PCGFSS Abbreviated Community Summaries- Draft In Support of the 5-Year Review of the West Coast Groundfish Trawl Catch Share Program

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The community summaries in this Appendix provide preliminary community-level information based on data from the Pacific Coast Groundfish Social Survey (PCGFSS). This information should be used to gain a better understanding of the individuals in these communities that participated in the PCGFSS (primarily individuals involved in the groundfish trawl fishery in some capacity), and how these individuals may have been impacted by the implementation of catch shares. Where applicable a "rank" (highest to lowest for a given year and survey item) is presented to allow for easy comparison across communities.

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PUGET SOUND AREA

This summary sheet provides a snapshot of the Puget Sound Area community based on data from the PCGFSS. This information should be used to gain a better understanding of the individuals in this community that participated in the PCGFSS (primarily individuals involved in the groundfish trawl fishery in some capacity), and how these individuals may have been impacted by the implementation of catch shares. Where applicable a "rank" (highest to lowest for a given year and survey item) is presented to allow for easy comparison across communities.

Bellingham

Bellingham is the seat of Washington's Whatcom County, and is located about 100 nautical miles east of the mouth of the Strait of Juan de Fuca (nwcruising.net), occupying 25.6 square miles of land and 6.1 square miles of water. Seattle—the nearest major US city—is a 90-mile drive south, while Vancouver, B.C. is a 54-mile drive north (Norman et al., 2007).

The population of Bellingham has grown from 53,458 to an estimated 85,146 since 1990, an increase of 59.28% (US Census Bureau ACS 2015). The median household income[1] is estimated at $43,536 in 2015 US dollars (US Census Bureau ACS 2015). While agriculture, forestry, and fishing are traditional industries in Whatcomb County, the largest industries in the county (as of 2014) are government (17.4% of the workforce), health care (13.5% of the workforce), retail (13.2% of the workforce), and manufacturing (10.8% of workforce) (Bellingham/Whatcom Chamber of Commerce, 2016).

Seattle

Seattle is the seat city of King County, situated on Puget Sound between Lake Washington and Elliot Bay. The city occupies 84 square miles of land and 59 square miles of water, and is a 113-mile drive south of the US-Canada border (Norman et al., 2007). Seattle's early economic pillars were lumber and coal, though fishing, trade, shipping, and shipbuilding also contributed to the city's population growth at the end of the 19th century (Seattle Municipal Archives, 1995).

Seattle's population—estimated at 684,451—has increased by 32.58% since 1990, when the population was 516,262. The median household income in Seattle is an estimated $70,594 in 2015 US dollars (US

[1] US. Census data reported for median income is supported by the American Community Survey (ACS) and available on the U.S. Census website www.census.gov.

Census Bureau ACS 2015). Farming, fishing, and forestry are minor components of Seattle's economy, accounting for only 0.22% of the workforce. The top five occupational sectors in Seattle are sales/office/administrative support (23.58%), production/transportation/material moving (17.12%), construction/extraction/maintenance (12.24%), management/business/finance (9.92%), and personal care (9.23%) (Sterling's Best Places, 2017).

PCGFSS Participants

The goal of the general community description is to describe the community based on some of the general characteristics that participants reported in the PCGFSS. These general characteristics provide information about who the participants within each year represent. In Section 3.2 Community Performance, the Puget Sound Area is used to represent a community group composed of the following communities: Anacortes, Bellingham Bay, Blaine, Everett, La Conner, and Seattle. The PCGFSS surveyed participants in Seattle and Bellingham. While these two communities share some characteristics related to their involvement in the groundfish trawl fishery, they differ in many important ways. Due to the small sample size of Bellingham participants in all three rounds of data collection for the PCGFSS—which stems partially from the simple fact that Seattle is home to a much greater number of groundfish fishery participants—the findings presented below are primarily representative of Seattle.

It is important to keep in mind that while there is some overlap in participants across years, not every survey year contains the same sample of individuals. Table PSA-1. summarizes the percentage of respondents in the Puget Sound Area who were the same between years, and is meant to aid in the interpretation of the results presented here.

Table PSA-1. Total number of participants, and percentage of return respondents in the Puget Sound Area.

	2010	2012	2015/2016
% Return respondents from 2010	-	38.5	30.4
% Return respondents from 2012	-	-	60.9
Number of participants	16	26	23

Compared to PCGFSS participants in other 5-Year Review community groupings, Puget Sound Area participants are, on average, slightly older, have more experience both in the groundfish fishery and the commercial fishing industry in general, have deeper generational ties to commercial fishing, and derive a relatively high percentage of their income from commercial fishing (see Box PSA-1, below).

The Puget Sound Area PCGFSS participant sample is relatively owner-heavy, compared to other 5-Year Review community aggregates (see Table PSA-2). In terms of catcher-processor and mothership participation, Puget Sound Area ranks first among the few communities with involvement in the at-sea sector.

BOX PSA-1. The following demographics and family history characteristics are presented as averages, followed by the community rank* from highest to lowest in comparison with other communities for the **2015/2016** survey (2010 and 2012 below).

2015/2016

Age | **55.7 years** | Rank 5 out of 13
2010=54.1 (4/13), 2012=56.2 (2/12)

Number of years working in commercial fishing | **34.9 years** | Rank 2 out of 13
2010=31.4 (4/12), 2012=35.0 (2/13)

Number of years working in the PCGTF | **27.6 years** | Rank 3 out of 13
2010=25.7 (5/13), 2012=23.6 (5/12)

Number of generations family has commercially fished | **3 generations** | Rank 2 out of 11
2010=3.1 (5/10), 2012=3.2 (1/12)

Percent income from commercial fishing | **92.3%** | Rank 5 out of 13
2010=91.9% (5/13), 2012=88.7% (5/12)

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Table PSA-2. Role of respondents within the Puget Sound Area, presented as a percentage of the total number of participants within the community sample, and rank* from highest to lowest in comparison with other communities. Multiple response item: respondents could fall in more than one role category.

	2010		2012		2015/2016	
Role Category	%	Rank	%	Rank	%	Rank
QS owner/co-owner**	43.8	3/12	46.2	3/12	52.2	1/11
Absentee owner/co-owner	-	-	34.6	1/8	26.1	2/10
Vessel owner/co-owner	50.0	2/12	30.8	6/8	43.5	2/12
Captain/Crew	25.0	8/12	23.1	9/11	39.1	6/12
Shoreside Processor	0	9/9	23.1	3/10	8.7	7/11
Catcher-Processor/Mothership	37.5	1/2	19.2	1/3	8.7	1/2
Buyer (not processor)	0	5/5	3.9	4/6	0	6/6
Other***	25.0	4/9	19.2	8/12	21.7	10/13
Not applicable	0		4.4		0	
Prefer not to answer	0		0		0	
Response rate	100		100		100	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

** 2010: refers to "permit owner"

*** Other represents the percentage of respondents that do not fall in any of the other role categories, and encompasses: Risk pool manager, QS/QP manager, Observer, Industry supplier, Fisherman's wife.

Infrastructure

Seattle is a major hub of shore-side support businesses for the entire West Coast, according to PCGFSS participants. Numerous participants in Washington, Oregon, and California mentioned acquiring nets, gear, and other miscellaneous items related to commercial fishing from Seattle-based businesses. For

some, these suppliers were primary sources of such goods and services, while others turned to Seattle only when the good or service in question was not readily available locally.

Puget Sound Area PCGFSS respondents in all three rounds of data collection shared fewer infrastructure-related concerns than participants in other communities. This may be partially explained by the fact that Seattle is home to the business headquarters of a number of companies involved in the at-sea whiting sector, as these catcher-processor vessels have unique infrastructure needs, and many of the catcher vessels are moored in other ports. Another likely contributing factor is the common involvement of fixed-gear black cod vessels in various Alaska fisheries, as these participants deal less frequently with infrastructure on the West Coast. Participants with ties to these vessels—be it captains, crew, or vessel/permit owners—make up the majority of the non-whiting PCGFSS participants in Seattle who actively participate in the catch shares fishery. The few comments on infrastructure from participants in Bellingham did note a decline in shore-side businesses and infrastructure, but these comments were directed toward the trawl sector in the state of Washington as a whole.

Fishery Participation Levels

This section supplements the general community description by characterizing the community based on respondents' current and planned participation in various fisheries. Fisheries participation data presented here reflects the fisheries that PCGFSS respondents in the Puget Sound Area participate in, and does not account for where these participants may land their catch.

As Table PSA-3 (below) indicates, Puget Sound-based PCGFSS fishermen[2] harvest a variety of groundfish, with Pacific whiting (62.5% in 2012, 54.5% in 2015/2016), shortspine thornyhead (46.2% in 2010, 25% in 2012, 45.5% in 2015/2016), and sablefish (25% in 2012, 63.6% in 2015/2016) being among the most often targeted. It is worth noting here that the percentages presented in the table are representative of fishermen only, and do not include processors. Due to the anomalous (relative to the rest of the West Coast) presence of the at-sea whiting sector in Seattle, the inclusion of processors in this analysis for the Puget Sound Area—some of which are motherships in the at-sea whiting sector—would likely result in an increase in percentages for both Pacific whiting and Alaska Pollock, or at the very least lowered percentages of other groundfish species relative to Pacific whiting.

Table PSA-3. Top five groundfish and other species that Puget Sound Area fishermen reported commercially fishing since catch shares was implemented (2010: commercially fished in the last 5 years).

2010	%	2012	%	2015/2016	%
Shortspine Thorneyhead	46.2	Pacific Whiting	62.5	Sablefish	63.6
Chilipepper	30.8	Lingcod	50.0	Lingcod	54.5
Longspine Thorneyhead	23.1	Dover Sole	50.0	Pacific Whiting	54.5
Yellowtail	23.1	Shortspine Thorneyhead	25.0	Shortspine Thorneyhead	45.5
Splitnose	15.4	Yellowtail	25.0	Longspine Thorneyhead	36.4
		Sablefish	25.0	Yellowtail	36.4
		Arrowtooth Flounder	25.0	Petrale Sole	36.4
		Petrale Sole	25.0		
		Spiny Dogfish	25.0		
		Dungeness Crab	12.5		

[2] The survey item summarized in Table PSA-2 only applies to fishermen, which were defined as captain, crew, and/or other roles directly related to the harvesting of fish.

PCGFSS survey data indicates that Puget Sound Area participants generally do not have plans to decrease activity in the groundfish trawl fishery anytime soon, as Box PSA-2 indicates. Rather, the majority of Puget Sound Area participants plan to continue their current (as of 2015/2016) level of activity in the fishery, and a sizeable minority (31.6%) plan to increase their activity level in the fishery.

BOX PSA-2. The following fishery participation characteristics are presented as percentages of the total respondents within the community sample, followed by the community rank* from highest to lowest in comparison with other communities for the **2015/2016** survey (2012 below).

2015/2016

Plan to increase activity in PCGTF | **31.6%** | Rank 6 out of 11
2012=48% (3/8)

Plan to decrease activity in PCGTF | **0%** | Rank 9 out of 9
2012=0% (3/3)

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Employment Levels

This section summarizes community-level employment based on participants' reported employment (including any combination of full-time, part-time, seasonal, and/or self-employment) in the groundfish fishery, other fisheries, or non-fishing industries, Table PSA-4. Participation in the groundfish fisheries has varied across data collection years. Additionally, we summarize how respondents within the community rated different components of job quality related to their role in the commercial fishing industry, Table PSA-5. Ranks across all components for this community vary across all data collection years, not providing clear trends.

Table PSA-4. Community-level employment (includes any combination of full-time, part-time, seasonal and/or self-employment), in percentages of total respondents within community sample, and rank* from highest to lowest in comparison with other communities.

	2010		**2012**		**2015/2016**	
	%	Rank	%	Rank	%	Rank
Groundfish	87.5	6/9	96.2	1/11	82.6	4/12
Other fisheries	43.8	12/13	57.7	6/11	43.5	10/10
Non-fishing	6.3	9/11	11.5	10/11	13.1	11/12
Not applicable	0		0		0	
Prefer not to answer	0		0		0	
Response rate	100		100		100	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

PCGFSS participants in the Puget Sound Area rank in the top half (relative to other community aggregations included in the 5-year review) of every self-reported job quality measure apart from "method of pay". Though it is difficult to discern what—if any—influence catch shares has had on these favorable job quality measures, the widespread support of the program among Puget Sound Area PCGFSS participants (see Box PSA-3 in the next section) could be reasonably interpreted as a contributing factor.

Interview data offers further insight into the relationship between the catch share program and job quality. Participants in the Puget Sound Area who were in support of the catch shares program tended to emphasize the added security and predictability they felt the catch shares program provided:

> *"I'd say yeah, increase in income…and one thing about catch shares is a lot of jobs get lost because the fishery consolidates, and then the jobs that stay are better jobs."* – QS Permit Owner, Puget Sound Area, 2015/2016

A number of PCGFSS participants in the Puget Sound Area expressed similar sentiments to this quote (i.e., that the catch shares program has decreased the amount of jobs in the fishery, but that the remaining jobs are more stable), but this perspective was not unanimous. Some reported that not only had jobs become more stable, but more numerous as well:

> *"We actually have more jobs, we don't have fewer jobs, we've actually hired a complete crew for another vessel that we didn't have before. Uh, we've essentially entered a new vessel into the fishery by... taking 2 permits and putting them onto a new vessel and hiring all new crew. So we have a completely new operation dedicated to groundfish."* – QS Permit Owner, Puget Sound Area, 2012

Still others reported that catch shares has created less stable jobs—namely for crew and deckhands—making it more difficult to keep good help around long-term:

> *"I mean, I spent 15-20 years where I had the same crew, and it's the same guys all the time, so, you know, nobody left ever, and all of a sudden, I got a different guy every week."* – Fisherman, Puget Sound Area, 2015/2016

Table PSA-5. Respondents' rated the following items related to their role in the commercial fishing industry on a Likert-scale Poor (1)-Excellent (4). Presented as community-level mean, and rank* from highest to lowest in comparison with other communities.

	2010		**2012**		**2015/2016**	
	Mean	Rank	Mean	Rank	Mean	Rank
Job satisfaction	3.3	5/10	3.5	2/10	3.4	3/10
Compensation	2.8	4/12	3.2	3/11	3.1	6/12
Method of pay	2.7	9/12	3.0	6/9	3.2	7/12
Job stability	3.1	2/13	3.0	3/9	3.2	4/10
Standard of living	3.0	2/8	3.0	5/10	3.2	4/9
Relationships	3.5	3/9	3.6	4/12	3.6	4/11
Not applicable	0		0		0	
Prefer not to answer	0		0		0	
Response rate	93.8		100		95.2	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Catch Shares Characteristics

The goal of the catch shares characteristics section is to describe the community based on participants' reported perspectives about catch shares. While, the previous sections provide information related to how the community may have been impacted by catch shares, this section responds directly to catch shares impacts by summarizing participants' perspectives on how they have been personally affected by catch shares.

