along the Central coast. There were a total of 56 sea days (28 per year) for the experimental fishing trips. These trips were monitored by catch share observers (Katie Schmidt and Bryon Downey) who monitored both at-sea fishing surveys and shoreside landings with first receivers under the IFQ program. Four fishing vessels were selected to participate in the study (two vessels out of Morro Bay, one out of Monterey, and one out of Half Moon Bay) and fishing trips occurred during September and October of each year.

A total of over 8,800 pounds of fish were landed during fishing surveys throughout the study, with the landed catch represented by 12 IFQ species/species groups and 22 individual species. The majority of fish landed was southern shelf rockfish and the two most abundant species in that category and overall for the study were Vermilion and Yellowtail rockfishes. Chilipepper was the third most abundant



Photo: AOI observer Katie Schmidt and deckhand Matt Breneman hold a 17 lb. lingcod on the F/V Dorado.

EFP study brief - continued

species, followed by Bocaccio and Widow Rockfish rounding out the top five species. Collectively these five species made up 95% of the landed catch. Rebuilding species catch made up less than 10% of overall landings, with Bocaccio representing the majority. Canary, Cowcod, and Yelloweye Rockfish catch was less than 1% of the overall landed catch for each of these species.

An interim report on study results was submitted to the Pacific Council for their November 2013 meeting, and project partners are working on a final report to the Council for the September 2015 meeting. Data collected from the visual and fishing effort surveys by the stereo video lander and by onboard observers and researchers will be used for several purposes, including to inform discussions on potential changes to the RCA boundaries and whether hook and line gear could be used to fish cleanly, i.e., with low encounter rates with rebuilding species. The spatial data collected through this collaborative process has been used to develop a geodatabase of the spatial distribution and occurrence of

rebuilding species inside the RCA. It is being made available to support proposals to the Council for the Essential Fish Habitat review process. Catch and effort data collected by observers and researchers from the directed fishing surveys will be used to evaluate the efficiency of this gear type and configuration for its ability to effectively target healthy stocks and minimize encounters with rebuilding species.

Thanks to WCGOP staff, observers Katie Schmidt and Bryon Downey, and debriefers Eli Coplen and Jason Vestre for their help with this project!



Steve Rienecke (TNC) and AOI observer Bryon Downey holding Vermilion Rockfish on the F/V Huli Cat.

Featured Observer - continued

No surprise Sean's bucket list continues the adventure theme. His primary goal is to backpack all the major long distance trails in the United States. He's completed the Appalachian Trail and most of the Long Trail. He hopes to complete the Wonderland Trail this year. That leaves the Continental Divide Trail, the Pacific Crest Trail, American Discovery Trail and North Country Trail still on the list.



We're happy to have Sean on the boat when he's not in the woods. His positive attitude and commitment to the data is exceptional.

To top it off, he's helped with multiple projects like testing deck forms and staging sampling photos for presentations and publications. He's also known for taking large, diverse species compositions and collecting a lot of biosamples. To date, he has more than 700 dissections over 130 trips.

Sean, we're proud to have you in the Program. Thanks for all your hard work and dedication.

Observer Data at Work: 2015 Presidential Migratory Seabird Stewardship Awarded



We're pleased to announce the collaborative project, [Preventing Migratory Seabird Mortality in US West Coast Groundfish Longline Fisheries](#), was awarded the 2015 Presidential Migratory Bird Stewardship Award. The project was chosen from a field of eight federal agency projects and incorporated Observer Program data and expertise.

The award recognizes the project's role in the prevention of migratory seabird mortality in the U.S. West Coast Groundfish longline fishery. Streamer lines and their ability to keep endangered short-tailed albatross from getting caught in fishing gear were highlighted.

Observers directly contributed to the project by collecting data on seabird bycatch and characterizing the use of sea-

bird avoidance gear or behaviors. These data were analyzed to gain an understanding of the effectiveness and use of avoidance gear.

Other pieces of observer-collected data were important for understanding the role of night-setting in seabird avoidance (e.g., time of gear deployment/retrieval, location of deployment/retrieval) and estimating total seabird bycatch in each fishery (e.g., amount of observed and landed catch, fishery).

Our own Jason Jannot, Jon McVeigh, and Ryan Shama were recognized by Kim Rivera, NOAA Fisheries' National Seabird Coordinator, for spearheading this data collection and analysis. NOAA Fisheries AA, Eileen Sobock, will be accepting the award on behalf of NOAA Fisheries and our partners at a ceremony this Fall.

This seabird mortality work is ongoing. If you're interested in learning more, please contact Ryan Shama at ryan.shama@noaa.gov.

Fisheries News

NOAA recently released the [Status of Stocks 2014](#) report. The good news is overfishing and overfished stocks are hitting record lows.

The [Pacific Fishery Management Council](#) is reporting two West Coast groundfish stocks rebuilt to sustainable levels. This is exciting news and wouldn't be possible without observer data.

Are you a moonfish fan? Scientists at NOAA's Southwest Fisheries Science Center recently discovered, the moonfish is warm-blooded. CNN did a brief clip on the fish [here](#). [NOAA's official announcement](#) is on the Southwest Science Fisheries Center's website.

Interested in the history of U.S. observer programs? [This paper](#) by Samantha Brooke provides insight into the last 40 years of independent data collection in US fisheries.

Finally, here's [an article from the New York Times](#) showcasing findings from Oregon's pink shrimp fleet in regards to bycatch reduction. They found attaching LED lights to shrimp nets reduces bycatch, particularly eulachon. Take a look.