Puget Sound Area PCGFSS participants reported the highest rate of support for the catch share program of any 5-Year Review community aggregation during all three rounds of data collection. In addition, Puget Sound-based participants consistently ranked high in terms of reporting being positively affected by catch shares, and low in terms of reporting being negatively affected by catch shares. Changing species caught post-catch shares was reported relatively often, and a higher percentage of Puget Sound area participants agreed that safety had improved than any other community sample (Box PSA-3).

BOX PSA-3. The following characteristics related to catch shares impacts are presented as percentages of total respondents within the community sample, followed by the community rank* from highest to lowest in comparison with other communities for **2015/2016** survey (2010 and 2012 below).

2015/2016

Support for the catch shares program | **72.7%** | Rank 1 out of 10
2010=68.8% (1/11), 2012=83.3% (1/11)

Positively affected by catch shares | **56.5%** | Rank 2 out of 12
2010 (expect to be affected)=50% (1/11), 2012=44% (4/12)

Negatively affected by catch shares | **8.7%** | Rank 12 out of 12
2010 (expect to be affected)=18.8% (12/13), 2012=28% (10/12)

Changed species caught post-catch shares | **63.6%** | Rank 2 out of 8
2010 (change in last 5 years)=23.1% (6/8), 2012=37.5% (5/10)

Agree that safety has improved as result of catch shares | **77.8%** | Rank 1 out of 8

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

While support for catch shares was common among PCGFSS participants in the Puget Sound area, interviews were not without commentary on the perceived impacts of fishery management to peoples' own fishing-related businesses, the groundfish fishery, and the industry in general. Two repeated points in this regard were the contention over the gear-switching component of the catch shares program, and gear-switching limitations:

> *"You know, we don't know what's coming next. Right now the trawlers all of a sudden say they don't want gear-switching anymore. Well! Okay, how are you supposed to plan for that? I mean, you know, we made the investments and somebody is taking that seriously. So, we are investing in that pretty…we have money on the line."* – QS Permit Owner, Puget Sound Area, 2015/2016

> *"The problem is I can't own two…I can't have a tier permit and a trawl permit on the boat at the same time. That is the problem. Write that down right there."* – QS Permit Owner, Puget Sound Area, 2015/2016

Some participants in the Puget Sound area also spoke of varying degrees of influence different groundfish-related interests had on fishery management. As the following comment on the trawl sector reflects, the policy arena was not necessarily seen as egalitarian:

> *"Well it's a huge…it's a huge…dollar-wise it's such a huge portion of the fishery. And not only that, it's tremendously consolidated. You know, where, there's still a ton of owner/operators like me in the longline fishery, and we have our organization and our guy to basically protect our*

interests. He's one guy. And you have all these trawl companies—big factory trawlers who are tremendously capitalized—they're the ones that make the political connections, or have high-paid lobbyists and that sort of thing. Very effective lobbyists, and that's how…it's influence, basically. It comes down to dollars, you know? Even though it shouldn't. But it does. So how do you combat that? That's a tough one." – Fisherman, Puget Sound Area, 2015/2016

Additional Themes

The theme of adaptability was prevalent in interviews with PCGFSS participants in the Puget Sound area. Discussion of adapting to catch shares tended to touch on at least one of the three general themes of a) the importance of having a proactive approach to one's career in the fishery, b) business strategy being dependent upon quota holdings, boat size, and boat capabilities, and c) gear experiments and modifications. The first quote below touches on the first two of these themes, while the second relates to gear modification:

"Well, when I was a kid, my dad always told me, he said, "In the fishing industry, you're either swimming forward, or you're going backwards. You can't tread water." And so my plan has been and continues to be that we will strengthen our position, make sure our boats are buyable, and our boats are maintained well, and we have the ability to catch leased fish. Because we won't be able to afford other fish. We have a big enough base that that will support us but we're going to have to survive off leasing fish." – QS Permit Owner, Puget Sound Area, 2015/2016

"So I make sure I don't catch the stuff I don't have. I mean I have so many holes in my net, I don't even know how I catch fish sometimes." – Fisherman, Puget Sound Area, 2015/2016

Summary

In general, Puget Sound Area participants appear to have adjusted well to the catch share program. Increased stability, increased business flexibility, and benefits to the resource were among the most common positive impacts noted from the catch share program, while decreased stability, decreased flexibility, and decreased employment opportunities were among the most common negative impacts discussed. Major factors that seem to be influencing the high levels of support for the program among Puget Sound Area participants include familiarity with quota-based management in the at-sea whiting and Alaskan IFQ fisheries, the high proportion of quota share owners among those surveyed, and the relatively stable shoreside support sector in the Seattle area.

PCGFSS Community Summary

ASTORIA

This summary sheet provides a snapshot of the Astoria community based on data from the PCGFSS. This information should be used to gain a better understanding of the individuals in this community that participated in the PCGFSS (primarily individuals involved in the groundfish trawl fishery in some capacity), and how these individuals may have been impacted by the implementation of catch shares. Where applicable a "rank" (highest to lowest for a given year and survey item) is presented to allow for easy comparison across communities.

Located 91 miles east of Portland in Clatsop County, Astoria is situated near the mouth of the Columbia River in northwestern Oregon. Together with the City of Warrenton, the Astoria area encompasses 22.45 square miles of land, and 8.35 square miles of water (Norman et al., 2007). Named after John Jacob Astor—a prominent New York Merchant during the late 18th and early 19th centuries—the community of Astoria grew out of Fort Astoria, a fur-trading outpost—established in 1811—considered the earliest U.S. settlement on the West Coast (Norman et al., 2007). Chinook, Clatsop, and Tillamook tribes historically occupied the area, harvesting seafood, roots, berries, and other resources to support their societies (Norman et al., 2007).

The US Census Bureau's Population Estimates Program estimates the population of Astoria to be 9,626 in 2015—a 4.5% decrease from 1990. Median household income[3] is estimated at $44,663 in 2015 dollars (US Census Bureau ACS 2015). Though the fishing industry has a fairly strong presence in Astoria, recent estimates indicate that only 1.7% of the population hold an occupation in the farming, fishing, and forestry sector. Sales/office/administrative support (23.6%), production/transportation/material moving (15.2%), and management/business/finance (11.2%) employ the highest percentages of Astoria's population (Sperling's Best Places, 2017).

PCGFSS Participants

The goal of this section is to describe the community based on some of the general characteristics that participants reported in the PCGFSS. These general characteristics provide information about who the participants within each year represent. In Section 3.2 Community Performance, Astoria is defined as a stand alone community, opposed to an aggregated community. Although some PCGFSS respondents may live outside of the community, all are connected to the fishing community in Astoria. It is important to

[3] US. Census data reported for median income is supported by the American Community Survey (ACS) and available on the U.S. Census website www.census.gov.

keep in mind that while there is some overlap in participants across years, not every survey year contains the same sample of individuals. Table A-1. summarizes the percentage of respondents in Astoria who were the same between years, and is meant to aid in the interpretation of the results presented here.

Table A-1. Total number of participants and percentage of return respondents in Astoria.

	2010	2012	2015/2016
% Return respondents from 2010	-	37.5	23.3
% Return respondents from 2012	-	-	53.3
Number of participants	23	32	30

Compared to participants in other West Coast communities with ties to the trawl groundfish fishery, Astorian PCGFSS participants are—on average—slightly younger, have a comparable level of experience in the groundfish trawl fishery (and commercial fishing in general), have deeper generational ties to fishing, and garner a higher percentage of their overall income from commercial fishing (Box A-1). Roles of study participants in Astoria are identified in Table A-2. Astoria ranks in the mid-range for all roles.

BOX A-1. The following demographics and family history characteristics are presented as averages, followed by the community rank* from highest to lowest in comparison with other communities for the **2015/2016** survey (2010 and 2012 below).

2015/2016

Age | **51.5 years** | Rank 11 out of 13
2010=47.5 (10/13), 2012=49.7 (9/12)

Number of years working in commercial fishing | **29.7 years** | Rank 8 out of 13
2010=29.6 (5/12), 2012=26.8 (9/13)

Number of years working in the PCGTF | **24.6 years** | Rank 6 out of 13
2010=26.6 (4/13), 2012=23.2 (6/12)

Number of generations family has commercially fished | **2.6 generations** | Rank 3 out of 11
2010=2.4 (8/10), 2012=2.0 (8/12)

Percent income from commercial fishing | **94.9%** | Rank 3 out of 13
2010=99.6% (1/13), 2012=91.6% (3/12)

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Table A-2. Role of respondents within Astoria, presented as a percentage of the total number of participants within the community sample, and rank* from highest to lowest in comparison with other communities. Multiple response item: respondents could fall in more than one role category.

	2010		2012		2015/2016	
Role Category	%	Rank	%	Rank	%	Rank
QS owner/co-owner**	34.8	7/12	31.3	7/12	40.0	3/11
Absentee owner/co-owner	-	-	12.5	5/8	16.7	5/10
Vessel owner/co-owner	43.5	3/12	40.6	3/8	36.7	5/12
Captain/Crew	78.3	1/12	59.4	4/11	43.3	4/12
Shoreside Processor	4.4	8/9	12.5	5/10	20.0	2/11
Catcher-Processor/Mothership	0	2/2	0	3/3	0	2/2
Buyer (not processor)	0	5/5	0	6/6	3.3	4/6
Other***	0	9/9	15.6	9/12	23.3	9/13
Not applicable	0		0		0	
Prefer not to answer	0		0		0	
Response rate	100		100		100	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

**2010: refers to "permit owner"

*** Other represents the percentage of respondents that do not fall in any of the other role categories, and encompasses: Risk pool manager, QS/QP manager, Observer, Industry supplier, Fisherman's wife.

Infrastructure

PCGFSS participants reported declines in shore-side commercial fishing infrastructure that pre-dated the implementation of the catch share program in 2011, though some asserted that fleet consolidation resulting from the program has influenced continued declines. Pacific Coast Seafoods and Bornstein Seafoods are the two primary groundfish processors in town, with Fishhawk Fisheries and Da Yang Seafoods also buying and processing smaller quantities of groundfish.

PCGFSS participants often noted that shore-side service and supply providers had been negatively impacted by the 2003 groundfish buyback program. Trawl vessels were recognized as requiring a higher degree of maintenance than other common gear types, thus the removal of a substantial portion of the drag fleet was seen as a major factor behind infrastructure decline. Consolidation resulting from the buyback and the catch share program was identified as bringing about a reduction in demand for trawl gear and maintenance, which has resulted in those service and supply providers experiencing difficulties maintaining a sufficient volume of products and labor to meet the lessened—but still present—demand.

> *"We are selling a lot less volume of stuff because we have so much fewer customers. So it has slowed the shop down tremendously. With the slowdown, we are not able to bring in volumes of containers of things to give the fishermen the best price."* – Industry Participant, Astoria, 2012

Fishery Participation Levels

This section supplements the section above by characterizing the community based on PCGFSS responses to items about current and planned participation in various fisheries. Fisheries participation data presented here reflects the fisheries that PCGFSS respondents in Astoria participate in, and does not account for where these participants may land their catch.

As presented in Table A-3, PCGFSS fishermen[4] in Astoria report targeting a diversity of groundfish species, with dover sole, sablefish (black cod), and petrale sole being particularly common. In addition to these groundfish species, participants also commonly report targeting pink shrimp, Dungeness crab, and tuna. Some also indicate involvement in Alaska fisheries.

Table A-3. Top five groundfish and other species that Astoria fishermen reported commercially fishing since catch shares was implemented (2010: commercially fished in the last 5 years).

2010	%	2012	%	2015/2016	%
Dover Sole	100.0	Dover Sole	91.3	Dover Sole	100.0
Sablefish	94.7	Lingcod	87.0	Sablefish	93.8
Petrale Sole	94.7	Sablefish	82.6	Petrale Sole	93.8
Shortspine Thorneyhead	89.5	Petrale Sole	82.6	Shortspine Thorneyhead	87.5
Arrowtooth Flounder	84.2	Shortspine Thorneyhead	73.9	Lingcod	87.5
		Rex Sole	73.9		
Pink Shrimp	42.1	Dungeness Crab	43.5	Dungeness Crab	56.25
Dungeness Crab	26.3	Pink Shrimp	30.4	Pink Shrimp	37.5
Tuna	10.5	Tuna	21.7	Alaska Salmon	18.75
Mackerel	5.3	Pacific Halibut	4.3	Tuna	18.75
Squid	5.3	Alaska Pollock	4.3		
Alaska Tanner Crab	5.3	Alaska Flatfish	4.3		

PCGFSS interview data from Astoria suggests an increase in participation in the shrimp, Dungeness crab, and tuna fisheries since catch share implementation, though participants tended to focus their discussions on increased activity in the shrimp fishery. While favorable ocean and market conditions for shrimp have influenced this trend, participants also linked the phenomenon to the catch share program. Increased participation costs—especially with regards to observer and leasing fees—were frequently identified as driving the shift toward shrimp and other fisheries with lower overhead costs. The following quote illustrates this line of thinking:

> *"But, you know, we don't have an observer so it's not costing me $520 a day. I mean we're looking at over $50,000 a year to have a guy. So anybody that can shrimp is shrimping. And that's the only reason. It's not even, you know if you take that $50,000 away and add it to the trawl fishery I mean, guys are going to shrimp if they can or if they have a market or if they have the gear and everything and they've got a permit to go shrimping. Everybody is shrimping unless their owner won't let them go shrimping for whatever reason, or this or that. But everybody that's shrimping is shrimping. And that's the reason, is the trawl fishery is too [expletive] expensive."* – Fisherman, Astoria, 2015/2016

Leasing out groundfish quota (instead of harvesting it) was another common trend in the post-implementation PCGFSS interview data (2012 and 2015/2016). Bycatch concerns and operating costs were the most commonly mentioned motivating factors behind this strategy:

> *"Why would I want to keep fishing if I could just lease out my quota and not take all those risks?"* – QS Permit Owner, Astoria, 2015/2016

> *"I'm not against the leasing—because it keeps us going—but there's people that are creating a living off owning these IFQs just by leasing them out. And I don't think that was what was*

[4] The survey item summarized in Table A-2 only applies to fishermen, which were defined as captain, crew, and/or other roles directly related to the harvesting of fish.

intended, really. This is a working industry, and it's taken these people that were privileged enough to get this fish, to where it's cheaper for them to lease their fish out for 40% because they don't have to own the boat, they don't have to pay for the fuel, they don't have to pay the crew, they don't have to pay for injuries, breakdowns…they just lease their fish out." – Fisherman, Astoria, 2015/2016

While this strategy enables quota owners to profit off their groundfish quota without as much financial risk as harvesting it would entail, many—including the fisherman quoted below—were concerned about the wider impacts of this strategy on the fishery as a whole:

"But I'd even recommend talking to some of the other draggers that have just even leased out their quota. Again, that's taking away from the crew that's on their boat, that's income that now their losing out, and so not only is the crew on that boat losing out on those fish, the quotas being leased out and everyone on the other boat is not getting paid what they normally would have." – Fisherman, Astoria, 2012

All in all, while participants in Astoria agreed that groundfish activity has decreased under the catch share program, participation in commercial fishing overall was seen as remaining fairly steady. As discussed, this is likely linked to the re-appropriation of harvesting efforts into non-groundfish fisheries, such as shrimp, Dungeness crab, and tuna. Interestingly, these trends were predicted by participants in 2010 (one year prior to catch shares implementation), as the quotes below highlight:

"You know, so, I also – the boat can shrimp and I tuna fish. But I've only been tuna fishing for the last four years. And before that, pretty much, I didn't need to deal with anything else because the trawl industry was pretty much the mainstay of everything. Shrimped for a couple of years in between, too, we did shrimp when we first got the boat. I haven't shrimped for two years…But looking at where my quota shares ending up here, I'm going to have to shrimp, I'm going to have to tuna fish. It's probably going to be a mainstay of my fishery." – Permit Owner, Astoria, 2010

"I don't want to shrimp, but I might have to. I really don't know yet. We'll see how this goes." – Permit Owner, Astoria, 2010

Despite these reported shifts in fishing effort, it is likely that groundfish will continue to remain an important component of the commercial fishing industry in Astoria. About 41% of respondents in 2015/2016 indicate plans to increase their activity in the groundfish fishery (Box A-2).

BOX A-2. The following fishery participation characteristics are presented as percentages of the total respondents within the community sample, followed by the community rank* from highest to lowest in comparison with other communities for the **2015/2016** survey (2012 below).

2015/2016

Plan to increase activity in PCGTF | **41.4%** | Rank 3 out of 11
2012=45.2% (4/8)

Plan to decrease activity in PCGTF | **3.5%** | Rank 8 out of 9
2012=32.3% (1/3)

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Employment Levels

This section summarizes community-level employment based on participants' reported employment (including any combination of full-time, part-time, seasonal, and/or self-employment) in the groundfish fishery, other fisheries, or non-fishing industries. Additionally, we summarize how respondents within the community rated different components of job quality related to their role in the commercial fishing industry.

As Table A-4 indicates, the vast majority of PCGFSS participants in all three rounds of data collection reported some level of participation in the groundfish fishery, which is not surprising as groundfish fishery participants were the explicit focus of the survey. Noteably, in comparison to other communities, Astoria ranks in the top two in terms of percentage employed in groundfish. Substantial percentages of respondents also reported some level of involvement in other fisheries. Though comparisons between the three rounds of data collection are complicated by small sample sizes and varying response rates, the apparent increase in non-groundfish fisheries participation between 2010 and 2015/2016 is in line with the qualitative findings presented in the "Fishery Participation Levels" section above.

Table A-4. Community-level employment (includes any combination of full-time, part-time, seasonal and/or self-employment), in percentages of total respondents within community sample, and rank* from highest to lowest in comparison with other communities.

	2010		**2012**		**2015/2016**	
	%	Rank	%	Rank	%	Rank
Groundfish	95.5	2/9	93.8	2/11	93.1	1/12
Other fisheries	45.5	11/13	56.3	7/11	79.3	3/10
Non-fishing	4.6	10/11	3.1	11/11	17.2	9/12
Not applicable	0		0		0	
Prefer not to answer	0		0		0	
Response rate	95.7		100		96.7	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

In 2010—one year prior to catch shares being implemented—PCGFSS participants in Astoria spoke heavily about job losses they felt would result from the catch share program. The following quotes are just a few examples:

> *"You know, right now, some of the numbers being tossed around is 40 to 50 percent fleet reduction. When you talk about a fleet, if you break it down per boat, you're talking anywhere from three to five guys per boat. That's less groceries purchased, that's less work at the hydraulic shop. Englund Marine is scared to death of inventory. You know, they'll order anything you need, but, you know, they don't know what the future's going to hold here either. So, I think as far as economics, some of the coastal communities like Warrenton, they can be hit really hard. I mean, they're already talking about the fish plant having a reduced crew. There's just a lot of things – less fuel purchases, you know, everything that it takes to keep a boat operating. I think all the industries, in that regard, are going to be hit hard. And directly. There is going to be guys on the dock, begging for a job on a boat because they lost their job."* – Fisherman, Astoria, 2010

> *"Just personally, so you know my stand on this, I personally think, and I'm one of the few people who's stood up and spoken about how this is – how we're going to lose jobs over this and how bad this is for the industry and nobody seems to care. But, that's where I fit in, I don't know if it's going to work or not, I don't even give a shit if it's going to works or not, but it's going to take a*

lot of jobs, not just fishing jobs, but support people too, and that's what I don't want to see." – Fisherman, Astoria, 2010

"By the time they make this study again, all the people who are hanging on are going to be gone, so they're not going to be getting their jobs back, so I mean. It seems kind of silly to me. I'm glad that they're understanding that this might become a problem, but I think too little too late." – Fisherman, Astoria, 2010

PCGFSS interviews from Astoria in 2012 and 2015/2016—many of which contain accounts of decreased harvesting and shore-side involvement in the groundfish fishery—suggest that these predictions were at least partially accurate, although a couple of factors seem to be preventing a more pronounced reduction of employment opportunities in Astoria. Based on interview analysis, the main buffering factors according to study participants are the health of the shrimp fishery (a common side—or primary—fishery for participants in the trawl groundfish fishery), and the presence of the "Pacific fleet" (i.e., vessels owned by Pacific Seafood Group that have access to large amounts of quota and the ability to co-ordinate the acquisition and harvesting of groundfish quota). The following quotes offer participant insight into these factors, in turn:

"So then when the price of shrimp went up, you know, we went shrimping. But along with the shrimping, as long as the price of shrimp stays I'm probably going to stay like this because the bottom fish fishery costs me way more money to be in than the shrimp. So I don't have to lease any fish. I don't have to worry about this and that and everything else." – QS Permit Owner, Astoria, 2015/2016

"You know, I went to all the council meetings, I spoke against it. I wasn't for it, but when the dust settled I work for a big company that has 10-12 drag permits, and they were able to stack a lot of fish on a coupe boats. It put a lot of other people out of business because they couldn't afford to buy fish and stack the permits. But for me it was positive because I work for Pacific and they have a lot of permits and they got a lot of fish. And that's big business. That put the small mom-and-pop operations, it put those guys out of business." – Fisherman, Astoria, 2015/2016

In addition to employment levels, PCGFSS survey and interview data also sheds light on reported job quality among participants in the groundfish trawl fishery. One finding presented in Table A-5 (below) stands out in particular: the mean job satisfaction score among PCGFSS participants in Astoria, while high on the Likert-scale from one to four, is consistently ranked lower than the majority of West Coast fishing communities included in this 5-Year Review. Interview data from the most recent round of data collection offers some insight into the impact of fishery management (though not necessarily catch shares) on this apparent trend:

"The job is becoming less fun. And, you know, the catch share program, the way it's been carried out, has contributed to it being less fun, so…" – Industry Participant, Astoria, 2015/2016

"Well, you're trying to execute a business based on a scientist's idea of what's in the ocean, and their data is so skewed, so flawed, that it's not fun anymore. It used to be challenging. Now it's, I mean I know where to catch the fish, but it's not fun. You almost have to have a calculator in your hand on a tow-by-tow basis and just pray the wrong fish aren't in the cod end when you haul back." – QS Permit Owner, Astoria, 2015/2016

Table A-5. Respondents' rated the following items related to their role in the commercial fishing industry on a Likert-scale Poor (1)-Excellent (4). Presented as community-level mean, and rank* from highest to lowest in comparison with other communities.

	2010		2012		2015/2016	
	Mean	Rank	Mean	Rank	Mean	Rank
Job satisfaction	3.1	8/10	3.1	6/10	3.3	7/10
Compensation	2.7	6/12	2.9	6/11	3.1	5/12
Method of pay	3.0	7/12	3.0	5/9	3.2	6/12
Job stability	2.5	9/13	3.1	2/9	3.2	3/10
Standard of living	2.9	3/8	3.1	4/10	3.3	2/9
Relationships	3.4	6/9	3.4	6/12	3.5	7/11
Not applicable	0		3.2		0	
Prefer not to answer	5.0		0		0	
Response rate	87.0		100		96.7	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Catch Shares Characteristics

The goal of the catch shares characteristics section is to describe the community based on participants' reported perspectives about catch shares. While, the previous sections provide information related to how the community may have been impacted by catch shares, this section responds directly to catch shares impacts by summarizing participants' perspectives on how they have been personally affected by catch shares.

In line with overall (coast-wide) findings, support for the catch shares program among Astoria-based PCGFSS participants appears to have increased after implementation (Box A-3). That said, opinions are still decidedly mixed, with 50% being the highest level of support of the three data collection phases. The proportion of Astoria-based participants that reported being positively affected by catch shares increased from 19.1% in 2010 to 48.3% in 2015/2016, while the proportion reporting being negatively affected by catch shares decreased from 42.9% in 2010 to 20.7% in 2015/2016.

The most frequent reasons cited for support of the catch shares program among Astoria-based PCGFSS participants included increased business planning ability and improved sustainability of the resource. The sentiment that "something needed to be done" was repeated by participants in all three rounds of data collection, as some perceived major sustainability issues (in both the biological and economic sense) facing the groundfish fishery prior to the management switch in 2011.

In general, Astoria-based PCGFSS participants regard the catch share program as beneficial to business planning. Relative to the bi-monthly management system that pre-dated catch shares, the catch share program's annually-administered quota was said to allow for more flexibility. Participants spoke of this flexibility being beneficial when budgeting efforts into multiple fisheries.

PCGFSS participants in Astoria also spoke frequently about the importance of incorporating other fisheries into their harvesting operations. While involvement in multiple fisheries is nothing new for fishermen in Astoria or elsewhere on the West Coast, comments like the ones below suggest that the importance of securing income from multiple fisheries may be increased under catch share management.

> *"So the shift to other fisheries is a negative in that it doesn't present an accurate picture. If all we had was bottom fish it would have failed a long time ago, probably a year after it started. It*

would have just [inaudible]. But because they have other fisheries that they can shift to, that's a good thing and it keeps them in business. But it has taken the groundfish from a profitable business activity, to a barely break even in most cases, and a loss in a lot of cases. So that's that." – Processor, Astoria, 2015/2016

For more on issues related to business operations, please see section 3.2.2(h) (Changing Nature of Fishery Businesses and Jobs). For more on the impacts of catch shares on other fisheries, please see section 3.2.2(g) (5) (Interactions Between Trawl Communities and Others).

Astoria-based PCGFSS participants offered a wide range of critiques about the catch share program, though much of their criticism was directed at the management of the fishery more generally. These comments tended to portray the management process as slow, unpredictable, and lacking in fisherman input. The following few quotes reflect repeated management-related sentiments.

(In response to being asked for his thoughts on why the fishery's attainment rate is so low):

"Because everybody is scared to death they'll catch a bunch of yellow-eye. Or canary, it might be canaries. They'll do them, they'll model about three or four years from now. I'm sorry but your bosses, they're not getting their [expletive] jobs done. They went to two-year management because they couldn't figure shit about it, and now they still can't. So that mean by the time you go through the council process, and it's, 'Oh, we've gotta wait for another survey.' Well that's three years later. Even still, 'Something's increased? We don't believe that.' If it's [fish stock] farther down, they'll believe it right away and they'll shut it down." – QS Permit Owner, Astoria, 2015/2016

"IQs are and were designed primarily by economists as an economic theory. They can have insularly advantages, particularly biological advantages and sometimes safety advantages. Um, so the theory of having an IQ program, um, for the economic benefits attached to it is not a bad one. It's when the practicality of the program, the reality of the program, begins to bite, that you suddenly realize it was not so ideal…There were lots of things that were voted on, that were discussed, that I raised a lot of concerns about. Not the idea of having an IQ program, but the way the program was being slowly structured by varying council actions. And several of those things continue to concern me. Um, hell, for example, the definition of ownership and control, um, was way out of whack from what someone normally considers ownership and control." – Industry Participant, Astoria, 2015/2016

"Regulations. Government side of things. The NOAA/NMFS side of things. The council side of things. It's the most unpredictable thing that I deal with. The regulations side of things is the most unsecure part of the whole thing, to me." – QS Permit Owner, Astoria, 2015/2016

"But the problem is, we put such faith in those numbers once they get to the TAC. And there's buffer--on every single layer, there's a buffer. And then we get to this number, and now we manage to the absolute, that absolute number like it is 100% science-based." – QS Permit Owner, Astoria, 2015/2016

"Unfortunately, they don't put much stock in what we say because we're not educated. We don't have PhDs." – QS Permit Owner, Astoria, 2015/2016

Cost of Observers: While Astoria-based PCGFSS survey participants were rarely in outright opposition to the catch shares observer program, nearly all recognized the cost of observer coverage as an issue of concern. The cost was seen by some as adding pressure to the harvesting experience. These participants

explained that the margin for error during harvest—already thinned for many by low amounts of bycatch quota—has been further minimized by the observer program.

> *"It used to be you could work harder and scratch around and if fishing wasn't that good you could work harder and spend more time out there, and just work harder and make it work out. You can't do that now. Because the clock is ticking now from when you leave the dock for the observer side of things."* – QS Permit Owner, Astoria, 2015/2016

Small vessels were often seen as bearing an inordinate cost burden with regards to observer coverage, since the flat rate of roughly $500 per day usually accounts for a greater proportion of their revenue on a given trip.

> *"Well, and $500 to a smaller dragger is a whole lot different than $500 to a guy bringing in 70,000 pounds."* – Processor, Astoria, 2015/2016

For more on issues related to observer fees and small vessels please see section 3.2.3.(d) (Small Vessels and Vessels Leaving the Fishery).

BOX A-3. The following characteristics related to catch shares impacts are presented as percentages of total respondents within the community sample, followed by the community rank* from highest to lowest in comparison with other communities for **2015/2016** survey (2010 and 2012 below).

2015/2016

Support for the catch shares program | **50.0%** | Rank 7 out of 10
2010=23.8% (5/11), 2012=48.4% (6/11)

Positively affected by catch shares | **48.3%** | Rank 3 out of 12
2010 (expect to be affected)=19.1% (5/11), 2012=38.7% (5/12)

Negatively affected by catch shares | **20.7%** | Rank 11 out of 12
2010 (expect to be affected)=42.9% (6/13), 2012=38.7% (7/12)

Changed species caught post-catch shares | **40.0%** | Rank 4 out of 8
2010 (change in last 5 years)=36.8% (2/8), 2012=43.5% (3/10)

Agree that safety has improved as result of catch shares | **37.5%** | Rank 6 out of 8

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Additional Themes

Markets: Comments on the ex-vessel groundfish market in Astoria tended to revolve around the limited number of groundfish processors, as well as the lack of substantial price increases for many species.

> *"We have no markets. We only have two people to buy our fish, which doesn't make it that great."* – QS Permit Owner, Astoria, 2015/2016

> *"Now my lease rates have skyrocketed, and instead of getting $2.00 and $1.85 for petrale, it's down to like, I think it's a buck fifteen ($1.15) right now. Well if you have to lease for 40 cents…That's one of the money fish. If it wasn't for the money fish I couldn't afford to fish. Some*

of the prices are at historic lows right now. When I first started fishing, Turbot was 9 cents. It's 10 now." – QS Permit Owner, Astoria, 2015/2016

As the second quote above alludes to, Astoria-based PCGFSS participants also frequently commented on the groundfish quota leasing market, with many stating that quota leasing has become a necessary component of participation in the trawl groundfish fishery. Lease rates—which a number of participants claimed had increased since implementation—were recognized as an added cost of doing business under catch shares.

Summary

Astoria has undergone changes since the implementation of the catch share program, but many of these changes appear to be continuations of trends that pre-date the program. Opinions on the catch share program have become more favorable since implementation, but they are still solidly mixed. Lease fees and observers costs are major concerns for many Astoria-based PCGFSS participants. Increased efforts in the crab, shrimp, and tuna fisheries were often seen as related to diminished opportunity in the groundfish fishery resulting from catch shares, although the buyback and the conservative approach to management in the last couple of decades were regarded as major factors as well. Despite mixed reviews, Astoria-based participants rank near the bottom among community aggregates in this analysis when it comes to reporting being negatively impacted by the catch share program, as well as with regard to plans to decrease participation in the fishery moving forward.

PCGFSS Community Summary

NEWPORT

This summary sheet provides a snapshot of the Newport community based on data from the PCGFSS. This information should be used to gain a better understanding of the individuals in this community that participated in the PCGFSS (primarily individuals involved in the groundfish trawl fishery in some capacity), and how these individuals may have been impacted by the implementation of catch shares. Where applicable a "rank" (highest to lowest for a given year and survey item) is presented to allow for easy comparison across communities.

Newport is located along the central Oregon coast approximately 136 miles southeast of Portland, and encompasses an area of 10.4 square miles (which includes 1.6 square miles of water). Oyster beds in Yaquina Bay attracted settlers to Newport in 1862, which was then incorporated in 1882 (Newport Chamber of Commerce 2016, Norman et al. 2007). Newport's Bayfront soon became an economic hub, supporting wood product industries and a commercial fishing port (Norman et al. 2007). Newport also has a history of tourism—by the 1900s, Nye Beach in Newport was one of the major visitor attractions along the Oregon coast (Norman et al. 2007). In an effort to reduce dependency on natural resource-based fishing and tourism, in the 1980s local businesses and leaders developed a community revitalization plan, which refocused the identity of Newport as a destination resort and research center.

According to the US Census Bureau's Population Estimates Program, the population of Newport in 2015 is estimated to be 10,268—a 20.1% increase from 1990. Median household income[5] (in 2015 dollars) is estimated to be $37,452 (US Census ACS 2015). The Newport Chamber of Commerce (2016) describes the major industries in Newport as tourism, fishing, forestry, and marine science.

PCGFSS Participants

The goal of this section is to describe the community based on some of the general characteristics that participants reported in the PCGFSS (Box X). These general characteristics provide information about who the participants within each study year represent. In Section 3.2 Community Performance, the community of Newport is defined as a stand alone community, opposed to an aggregated community. PCGFSS respondents within Newport may live outside of Newport (i.e. Toledo), however, all are connected with the groundfish fishery in Newport. When interpreting the results presented in this section

[5] US. Census data reported for median income is supported by the American Community Survey (ACS) and available on the U.S. Census website www.census.gov.

it is important to keep in mind that while there is some overlap in participants across years, not every survey year contains the same sample of individuals. Table N-1. summarizes the percentage of survey respondents in Newport who were the same between years, and is meant to aid in the interpretation of the results presented in this document.

Table N-1. Total number of participants, and percentage of return respondents in Newport.

	2010	2012	2015/2016
% Return respondents from 2010	-	50.0	28.9
% Return respondents from 2012	-	-	50.0
Number of participants	28	34	38

Participants in Newport are generally younger than those in other communities, which may be attributed to the strong presence of the whiting fleet in Newport (Section 3.2.3(c) Fishing Heritage), and in general, commercial fishing accounts for a large percentage of their income (Box N-1). Table N-2 summarizes the roles that Newport participants hold within the industry. In all three study years, Newport ranks in the top five communities for the percentage of PCGFSS respondents that are QS owners/co-owners and vessel owners/co-owners.

BOX N-1. The following demographics and family history characteristics are presented as averages, followed by the community rank* from highest to lowest in comparison with other communities for the **2015/2016** survey (2010 and 2012 below).

2015/2016

Age | **49.9 years** | Rank 13 out of 13
2010=51.3 (8/13), 2012=54.4 (4/12)

Number of years working in commercial fishing | **28.9 years** | Rank 11 out of 13
2010=34.6 (2/12), 2012=34.7 (3/13)

Number of years working in the PCGTF | **22.5 years** | Rank 8 out of 13
2010=24.2 (8/13), 2012=19.5 (7/12)

Number of generations family has commercially fished | **2.2 generations** | Rank 7 out of 11
2010=2.4 (9/10), 2012=2.3 (7/12)

Percent income from commercial fishing | **93.0%** | Rank 4 out of 13
2010=94.0% (4/13), 2012=81.9% (8/12)

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Table N-2. Role of respondents within Newport, presented as a percentage of the total number of participants within the community sample, and rank* from highest to lowest in comparison with other communities. Multiple response item: respondents could fall in more than one role category.

	2010		2012		2015/2016	
Role Category	%	Rank	%	Rank	%	Rank
QS owner/co-owner**	53.6	1/12	47.1	2/12	34.2	4/11
Absentee owner/co-owner	-	-	29.4	3/8	10.5	7/10
Vessel owner/co-owner	57.1	1/12	50.0	1/8	39.5	4/12
Captain/Crew	46.4	6/12	38.2	6/11	60.5	1/12
Shoreside Processor	10.7	5/9	5.9	8/10	2.6	10/11
Catcher-Processor/Mothership	0	2/2	0	3/3	0	2/2
Buyer (not processor)	3.6	4/5	2.9	5/6	2.6	5/6
Other***	14.3	7/9	26.5	6/12	23.7	8/13
Not applicable	0		0		0	
Prefer not to answer	0		0		0	
Response rate	100		100		100	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

**2010: refers to "permit owner"

*** Other represents the percentage of respondents that do not fall in any of the other role categories, and encompasses: Risk pool manager, QS/QP manager, Observer, Industry supplier, Fisherman's wife.

Fishery Participation Levels

This section supplements the section above by characterizing the community based on PCGFSS responses 3to items about current and planned participation in various fisheries. Fisheries participation data presented here reflects the fisheries that PCGFSS respondents in Newport participate in, and does not account for where these participants may land their catch.

In all three study years, Newport fishermen[6] reported commercially fishing Pacific whiting, sablefish, dover sole, and petrale sole (Table N-3). Additionally, across all years, Newport fishermen reported fishing Alaska Pollock, Dungeness crab, Alaska Pacific cod, pink shrimp, and tuna (Table N-3).

Much of the groundfish fleet in Newport was involved in other fisheries prior to catch shares (Table N-3), which participants recognize as a beneficial characteristic for adaptation. For instance, one non-IFQ fixed gear fisherman stated:

> "*Each fisherman has the job of figuring out where he needs to fit into this puzzle. Because even though your piece of that puzzle has a certain shape, it fits in more than one place. It might be advantageous to be over here one year, and down over here the next year, and maybe over there the year after that. And so if you're reasonably successful at picking the place that you should be, and a little bit lucky, then you do just fine."* – Fisherman (Non-IFQ Fixed Gear), Newport 2015/2016

Adaptability was the most frequently mentioned interview code in Newport, occurring in about 80% of the interviews. Following implementation of catch shares, it was common for participants to switch to shrimping or increase their level of activity in the shrimp fishery. Some reported a heavy reliance on other

[6] The survey item summarized in Table N-2 only applies to fishermen, which were defined as captain, crew, and/or other roles directly related to the harvesting of fish.

fisheries stating that, *"If we didn't have the other fisheries, it wouldn't have been a good thing for us"* (Fisherman, Newport, 2015/2016). However, there are mixed opinions about whether the increase in shrimp activity was directly related to catch shares or the boom in shrimp numbers:

> *"Yeah, boats have gone into shrimping, but the other side of that is the shrimping has been real good the last 3 years. Historically, I mean its way better than its been in the last 20 years."* – QS Permit Owner, Newport 2012

Table N-3. Top five groundfish and other species that Newport fishermen reported commercially fishing since catch shares was implemented (2010: commercially fished in the last 5 years).

2010	**%**	**2012**	**%**	**2015/2016**	**%**
Pacific Whiting	81.0	Pacific Whiting	80.0	Pacific Whiting	100.0
Sablefish	66.7	Sablefish	60.0	Sablefish	85.7
Dover Sole	57.1	Dover Sole	50.0	Dover Sole	85.7
Petrale Sole	52.4	Petrale Sole	50.0	Petrale Sole	71.4
Shortspine Thorneyhead	47.6	Shortspine Thorneyhead	40.0	Arrowtooth Flounder	71.4
Alaska Pollock	66.7	Alaska Pollock	55.0	Alaska Pollock	44.8
Dungeness Crab	52.4	Alaska Pacific Cod	55.0	Dungeness Crab	44.8
Alaska Pacific Cod	52.4	Dungeness Crab	50.0	Alaska Pacific Cod	41.1
Pink Shrimp	38.1	Pink Shrimp	40.0	Pink Shrimp	34.5
Tuna	19.0	Pacific Halibut	5.0	Tuna	17.2
Alaska Flatfish	19.0	Tuna	5.0		
		Alaska King Crab	5.0		
		Alaska Tanner Crab	5.0		

Newport participants discussed that the catch shares program allowed more flexibility to participate in other fisheries, which for some was one of the only benefits of the program:

> *"Its going to give us more flexibility to jump from other fisheries to the other. And the gear types. I like the flexibility of the gear type. Those are the pluses I see. The only two pluses I see. Those two are pretty good ones but the rest that I see are negatives."* – QS Permit Owner, Newport 2010

In addition to a diverse portfolio of fishery involvement, interviewees mentioned quota pound trading as an adaptation strategy. Quota pound trades seem to be more common than sales or paid leasing arrangements, and can be used as a mutualistic strategy to keep costs down. One QS permit owner explained:

> *"Like the hake fleet needs bycatch that we have that we don't need, and so we trade for species that they have that they don't need, like blackcod, petrale sole. We do a lot of that, a LOT of that. We try to keep the cost down. Instead of paying lease rates, trade fish. Because the costs are so high."* – QS Permit Owner, Newport 2015/2016

In terms of Newport respondents' future participation in the PCGTF, in 2015/2016 about 1/3 reported that they plan to increase their activity in the fishery (Box N-2), whereas few plan to decrease their activity.

BOX N-2. The following fishery participation characteristics are presented as percentages of the total respondents within the community sample, followed by the community rank* from highest to lowest in comparison with other communities for the **2015/2016** survey (2012 below).

2015/2016

Plan to increase activity in PCGTF | **33.3%** | Rank 5 out of 11
2012=5.9% (7/8)

Plan to decrease activity in PCGTF | **11.1%** | Rank 2 out of 9
2012=5.9% (2/3)

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Infrastructure

PCGFSS interviewees in Newport reported that there are roughly eight processors in the community along with a new whiting plant in progress. Newport brings in business from other communities and is considered a hub for shoreside support businesses. Unlike other communities that have struggled to maintain capacity, participants found that delivery schedules and shipyards are busier than they used to be. In general, however, participants discussed that they expected catch shares to have a negative cascading effect on shoreside supply/service businesses. Though they also noted that infrastructure has gradually declined over the past decade or so, which they associated with fewer boats in salmon, crab, and dragging, especially after the limited entry permit system started. For instance one participant reports the decline in full service operations, and explains why they work in other locations in addition to Newport:

> *"…Because of the lack of, because of the change in industry- we are like the only full service trawl shop between Seattle and Mexico. For years like Coos Bay had three net shops- they don't have any. Astoria had four- they got kinda one. They just do shrimp nets. There are back yard people doing it on their own but no true businesses specializing in trawl gear."* – Industry Participant, Newport, 2012

Despite these challenges, interviewees found that some service suppliers have adapted to meet the needs of the fleet:

> ***"****We signed a five-year lease getting into this building a month ago. And I'm like, "alrighty". I guess the first five years of the IFQ will be over by then and I don't know if we'll be here by then. We're resourceful and we're the only show in town. We've survived all the other stuff. There were three net shops in Coos Bay and now there's none. There was a huge net shop in Eureka and now there's none. There were at least four net shops in Astoria and now there's like a half of one. And so we survived because of the diversity of the Newport fleet."* – Industry Participant, Newport, 2010

Specifically related to infrastructure impacts in Newport, interviewees discussed the crowded delivery schedule at Newport plants:

> *"I would say, though, as far as us going and fishing – now here's one thing that kinda coming down the line that seems like it's, it seemed like there used to be more processing facilities for groundfish. Where now, like Eureka does takes care of, Pacific in Eureka does their boats but they work Crescent City, Eureka, you know the surrounding areas. Coos Bay all their fish is getting trucked to Newport to be cut. And so if the cannery downsizes at all or does a central location for everything to come to, well if that infrastructure's not big enough to handle the*

boats, that's kind of the predicament that we're in. Right? We have two ports, all the fish is coming to Newport. There's 10 boats. So we're all competing for a piece of that. They can only do 200,000lbs a week of dover. Everybody wants to catch 50,000lbs a week of dover." – QS Permit Owner, Newport 2015/2016

Employment Levels

This section summarizes community-level employment based on survey participants' reported employment (including any combination of full-time, part-time, seasonal, and/or self-employment) in the groundfish fishery, other fisheries, or non-fishing industries. Additionally, we summarize how respondents within the community rated different components of job quality related to their role in the commercial fishing industry.

Newport interviewees discussed that there are fewer jobs overall, but that the remaining jobs are more stable (this is also discussed in Section 3.2.2(h) Changing Nature of Fishery Businesses and Jobs). Further, some perceived that job stability may differ depending on the size of the operation—bigger boats offer more stability. More specifically, some mentioned that it is more difficult to find good crew, and that there are fewer deckhands with quality experience in the fishery because there are less full-time groundfish jobs. Some connected this to increased job security for older and more experienced fishermen because their knowledge about fishing grounds (in relation to bycatch) is now more valuable to owners. Participants also highlighted that the whiting fleet may benefit more than non-whiting:

"It's been better for whiting. There's more jobs for whiting but there's less jobs in probably bottom trawl but what was happening in bottom trawl wasn't sustainable long term." – Industry Participant, Newport 2015/2016

In 2015/2016, Newport ranks in the top two in terms of employment levels in the groundfish fishery, and other fisheries (Table N-4). Across all three study years Newport ranks in the top five on all job quality items, except relationships with co-workers (Table N-5). As there is a strong whiting presence in Newport, these results correspond to projections that the whiting fleet may experience positive impacts related to catch shares. In regards to other forms of employment in the fishery, observers expressed concern that the shift to electronic monitoring (a topic that was discussed in many Newport interviews) may result in fewer observer jobs, and issues with observer access.

Table N-4. Community-level employment (includes any combination of full-time, part-time, seasonal and/or self-employment), in percentages of total respondents within community sample, and rank* from highest to lowest in comparison with other communities.

	2010		2012		2015/2016	
	%	Rank	%	Rank	%	Rank
Groundfish	89.3	5/9	64.7	8/11	92.1	2/12
Other fisheries	60.7	9/13	67.7	4/11	81.6	1/10
Non-fishing	17.9	6/11	41.2	4/11	23.7	7/12
Not applicable	0		2.9		0	
Prefer not to answer	0		0		0	
Response rate	100		100		100	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Table N-5. Respondents' rated the following items related to their role in the commercial fishing industry on a Likert-scale Poor (1)-Excellent (4). Presented as community-level mean, and rank* from highest to lowest in comparison with other communities.

	2010		2012		2015/2016	
	Mean	Rank	Mean	Rank	Mean	Rank
Job satisfaction	3.4	2/10	3.6	1/10	3.5	2/10
Compensation	3.2	2/12	3.2	2/11	3.2	3/12
Method of pay	3.4	1/12	3.2	3/9	3.3	3/12
Job stability	3.2	1/13	2.8	4/9	3.1	5/10
Standard of living	3.4	1/8	3.3	1/10	3.4	1/9
Relationships	3.4	6/9	3.4	7/12	3.5	8/11
Not applicable	0		6.1		2.6	
Prefer not to answer	0		0		2.6	
Response rate	92.9		100		100	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Catch Shares Characteristics

The goal of the catch shares characteristics section is to describe the community based on participants' reported perspectives about catch shares. While, the previous sections provide information related to how the community may have been impacted by catch shares, this section responds directly to catch shares impacts by summarizing participants' perspectives on how they have been personally affected by catch shares.

In 2010, interviewees expressed uncertainty and fear surrounding the forthcoming implementation of catch shares. However, in comparison to potential impacts on other communities, many in Newport thought their community would be able to adapt to the changes:

> *"This is a huge impact to the communities. A huge impact. Newport's not as bad. We have the Alaska fleet, a big hake fleet, we have NOAA coming to the community which couldn't be better timing with this groundfish thing. People are just now waking up and saying, oh what have we done with the groundfish. What have we done. People are just now realizing it. It's pretty sad."* – QS Permit Owner, Newport 2010

Across all three study years, Newport ranks in the top five for percentage supporting catch shares, and percentage positively affected by catch shares (Box N-3). These results may be related to the high levels of whiting participation in Newport as the whiting fleet is thought to benefit more positively from catch shares than non-whiting participants. Additionally, these results may be related to the adaptation capacity of Newport participants. Interviewees discussed five categories of adaptation strategies including 1) proactive management of quota, 2) leaning on other fisheries (as discussed in the "Fishery Participation" section above), 3) changing business operations, 4) switching to fixed gear, and 5) learning from others. Those who spoke about proactive management of quota expressed a need to learn to operate within the management system, actively acquire quota, and track bycatch:

> *"You know, that's why we're trying, basically, we're trying to invest further and get more fish. That way no matter what, we're not having to depend on leases to survive. 'Cause at this point with the 3 boats and without shrimp they wouldn't make it. They wouldn't. So we have to keep investing and try to get some more quota."* – Fisherman, Newport 2015/2016

Participants reported learning from the actions of their peers as well as from management personnel:

> *"… Now I won't go greenie fishing next year because I was greenie fishing up until that point. Now the same guy who owns the boat is like, 'Well, we can't do that again,' because if that happened to us, we'd have nothing to do."* - Fisherman, Newport, 2015/2016

> *"Yeah, the industry, and there's been a lot of guys that have tried things that haven't worked, you know, but but still…that's how we keep learning. That's how we're going to keep learning. And we keep evolving to better and better and better stuff. If you started out where we were, with our first rockfish excluders to where we are now, its been, its like going from a Ferrari to a Volkswagen."* - QS Permit Owner, Newport, 2012

> *"I have seen it starting to happen in Newport but I think they have had a lot of support from some fishermen and I'm sure [omitted name of Sea Grant agent] has been able to help teach them to shift to more of a business model."* - QS Permit Owner, Newport, 2012

BOX N-3. The following characteristics related to catch shares impacts are presented as percentages of total respondents within the community sample, followed by the community rank* from highest to lowest in comparison with other communities for **2015/2016** survey (2010 and 2012 below).

2015/2016

Support for the catch shares program | **63.2%** | Rank 2 out of 10
2010=38.5% (3/11), 2012=57.1% (4/11)

Positively affected by catch shares | **62.2%** | Rank 1 out of 12
2010 (expect to be affected)=30.4% (3/11), 2012=55.6% (3/12)

Negatively affected by catch shares | **24.3%** | Rank 9 out of 12
2010 (expect to be affected)=39.1% (7/13), 2012=29.6% (8/12)

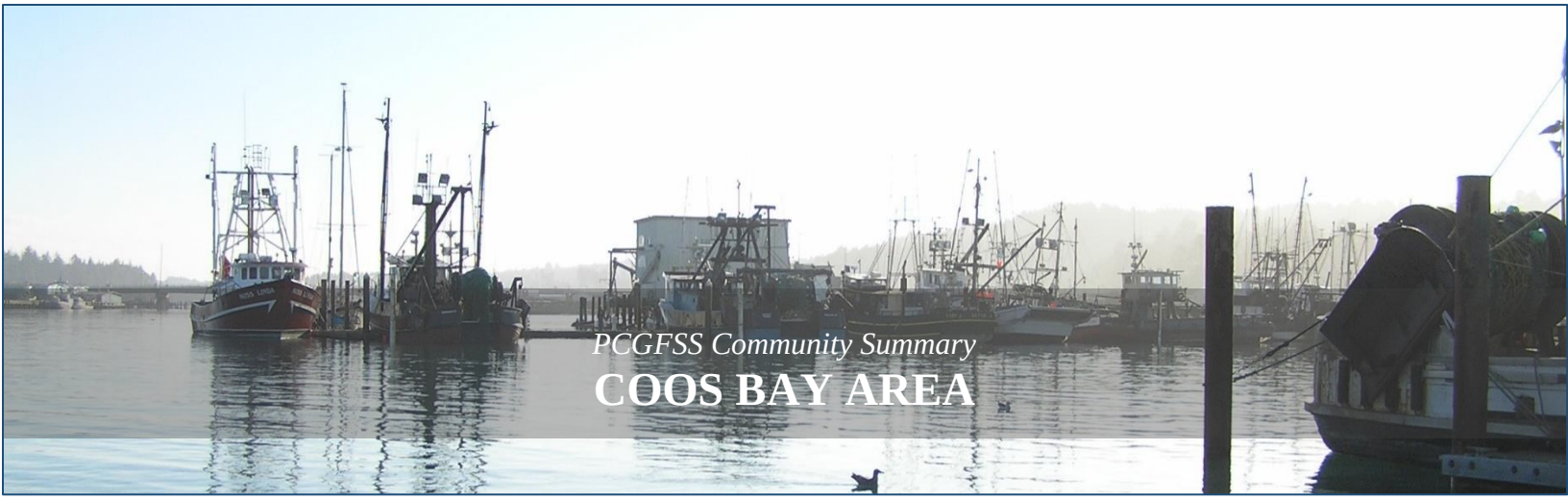
Changed species caught post-catch shares | **33.3%** | Rank 7 out of 8
2010 (change in last 5 years)=28.6% (4/8), 2012=35.0% (6/10)

Agree that safety has improved as result of catch shares | **44.4%** | Rank 5 out of 8

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Summary

In comparison to other communities, Newport appears to have adapted well to catch shares. Newport still faces challenges, but it has adapted more successfully. In all three study years, Newport ranks in the top five for percentage positively affected by catch shares. Interview participants discussed that having a diverse portfolio of fisheries involvement, and quota pound trading may have contributed to their community's adaptability. In particular, the strong presence of the whiting fleet in Newport is a unique characteristic that seems to play an important role in the community's response to catch shares. "Graying of the fleet" or an aging fishing industry is a trend that has been gaining national attention. Fishery participants in Newport, however, do not appear to follow the same aging trajectory, which may also be related to the strong whiting presence.



PCGFSS Community Summary

COOS BAY AREA

This summary sheet provides a snapshot of the Coos Bay Area community based on data from the PCGFSS. This information should be used to gain a better understanding of the individuals in this community that participated in the PCGFSS (primarily individuals involved in the groundfish trawl fishery in some capacity), and how these individuals may have been impacted by the implementation of catch shares. Where applicable a "rank" (highest to lowest for a given year and survey item) is presented to allow for easy comparison across communities.

Coos Bay (incorporated in 1874) is located on the southern Oregon coast approximately 220 miles south of Portland, and encompasses an area of 15.9 square miles (which includes 5.3 square miles of water). The area was originally inhabited by the Coos, Lower Umpqua, Siuslaw, and Coquille Indians (Norman et al. 2007). During the late 1800s, sawmills, shipbuilding, coal mining, and farming activities were the major industries in the area (Norman et al. 2007). While the coal mining industry collapsed in the 1920s and 1930s, the forestry industry in Coos Bay continued to progress—Weyerhauser Timber Company and Menasha Woodenware Company built manufacturing plants in the area around 1945 (Norman et al. 2007).

According to the U.S. Census Population Estimates Program, the population of Coos Bay in 2015 is estimated to be 16,182—a 7.1% percent increase from 1990. Median household income[7] is estimated to be $38,780 (US Census ACS 2015). The Bay Area Chamber of Commerce (2016) describe the major industries in Coos Bay as farming, commercial fishing, forestry, and tourism.

PCGFSS Participants

The goal of this section is to describe the community based on some of the general characteristics that participants reported in the PCGFSS. These general characteristics provide information about who the participants within each year represent. In Section 3.2 Community Performance, the Coos Bay Area is used to represent a community group composed of the following communities: Coos Bay/Charleston, Florence, and Winchester Bay. PCGFSS respondents are only representative of Coos Bay/North Bend/Charleston. When interpreting the results presented in this section, it is important to keep in mind that while there is some overlap in participants across years, not every survey year contains the same

[7] US. Census data reported for median income is supported by the American Community Survey (ACS) and available on the U.S. Census website www.census.gov.

sample of individuals. Table CBA-1. summarizes the percentage of respondents in the Coos Bay Area who were the same between years, and is meant to aid in the interpretation of the results presented here.

Table CBA-1. Total number of participants, and percentage of return respondents in the Coos Bay Area.

	2010	**2012**	**2015/2016**
% Return respondents from 2010	-	57.7	36.0
% Return respondents from 2012	-	-	60.0
Number of participants	26	26	25

In comparison to other communities, Coos Bay participants are generally younger, and derive between 79-92% of their income from commercial fishing (Box CBA-1). Table CBA-2 summarizes the roles that Coos Bay participants hold within the industry. In 2012 and 2015/2016, Coos Bay ranks in the top five in terms of the percentage of PCGFSS respondents that are QS owners/co-owners, and captain/crew members (Table CBA-2).

BOX CBA-1. The following demographics and family history characteristics are presented as averages, followed by the community rank* from highest to lowest in comparison with other communities for the **2015/2016** survey (2010 and 2012 below).

2015/2016

Age | **53.4 years** | Rank 9 out of 13
2010=46.1 (12/13), 2012=52.5 (6/12)

Number of years working in commercial fishing | **31.8 years** | Rank 5 out of 13
2010=23.1 (10/12), 2012=30.9 (6/13)

Number of years working in the PCGTF | **25.6 years** | Rank 5 out of 13
2010=18.5 (11/13), 2012=26.8 (2/12)

Number of generations family has commercially fished | **2.4 generations** | Rank 4 out of 11
2010=7.4 (1/10), 2012=2.9 (2/12)

Percent income from commercial fishing | **78.9%** | Rank 9 out of 13
2010=90.2% (6/13), 2012=91.6% (4/12)

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Table CBA-2. Role of respondents within the Coos Bay Area, presented as a percentage of the total number of participants within the community sample, and rank[*] from highest to lowest in comparison with other communities. Multiple response item: respondents could fall in more than one role category.

	2010		2012		2015/2016	
Role Category	%	Rank	%	Rank	%	Rank
QS owner/co-owner[**]	23.1	9/12	40.7	4/12	40.0	3/11
Absentee owner/co-owner	-	-	14.8	4/8	24.0	4/10
Vessel owner/co-owner	26.9	9/12	40.7	2/8	36.0	6/12
Captain/Crew	73.1	3/12	59.3	5/11	52.0	2/12
Shoreside Processor	7.7	6/9	7.4	7/10	12.0	5/11
Catcher-Processor/Mothership	0	2/2	3.7	2/3	0	2/2
Buyer (not processor)	0	5/5	0	6/6	0	6/6
Other[***]	11.5	8/9	14.8	10/12	16.0	13/13
Not applicable	0		0		0	
Prefer not to answer	0		0		0	
Response rate	100		100		100	

[*]Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

[**] 2010: refers to "permit owner"

[***] Other represents the percentage of respondents that do not fall in any of the other role categories, and encompasses: Risk pool manager, QS/QP manager, Observer, Industry supplier, Fisherman's wife.

Fishery Participation Levels

This section supplements the section above by characterizing the community based on PCGFSS responses to items about current and planned participation in various fisheries. Fisheries participation data presented here reflects the fisheries that PCGFSS respondents in Coos Bay participate in, and does not account for where these participants may land their catch.

In all three study years, Coos Bay fishermen[8] reported commercially fishing sablefish and dover sole (Table CBA-3). Coos Bay fishermen also target a diverse selection of species in other fisheries including Dungeness crab, pink shrimp and tuna.

In the Coos Bay, as well as in other communities, participation in the groundfish fishery has declined, primarily due to cost related limitations. Interviewees in 2012 and 2015/2016 also explained that low amounts of black cod and bycatch quota limit participation levels. In order to supplement their income, some fishermen have increased their level of activity in other fisheries. Others have decided to lease out their quota in order to avoid the costs and challenges associated with actually fishing their quota—which also allows more time to fish in other fisheries. For instance, one participant explains the financial benefit of leasing quota (referred to below as selling fish):

> "*He sells his fish. He can make more money selling his fish than he can catching them because he don't have no crew shares or no fuel or nothing. What he gets out of it is money."* – QS Permit Owner, Coos Bay Area, 2015/2016

[8] The survey item summarized in Table CBA-2 only applies to fishermen, which were defined as captain, crew, and/or other roles directly related to the harvesting of fish.

Table CBA-3. Top five groundfish and other species that Coos Bay Area fishermen reported commercially fishing since catch shares was implemented (2010: commercially fished in the last 5 years).

2010	%	2012	%	2015/2016	%
Sablefish	85.0	Sablefish	85.0	Sablefish	66.7
Dover Sole	75.0	Dover Sole	75.0	Dover Sole	66.7
Petrale Sole	60.0	Longnose Skate	75.0	Petrale Sole	66.7
Longspine Thorneyhead	50.0	Rex Sole	70.0	Rex Sole	50.0
Shortspine Thorneyhead	50.0	Arrowtooth Flounder	65.0	English Sole	50.0
Pink Shrimp	70.0	Dungeness Crab	80.0	Dungeness Crab	66.7
Dungeness Crab	45.0	Pink Shrimp	60.0	Pink Shrimp	66.7
Tuna	10.0	Tuna	25.0	Tuna	27.8
Squid	5.0	Pacific Halibut	15.0	Pacific Halibut	16.7
		Pacific Salmon	10.0	Squid	11.1

Interviewees in the Coos Bay Area discussed shrimping and crabbing as a common strategy to adapt to catch shares. While some fishermen participated in crab and shrimp prior to catch shares, there is a noticeable increase in the level of activity. As trawl fishermen move into other fisheries this may impact the environmental and social dynamics of these other fisheries:

> *"Not only that, but now that people have chosen to get out of the groundfish because of these reasons, everybody is jumping into the shrimp, where I used to be able to make a bank load of money. But now there's 50 boats doing it when there used to be 20, and now they can't handle the volume. So I'm making one trip every two weeks, where I used to be able to turn and burn. Turn and burn."* – Fisherman, Coos Bay Area, 2012

> *"I really didn't expect as much overflow in fisheries as we had come down. The shrimp fishery has taken a big hit, and the crab fishery has taken a huge hit with large drag boats that had to do something so they bought crab permits. I don't know if you know about the crab fisheries, but it's a flat-out derby anyway, and now it's really…"* –QS Permit Owner, Coos Bay Area, 2015/2016

For some, especially the smaller boats, an increased level of activity in other fisheries may have negative impacts on safety. A PCGFSS researcher asks, *"Got more people crabbing, bigger boats crabbing?"* The participant responds, *"Which forces a smaller boat to fish harder, in dangerous weather, and we've drowned some people"* (QS Permit Owner, Coos Bay Area, 2015/2016).

BOX CBA-2. The following fishery participation characteristics are presented as percentages of the total respondents within the community sample, followed by the community rank* from highest to lowest in comparison with other communities for the **2015/2016** survey (2012 below).

2015/2016

Plan to increase activity in PCGTF | **28.0%** | Rank 7 out of 11
2012=0% (8/8)

Plan to decrease activity in PCGTF | **8.0%** | Rank 5 out of 9
2012=0% (3/3)

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Furthermore, many perceive catch shares related costs, such as observer coverage, to be a larger issue for small vessels (this topic is discussed in more detail in Section 3.2.3(d) Small Vessels and Vessels Leaving the Fishery):

> "*It just doesn't…the small or mid-sized trawl boat just isn't gonna make it. We've already lost almost…God, there's only a couple of us left in this port. And we just can't afford to fish. Can't afford to trawl."* – QS Permit Owner, Coos Bay Area, 2015/2016

Despite the challenges of catch shares, 28% of Coos Bay participants plan to increase their activity in the groundfish fishery (Box CBA-2), which for some can be attributed to an enjoyment of the job:

> "*It's not really that we're too dumb to quit. Some of us really do enjoy our jobs. The scenery I've seen…I've logged and fished…and the scenery I've seen is awesome, and the challenge of catching being as clean as you can be is a challenge, and to me, it's a worthwhile industry to be involved in. It's kind of hard to explain, but I really do enjoy my job. So it's not that we're too dumb to quit; it's just that we do enjoy doing what we do."* – Fisherman, Coos Bay Area 2015/2016

Infrastructure

Interviewees in Coos Bay reported declines in infrastructure related to catch shares, particularly in regards to buyers and processors. While some of the impacts on infrastructure may pre-date catch shares, infrastructure has not increased with catch shares:

> "*At 15 years ago, there was 1, 2, 3, 4, 5, 6, 7 buyers here in town to buy dragfish. You know how many we got now? Two. And it is not increasing. There is nobody coming in to buy groundfish, especially in this podunk. Unless you can commit to buying the whole thing. You know, it used to be, you know, you would go over here and sell a little bit. And we used to take fish off this dock and sell them around to somebody that's getting started and you know, you need a couple thousand pounds, it's perfect. We always supported that. That's gone. We do that, we don't have a market. We don't have a shrimp market. We don't have a crab market."* – QS Permit Owner, Coos Bay Area, 2012

Participants in Coos Bay provide insight to the cyclical relationship between processor capacity and fish supply. Processors in the area state that there is a lack of a steady supply of fish:

> *"I mean, it's just made our groundfish production less profitable, less easy to manage as far as making money goes. It's just such a lack of product here in this area unless I buy it, truck it, and I can't do that with what it's worth. It's not worth anything."* – Processor, Coos Bay Area, 2015/2016

The lack of fish may in turn result in fewer processor jobs and a loss of overall capacity. A PCGFSS researcher asked a processor if there is an increase in processing capacity, and the processor responded, *"No. For whiting? Yes. For non-whiting? No. In fact we've decreased it because of a loss of filleters. Those are essential for doing bottom-fish"* (Coos Bay, 2015/2016). One QS owner explains that processors are unable to keep up with the amount of fish delivered which then causes a decline in the number of fishing trips:

> *"For me or for…right now I struggle selling enough groundfish because the plant can't keep filleters in there. I mean I go get 50 or 60,000 pounds of fish into [name omitted] and that ties them up for 3 days because they've lost all their filleters. So I think jobs have gone away in that respect. You know, I mean I haven't lost any jobs on my boat, but I've seen infrastructure go*

away that's hurt my business because I can't get the product out as quick as I'd like to. I'm only one boat going, so then if you get 3 or 4 draggers going to that plant, then we're backed up to where we're only making a trip every 10 or 12 days, instead of every time the weather is good. So it's hurt." – QS Permit Owner, Coos Bay Area, 2015/2016

As discussed previously, smaller vessels may be more vulnerable to catch shares related change than larger vessels. Consequently, small-scale processing operations that target fish from small vessels may also encounter challenges:

"Yeah, there's a lot less fish coming into this plant. Our basic plan is to catch quality fish, as far as beach fish. We don't really try to hire the guys that are just big slammers that catch the most fish and charge out there. We try to go for quality fish and always have, so a lot of our boats were smaller boats, and this plan helps the bigger boat, not a smaller boat. So we're losing…I'm losing boats, captains, business, you name it." – Processor, Coos Bay Area, 2015/2016

Employment Levels

This section summarizes community-level employment based on PCGFSS participants' reported employment (including any combination of full-time, part-time, seasonal, and/or self-employment) in the groundfish fishery, other fisheries, or non-fishing industries. Additionally, we summarize how respondents within the community rated different components of job quality related to their role in the commercial fishing industry. In 2010 and 2012, Coos Bay ranked in the top three in terms of the percentage of PCGFSS respondents employed in the groundfish fishery, and percentage employed in other fisheries (Table CBA-4).

Table CBA-4. Community-level employment (includes any combination of full-time, part-time, seasonal and/or self-employment), in percentages of total respondents within community sample, and rank* from highest to lowest in comparison with other communities.

	2010		2012		2015/2016	
	%	Rank	%	Rank	%	Rank
Groundfish	92.3	3/9	84.6	3/11	72.0	8/12
Other fisheries	96.2	1/13	73.1	3/11	68.0	5/10
Non-fishing	11.5	7/11	42.3	3/11	16.0	10/12
Not applicable	0		0		0	
Prefer not to answer	0		0		0	
Response rate	100		96.3		100	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

In 2010, participants in Coos Bay anticipated job losses associated with catch shares, and the loss of good crew to more lucrative fisheries:

"*Well, with a reduction in fleet, which is surely to happen other businesses, associated businesses are going to have a decrease, which is you know, already occurring with the buyback and everything else."* –Fisherman, Coos Bay Area, 2010

"I've kept em pretty stable up to the last, I don't know, I've had 2 or 3 them quit in the last week and a half and or two weeks, some of them are going to Alaska, they said, it didn't look good here anymore and some of them said they were going crabbing." –Permit Owner, Coos Bay Area, 2010

Following catch shares implementation, some perceived that while there were still job opportunities, it had become increasingly more difficult to make an income. Participants also continued to discuss the loss of good crew, and attributed this to a decrease in compensation:

> *"It's not necessarily hard to get on a boat. You can get on the same boat during the summer and the tune-up. It's to get on a boat that you can actually make a true living. There are some boats that do the crabbing, the salmon, and tuna, but overall, they probably make $40,000 a year, and that's before taxes, and plus, they work. They're hardly working. They're a smaller boat. They're not going out in the crap."* – Fisherman, Coos Bay Area, 2015/2016

> "*These deck hands anywhere from $50-$80,000 on these boats. Now they're making about $30,000 at the most."* – QS Permit Owner, Coos Bay Area, 2015/2016

> "*Yeah, the good ones said 'hey, there ain't nothing to make here anymore. I'm outta here.' They went and found better jobs, something different to do."* – Fisherman, Coos Bay Area, 2012

Similarly, others discussed that while their income has remained the same they have had to work harder for it:

> *"My income has stayed the same because I've had to break my neck and go to other fisheries. As far as the trawl fishery, it's less income, yes."* – QS Permit Owner, Coos Bay Area, 2015/2016

Despite these challenges, in comparison with other communities, Coos Bay ranked in the top five for average reported job satisfaction, compensation, and job stability in 2015/2016 (Table CBA-5). This corresponds with the general trend of more stable jobs associated with catch shares, which is discussed in more detail in Section 3.2.2(h) Changing Nature of Fishery Businesses and Jobs.

Table CBA-5. Respondents' ratings of the following items related to their role in the commercial fishing industry on a Likert-scale from Poor (1)-Excellent (4). Presented as community-level mean, and rank* from highest to lowest in comparison with other communities.

	2010		**2012**		**2015/2016**	
	Mean	Rank	Mean	Rank	Mean	Rank
Job satisfaction	3.4	4/10	3.2	5/10	3.4	5/10
Compensation	2.7	6/12	2.6	8/11	3.2	4/12
Method of pay	3.0	6/12	3.0	6/9	3.2	6/12
Job stability	2.9	3/13	2.4	6/9	3.2	1/10
Standard of living	2.8	4/8	2.6	9/10	3.0	7/9
Relationships	3.4	6/9	3.4	8/12	3.1	11/11
Not applicable	0		0		0	
Prefer not to answer	0		0		0	
Response rate	88.5		100		92.0	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Catch Shares Characteristics

The goal of the catch shares characteristics section is to describe the community based on participants' reported perspectives about catch shares. While, the previous sections provide information related to how the community may have been impacted by catch shares, this section responds directly to catch shares

impacts by summarizing participants' perspectives on how they have been personally affected by catch shares.

In 2010 there were mixed opinions about catch shares—21% of Coos Bay respondents supported the program (Box CBA-3). In 2012, interviewees expressed primarily negative opinions about catch shares, which corresponds to few reporting that they had been positively affected by catch shares, and 68% reporting that they had been negatively affected (Box CBA-3). In particular, many were frustrated about increasing management, allocation amounts and process, and observer cost. Despite this, over half of respondents support the catch shares program.

Interviewees expressed a frustration with the nature of relationships between the commercial fishing industry and government agencies. For instance, one participant perceived a lack of communication between fishermen and scientists:

> *"I would say fair. My problem with that is I went to a lot of them damn meetings for no good, and I listened to all their PhDs and all their stuff, and when I get my little one-minute explanation, they wouldn't listen. So I just figured I got 40 years in the ocean, I'm equal to goddamn PhD…"* –QS Permit Owner, Coos Bay Area, 2015/2016

More specifically in regards to catch shares, some were not satisfied with the allocation process, and thought that non-vessel owning participants had been overlooked:

> *"I lease this vessel from a man that I deeply respect and have been very good to me, but if I lease his boat and I go out and catch those fish in the ocean, I give him 50% of the value… I don't know if these questions are coming up, but I feel before they changed this, they should have looked at tenure captains and crews on these vessels. Because we're the ones that got these guys their permits, I'm sure you've heard that before and I think we got neglected and overlooked. I don't think the fish plant should have ever got a 20% share of the quota. I believe that guys like me, you talk to half of these boats here, I bet you 1/3 of them are run by owners. Most of them are hired out. I think we really got kicked to the curb."* – Fisherman, Coos Bay Area, 2015/2016

BOX CBA-3. The following characteristics related to catch shares impacts are presented as percentages of total respondents within the community sample, followed by the community rank* from highest to lowest in comparison with other communities for **2015/2016** survey (2010 and 2012 below).

2015/2016

Support for the catch shares program | **54.2%** | Rank 4 out of 10
2010=21.1% (6/11), 2012=52.0% (5/11)

Positively affected by catch shares | **43.5%** | Rank 4 out of 12
2010 (expect to be affected)=10.5% (7/11), 2012=8.0% (11/12)

Negatively affected by catch shares | **52.2%** | Rank 5 out of 12
2010 (expect to be affected)=52.6% (4/13), 2012=68% (2/12)

Changed species caught post-catch shares | **12.5%** | Rank 7 out of 8
2010 (change in last 5 years)=20.0% (7/8), 2012=40.0% (4/10)

Agree that safety has improved as result of catch shares | **61.1%** | Rank 2 out of 8

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

One of the most frequently mentioned codes in the Coos Bay Area interviews was "observers" which occurred in 84% of interviews. Participants primarily discussed observers in association with cost, working experience and small vessels. Many thought that the midnight-to-midnight schedule was problematic, both financially and in terms of overall working experience:

> "*That's another thing, is the observers. I did come in a little bit after midnight—we're charged for midnight to midnight—I came in at 1 o-clock in the morning because of the current, fighting the current, and I was trying to get in before midnight, and then I was charged for another day. I was a little bit late, and $400. Next year it'll be $500. So it's kind of hard to...you know? Heck, when I started doing this in the '80s, $500 was the profit. I was hoping to make that much money to make ends meet."* – QS Permit Owner, Coos Bay Area, 2015/2016

> "*Well, then I used to fish until midnight, run home, and get in…the crew gets a couple hours of sleep before we start offloading at 8 AM. Now we're forced to quit in the middle of the afternoon, so we can be in by midnight because if we run over by 12:30, that's another day. That's another $500."* – Fisherman, Coos Bay Area, 2015/2016

Summary

The decline in processing capacity, decreasing compensation, and loss of good crew to more lucrative fisheries appear to be important themes in Coos Bay. In comparison with other communities, Coos Bay ranks in the top five across all study years in terms of the percentage negatively affected by catch shares (Box CBA-3). Although many in Coos Bay have encountered hardships related to the catch shares program, many have found ways to adapt. In the "Fisheries Participation" section above, respondents reported increasing their level of activity in other fisheries and/or leasing out their quota as strategies to supplement their income or remain profitable. There were also multiple reports of net design/excluder experimentation in Coos Bay:

> "*We have even, as individuals, have taken it upon ourselves. I've changed my designs of my nets. We've put square mesh panels in them to relieve the small black cod and the juvenile fish."* – Fisherman, Coos Bay Area, 2015/2016

Similar to other communities, Coos Bay appears to have been noticeably impacted by catch shares directly following implementation in 2012. In the 2015/2016 data collection efforts, while there are still issues and frustrations, there is evidence that some Coos Bay participants are utilizing strategies such as quota leasing, diversifying fishery participation, and gear experimentation to adapt to catch shares. Whereas none of the 2012 participants in Coos Bay planned to increase their level of activity in the groundfish fishery, about 28% reported plans to increase their activity in 2015/2016. This may be an indication of the community's continued commitment to the fishery, and ability to adapt despite hardships and challenges.

PCGFSS Community Summary

BROOKINGS AREA

This summary sheet provides a snapshot of the Brookings Area community based on data from the PCGFSS. This information should be used to gain a better understanding of the individuals in this community that participated in the PCGFSS (primarily individuals involved in the groundfish trawl fishery in some capacity), and how these individuals may have been impacted by the implementation of catch shares. Where applicable a "rank" (highest to lowest for a given year and survey item) is presented to allow for easy comparison across communities.

Brookings (incorporated in 1951) is the southernmost coastal city in Oregon. It is located approximately 345 miles southeast of Portland and encompasses a 3.94 square mile area of land and 0.03 square miles of water (Brookings 2017, Norman et.al. 2007). The area was originally inhabited by the Chetco Indians (Normal et. al. 2007). Explorers discovered gold and precious metals in the region in the mid-1800's (Norman et. al. 2007) In the late 1800's/early 1900's lumber operations including a sawmill and shipping operations were established, the port also supported commercial and sport fishing activities. In the 1920's, lily bulb farming was established. The lumber, fishing, and bulb farming industries continue to support the local economy to date (Brookings 2017).

According to the U.S. Census Popluation Estimates Program, the population of Coos Bay in 2015 is estimated to be 6,376 – 17.1% percent increase from 1990. Median household income[9] is estimated to be $40,228 (US Census ACS 2015).

PCGFSS Participants

The goal of this section is to describe the community based on some of the general characteristics that participants reported in the PCGFSS. These general characteristics provide information about who the participants within each year represent. In Section 3.2 Community Performance, Brookings Area is used to represent a community group composed of the following communities: Brookings and Port Orford. PCGFSS respondents are only representative of Brookings for this effort. When interpreting results presented in this section, it is important to keep in mind that while there is some overlap in participants across years, not every survey year contains the same sample of individuals. Table BA-1. summarizes the

[9] US. Census data reported for median income is supported by the American Community Survey (ACS) and available on the U.S. Census website www.census.gov.

percentage of respondents in the Brookings Area who were the same between years, and is meant to aid in the interpretation of the results presented here.

Table BA-1. Total number of participants, and percentage of return respondents in the Brookings Area.

	2010	2012	2015/2016
% Return respondents from 2010	-	66.7	16.7
% Return respondents from 2012	-	-	50.0
Number of participants	8	6	6

In comparison to other communities, Brookings participants are generally younger, and derive between 92.0% to 97.5% of their income from commercial fishing (Box BA-1). Table BA-2 summarizes the roles that Brookings Area participants hold within the industry. Brookings ranks in the top five across all years in terms of the percentage of captain and crew, and post-catch shares ranks in the top five for absentee owners.

BOX BA-1. The following demographics and family history characteristics are presented as averages, followed by the community rank* from highest to lowest in comparison with other communities for the **2015/2016** survey (2010 and 2012 below).

Age | **50.4 years** | Rank 12 out of 13
2010=41.9 (13/13), 2012=49.7 (10/12)

Number of years working in commercial fishing | **29.5 years** | Rank 9 out of 13
2010=22.9 (11/12), 2012=36.5 (1/13)

Number of years working in the PCGTF | **22.2 years** | Rank 9 out of 13
2010=17.3 (12/13), 2012=25.8 (3/12)

Number of generations family has commercially fished | **1.6 generations** | Rank 10 out of 11
2010=2.0 (10/10), 2012=2.3 (6/12)

Percent income from commercial fishing | **97.5%** | Rank 1 out of 13
2010=94.4% (3/13), 2012=92.0% (2/12)

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Table BA-2. Role of respondents within the Brookings Area, presented as a percentage of the total number of participants within the community sample, and rank* from highest to lowest in comparison with other communities. Multiple response item: respondents could fall in more than one role category.

	2010		2012		2015/2016	
Role Category	%	Rank	%	Rank	%	Rank
QS owner/co-owner**	25.0	8/12	50.0	1/12	33.3	5/11
Absentee owner/co-owner	-	-	33.3	2/8	33.3	1/10
Vessel owner/co-owner	25.0	10/12	50.0	1/8	33.3	7/12
Captain/Crew	75.0	2/12	66.7	1/11	50.0	3/12
Shoreside Processor	0	9/9	0	10/10	0	11/11
Catcher-Processor/Mothership	0	2/2	0	3/3	0	2/2
Buyer (not processor)	0	5/5	0	6/6	0	6/6
Other***	0	9/9	0	12/12	16.7	12/13
Not applicable	0		0		0	
Prefer not to answer	0		0		0	
Response rate	100		100		100	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

** 2010: refers to "permit owner"

*** Other represents the percentage of respondents that do not fall in any of the other role categories, and encompasses: Risk pool manager, QS/QP manager, Observer, Industry supplier, Fisherman's wife.

Fishery Participation Levels

This section supplements the section above by characterizing the community based on PCGFSS responses to items about current and planned participation in various fisheries. Fisheries participation data presented here reflects the fisheries that PCGFSS respondents in Brookings participate in, and does not account for where these participants may land their catch.

The species of groundfish that most Brookings Area fishermen[10] reported fishing include longspine thorneyhead (50-100% of participants), shortspine thorneyhead (50-100%), sablefish (67-100%), dover sole (67-100%), and petrale sole (50-100%) (Table BA-3). The other species that participants reported fishing include Dungeness crab (83-100%), and pink shrimp (83-100%). In 2012, 20% of participants also fished Alaska Pollock and Alaska Pacific cod. In 2015/2016, 17% of participants also fished Pacific salmon and tuna.

Participation in the groundfish fishery has declined in Brookings, and their participation in shrimp and crab has declined as well. For the groundfish fishery, issues of bycatch are a concern and some owners may lease out quota to avoid bycatch and reduce costs. Regarding bycatch a fisherman describes it as follows:

> *"…we can't catch blackcod anymore, because of dover fishing…we catch our blackcod up and it's mixed with the dover, well we can't dover fish anymore. We have like 800,000 pounds of dover to catch, but it's impossible to catch because we're going to catch something else before we catch a dover up and those fish are left on the table…"* Fisherman, Brookings Area, 2015/2016

[10] The survey item summarized in Table BA-2 only applies to fishermen, which were defined as captain, crew, and/or other roles directly related to the harvesting of fish.

Table BA-3. Top five groundfish and other species that Brookings Area fishermen commercially fished since catch shares was implemented (2010: commercially fished in the last 5 years).

2010	%	2012	%	2015/2016	%
Longspine Thorneyhead	100.0	Sablefish	100.0	Sablefish	66.7
Shortspine Thorneyhead	100.0	Dover Sole	100.0	Dover Sole	66.7
Sablefish	100.0	Petrale Sole	100.0	Longnose Skate	66.7
Dover Sole	100.0	Longspine Thornyhead	80.0	Longspine Thornyhead	50.0
Petrale Sole	100.0	Shortspine Thornyhead	80.0	Shortspine Thornyhead	50.0
		Rex Sole	80.0	Petrale Sole	50.0
		Longnose Skate	80.0		
Dungeness Crab	100.0	Dungeness Crab	100.0	Dungeness Crab	83.3
Pink Shrimp	100.0	Pink Shrimp	100.0	Pink Shrimp	83.3
		Alaska Pollock	20.0	Pacific Salmon	16.7
		Alaska Pacific Cod	20.0	Tuna	16.7

A QS owner discussed selling quota as either related to bycatch issues or cost, as indicated below:

> *"So it's easier to sell it, so that way you don't get your blood pressure up… I just sell it because I don't think it's feasible to even groundfish anymore. If you want to take the overall cost…there's no reason to participate because my feeling is all you have to do is pull up one wrong fish, and you're out of business. It doesn't add up to me."* QS Permit Owner, Brookings Area, 2015/2016

This decline in groundfish is further supported in Box BA-2, where participants ranked low in their intention to increase activity in the groundfish fishery, and ranked the highest of all communities in their intention to decrease participation in groundfish. Reasons for why participation in non-groundfish fisheries has decreased are not clear in Brookings and more research into this area is needed to understand this trend. However, one participant provides some insight suggesting that high levels of participation in shrimp may be reducing deliveries:

> *"…more boats are starting to come back into the shrimpin industry. That's going to cut out deliveries…"* Fisherman, Brookings Area, 2015/2016

BOX BA-2. The following fishery participation characteristics are presented as percentages of the total respondents within the community sample, followed by the community rank* from highest to lowest in comparison with other communities for the **2015/2016** survey (2012 below).

2015/2016

Plan to increase activity in PCGTF | **16.7%** | Rank 10 out of 11
2012=0% (8/8)

Plan to decrease activity in PCGTF | **16.7%** | Rank 1 out of 9
2012=0% (3/3)

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Infrastructure

Brookings Area participants discuss infrastructure loss, but don't necessarily tie it directly to catch shares. Rather, respondents commonly reference the buyback and discuss long-term trends of decline exasperated by the catch shares program. One response describes the buyback as follows:

> *"…the big problem that I've watched and seen here was the buyback program. That's hurt us worse than anything…"* QS Permit Owner, Brookings Area, 2015/2016

When asked about loss of community infrastructure, one participant describes it as follows:

> *"…not measureable. But there's been a steady erosion."* Fisherman, Brookings Area, 2015/2016

One participant further explains the resources that are lacking in Brookings:

> "*No, we don't have any local here in fishing gear. We don't have much here. We have to call our fuel in from out of town or get to get it at a decent price...(any shipyards?) nothing that will haul my boats. All we have is a Blacksmith in Crescent City."* QS Permit Owner, Brookings Area, 2015/2016

One participant further discusses processing related to groundfish:

> *"…We lost processors because there's no groundfish."* QS Permit Owner, Brookings Area, 2015/2016

While another speaks to the future in non-groundfish:

> *"I…realized that they have almost finished a brand new shrimp processing plant."* Industry Participant, Brookings Area, 2015/2016

Employment Levels

This section summarizes community-level employment based on participants' reported employment (including any combination of full-time, part-time, seasonal, and/or self-employment) in the groundfish fishery, other fisheries, or non-fishing industries. Additionally, we summarize how respondents within the community rated different components of job quality related to their role in the commercial fishing industry.

One major takeaway from the Brooking Area PCGFSS employment level measures is that the percentage of Brookings respondents employed in the groundfish fishery has remained relatively constant, whereas in comparison with other communities, Brookings ranks higher post-catch shares than in 2010 (Table BA-4). Small sample sizes limit the power of any conclusions from this data, but this dynamic is potentially a reflection of the overall decrease in groundfish fishing effort at the coast-wide level. Similar to other communities, high levels of employment in other fisheries and non-fishing jobs in 2012 may suggest a period of adjustment following catch shares in which participants utilized other fisheries and/or non-fishing jobs to supplement their income from groundfish (3.2.2(f) Changes in Employment).

Table BA-4. Community-level employment (includes any combination of full-time, part-time, seasonal and/or self-employment), in percentages of total respondents within community sample, and rank* from highest to lowest in comparison with other communities.

	2010		2012		2015/2016	
	%	Rank	%	Rank	%	Rank
Groundfish	87.5	6/9	83.3	4/11	83.3	3/12
Other fisheries	62.5	8/13	83.3	2/11	50.0	7/10
Non-fishing	0	11/11	16.7	8/11	0	12/12
Not applicable	0		0		0	
Prefer not to answer	0		0		0	
Response rate	100		100		100	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

For all three rounds of data collection, Brookings Area participants' average overall job satisfaction score ranks last among community aggregates included in this analysis (Table BA-5). Other items related to job satisfaction—compensation, method of pay, and standard of living—appear more fluid. Again, small sample sizes hinder the ability to attribute strong trends to these measures. The following quotes help qualify these rankings:

> *"They gotta, you know deal with the consequences of where they stick that net. And yeah, it's scary for them, especially the beach fishermen that, they never know when they're gonna put that net down there. It's like playin' Russian roulette."* – Industry Participant, Brookings Area, 2015/2016

> *"…the uncertainty in there really is a deal killer with stuff. It wears you down as an individual; it stops you from making decisions for planning things. It just takes the air out of the room."* – QS Permit Owner, Brookings Area, 2015/2016

Table BA-5. Respondents' rated the following items related to their role in the commercial fishing industry on a Likert-scale Poor (1)-Excellent (4). Presented as community-level mean, and rank* from highest to lowest in comparison with other communities.

	2010		2012		2015/2016	
	Mean	Rank	Mean	Rank	Mean	Rank
Job satisfaction	2.5	10/10	2.7	10/10	3.0	10/10
Compensation	2.1	9/12	3.3	1/11	3.2	4/12
Method of pay	2.6	10/12	3.3	2/9	3.3	2/12
Job stability	2.8	6/13	3.0	3/9	3.2	3/10
Standard of living	2.6	7/8	3.2	3/10	3.3	3/9
Relationships	3.3	8/9	3.0	12/12	3.5	6/11
Not applicable	0		0		0	
Prefer not to answer	0		0		0	
Response rate	100		100		100	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Catch Shares Characteristics

The goal of the catch shares characteristics section is to describe the community based on participants' reported perspectives about catch shares. While, the previous sections provide information related to how

the community may have been impacted by catch shares, this section responds directly to catch shares impacts by summarizing participants' perspectives on how they have been personally affected by catch shares.

As Box BA-3 indicates, in all three study years Brookings Area participants ranked high in comparison with other communities when it comes to support for the catch shares program. Additionally, the proportion of Brookings Area participants reporting being negatively impacted by the catch shares program has remained consistently low relative to other communities included in the study. The apparently positive attitude toward the program among Brookings Area participants suggests that the relatively low levels of job satisfaction reported in Table BA-5, may stem from issues other than catch share management. The following general statement on job satisfaction sheds light on the subject:

> *"You're satisfied at the time until you're strapped in to when you get the bad years. You have to survive through those. You get sucked in, that's your life. We're here every single day. When do you have time to do anything else, to go do anything else?"* – Fisherman, Brookings Area, 2015/2016

BOX BA-3. The following characteristics related to catch shares impacts are presented as percentages of total respondents within the community sample, followed by the community rank* from highest to lowest in comparison with other communities for **2015/2016** survey (2010 and 2012 below).

2015/2016

Support for the catch shares program | **60.0%** | Rank 3 out of 10
2010=37.5% (4/11), 2012=83.3% (1/11)

Positively affected by catch shares | **33.3%** | Rank 6 out of 12
2010 (expect to be affected)=25.0% (4/11), 2012=66.7% (2/12)

Negatively affected by catch shares | **16.7%** | Rank 11 out of 12
2010 (expect to be affected)=25.0% (11/13), 2012=16.7% (12/12)

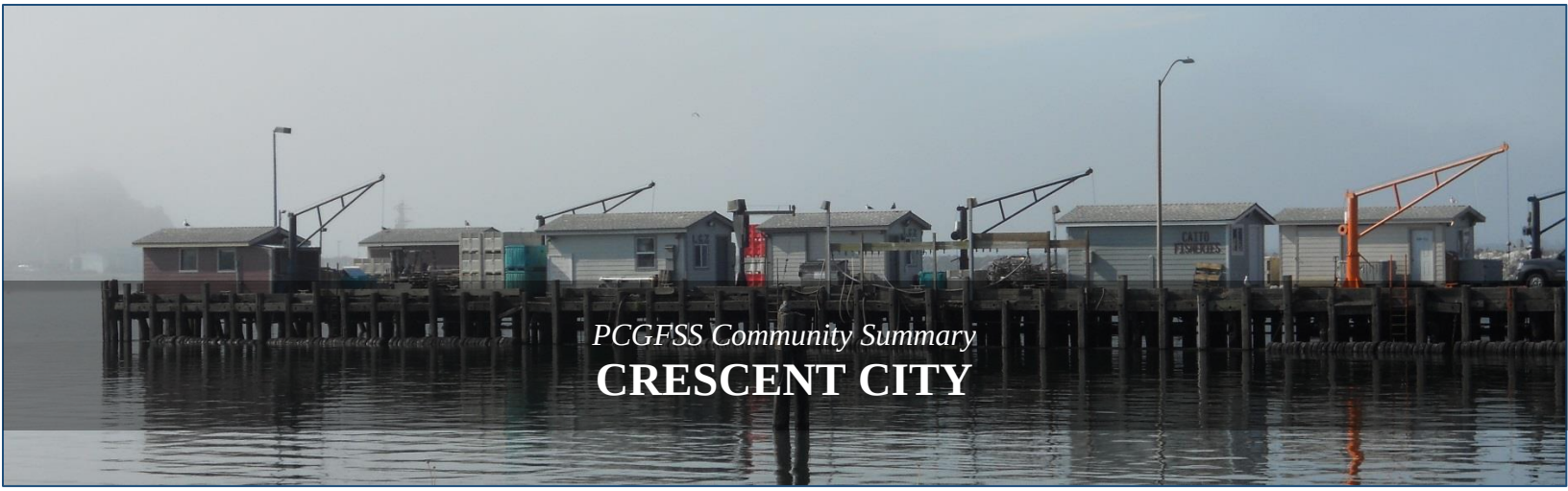
Changed species caught post-catch shares | **0%** | Rank 8 out of 8
2010 (change in last 5 years)=25.0% (5/8), 2012=0% (10/10)

Agree that safety has improved as result of catch shares | **60.0%** | Rank 3 out of 8

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Summary

In comparison with other communities, support for catch shares in the Brookings Area is high and few participants expected to be or reported being negatively affected by catch shares. This may be related to groundfish participation levels in Brookings. In 2012 and 2015/2016, Brookings Area ranks in the bottom two in terms of the percentage of respondents that plan to increase their level of activity in the groundfish fishery. Additional research aimed at increasing the Brookings Area sample size may provide additional insight to these trends.



PCGFSS Community Summary

CRESCENT CITY

This summary sheet provides a snapshot of the Crescent City community based on data from the PCGFSS. This information should be used to gain a better understanding of the individuals in this community that participated in the PCGFSS (primarily individuals involved in the groundfish trawl fishery in some capacity), and how these individuals may have been impacted by the implementation of catch shares. Where applicable a "rank" (highest to lowest for a given year and survey item) is presented to allow for easy comparison across communities.

Crescent City is located in northern California, about 25 miles south of the Oregon border and approximately 330 miles south of Portland. Situated along the north coast, the community encompasses 1.8 square miles of land and 0.3 square mile of water (Norman, 2007). According to the US Census Bureau Population Estimates Program, the population of Crescent City in 2015 is estimated to be 6,774—a 10.96% increase from 1990. The median household income[11] (adjusted to 2015 dollars) is estimated to be $27,622 (US Census Bureau ACS 2015).

The Tolowa people occupied the area that would become Crescent City, utilizing the resources of the redwood coast for constructing their dwellings and sources of food, including elk, fish, berries and nuts (Norman, 2007). The discovery of gold during the 1850s in northern California brought miners and homesteaders to the region resulting in the removal of the native peoples. Crescent City, named for its crescent shaped beach, was established during the same time period and became the main entry point and supply center for Oregon miners and growing California settlements (Norman, 2007). Timber and logging became the dominate industry for Crescent City until its decline in the mid-1900s and commercial fishing took its place. The harbor and community sustained significant tsunami damage in 1964 and again in 2011. The community rebuilt and today serves a state and national park centered tourist industry.

PCGFSS Participants

The goal of the PCGFSS Participants section is to describe the community based on some of the general characteristics that participants reported in the PCGFSS. These general characteristics provide information about who the participants within each year represent. In Section 3.2 Community Performance, Crescent City is defined as a stand alone community, opposed to an aggregated community. Although some PCGFSS respondents may live outside of the community, all are connected to the fishing

[11] US. Census data reported for median income is supported by the American Community Survey (ACS) and available on the U.S. Census website www.census.gov .

community in Crescent City. When interpreting the results presented in this section, it is important to keep in mind that while there is some overlap in participants across years, not every survey year contains the same sample of individuals. Table CC-1. summarizes the percentage of respondents in Crescent City who were the same between years, and is meant to aid in the interpretation of the results presented here.

Table CC-1. Total number of participants, and percentage of return respondents in Crescent City.

	2010	2012	2015/2016
% Return respondents from 2010	-	33.3	66.7
% Return respondents from 2012	-	-	50.0
Number of participants	5	6	6

In comparison to other communities, Crescent City participants are older, have worked fewer years in the PCGTF, and derive somewhat less of their income from commercial fishing (Box CC-1). Table CC-2 summarizes the roles that Crescent City participants hold within the industry. In comparison with other communities, Crescent City has ranked in the middle in terms of the percentage of PCGFSS respondents that are QS owners/co-owners, while vessel owners/co-owners have fluctuated between the bottom three and bottom five since 2012, a decrease from 2010.

BOX CC-1. The following demographics and family history characteristics are presented as averages, followed by the community rank* from highest to lowest in comparison with other communities for the **2015/2016** survey (2010 and 2012 below).

2015/2016

Age | **56.0 years** | Rank 4 out of 13
2010=51.8 (7/13), 2012=49.5 (12/12)

Number of years working in commercial fishing | **30.8 years** | Rank 7 out of 13
2010=28.0 (7/12), 2012=20.6 (13/13)

Number of years working in the PCGTF | **18.8 years** | Rank 12 out of 13
2010=19.0 (10/13), 2012=16.8 (10/12)

Number of generations family has commercially fished | **2.2 generations** | Rank 6 out of 11
2010=2.0 (10/10), 2012=1.8 (9/12)

Percent income from commercial fishing | **79.2%** | Rank 8 out of 13
2010=68.0% (13/13), 2012=85.0% (7/12)

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Table CC-2. Role of respondents within the Coos Bay Area, presented as a percentage of the total number of participants within the community sample, and rank[*] from highest to lowest in comparison with other communities. Multiple response item: respondents could fall in more than one role category.

	2010		2012		2015/2016	
Role Category	%	Rank	%	Rank	%	Rank
QS owner/co-owner[**]	40.0	4/12	33.3	6/12	33.3	5/11
Absentee owner/co-owner	-	-	33.3	2/8	16.7	5/10
Vessel owner/co-owner	40.0	4/12	33.3	5/8	33.3	7/12
Captain/Crew	40.0	7/12	16.7	11/11	33.3	8/12
Shoreside Processor	0	9/9	33.3	2/10	0	11/11
Catcher-Processor/Mothership	0	2/2	0	3/3	0	2/2
Buyer (not processor)	0	5/5	0	6/6	0	6/6
Other[***]	40.0	2/9	33.3	4/12	50.0	2/13
Not applicable	0		0		0	
Prefer not to answer	0		0		0	
Response rate	100		100		100	

[*]Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

[**] 2010: refers to "permit owner"

[***] Other represents the percentage of respondents that do not fall in any of the other role categories, and encompasses: Risk pool manager, QS/QP manager, Observer, Industry supplier, Fisherman's wife.

Fishery Participation Levels

This section supplements the general community description by characterizing the community based on respondents' current and planned participation in various fisheries. Fisheries participation data presented here reflects the fisheries that PCGFSS respondents in Crescent City participate in, and does not account for where these participants may land their catch.

Crescent City vessels have not participated in the groundfish trawl fishery since catch shares' implementation, their owners opting to lease out their quota pounds in favor of Dungeness crab and profitable pink shrimp fisheries. Participants indicated in both 2012 and 2015/2016 that if shrimp stocks cycled down, they would consider a return to groundfish fishing. Crescent City ranks in the middle among other communities planning to increase PCGTF activity, and indicated that they have no plans to decrease any participation levels, however low, in the Groundfish fishery (Box CC-2).

> "Researcher: *And you don't do any more groundfish either?*
> Participant 1: *Not the last 5 years.*
> Participant 2*: We might start up this year. I mean, we still got our permits and stuff.*" –
> Fishermen, Crescent City, 2015/2016

One industry participant's comment from 2015/2016 illustrates the effects a poor Dungeness crab season may have on fishers, potentially motivating them to return to groundfish trawl;

> "*There's one guy in the harbor here that every year just sits down with the buyer and says, 'Alright, what's my quota worth this year?' And then he doesn't even fish it. He just, you know, leases it out to 'em. Although since the crab season was so poor, you know, there was a vessel that said, well we got this quota and we can't crab fish, let's go drag even though they had never participated in catch shares, they'd always sold their quota. So now this boat, I went down to the harbor and I see them putting their net on and I was like, 'Wow, that boat hasn't had a net on it*

in four years.' Yeah, it was pretty easy to figure out. It's like, 'Well we gotta do somethin', no crab season.' " – Other Industry Participant, Crescent City, 2015/2016

BOX CC-2. The following fishery participation characteristics are presented as percentages of the total respondents within the community sample, followed by the community rank* from highest to lowest in comparison with other communities for the **2015/2016** survey (2012 below).

2015/2016

Plan to increase activity in PCGTF | **33.3%** | Rank 5 out of 11
2012=0% (8/8)

Plan to decrease activity in PCGTF | **0%** | Rank 9 out of 9
2012=0% (3/3)

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Infrastructure

As with a number of California's ports, Crescent City's infrastructure was impacted by the loss of 15 vessels during the 2003 federal buyback (Section 3.2.2(c) Changes in Infrastructure).

"*I think the buyback was extremely significant. […] I mean, you take 15 boats away from my business, the repair business that I have here and, it was a very large hit to us. You know, 15 boats with the maintenance and services that they need really impacted this business.*" - Fisherman, Crescent City, 2015/2016

The city's harbor was recently rebuilt after damage incurred by the 2011 tsunami, yet according to one participant, "*…we got a beautiful, brand new harbor down there and it's maybe 25% full.*" (Fisherman, Crescent City, 2015/2016).

There is one, primary marine supplier for remaining trawl vessels, but the company "*…has survived on the crabbing and the shrimping is why they're still here*" (Fisherman, Crescent City, 2015/2016) as well as recreational fisheries and markets. This focus on recreational users is evident in the local store's expansion into a larger, more retail-friendly facility.

One industry supplier, based in Crescent City performing a range of vessel services for clients all along the Pacific Coast, in response to a survey question in 2015/2016 about improving job satisfaction stated, "*We are a slave to seasons. We have worked booked out for 3 years. One job overlaps the next.*" Despite the level of industry demand for these services, this participant does not have anyone lined up to take over the business nor do they foresee another business in the area filling the gap when they retire.

This lack of local, new entrants into the industry supplier side of the industry forces fishers to seek those services farther afield.

"*Yeah. We used to have our own net shop here that we don't have any more but we do have that in Oregon, You know, Portland. […] Yeah and to build doors we got to go to Newport. It might be further away. But that was not because of the industry. That guy retired because he was too old.*" – Fisherman, Crescent City, 2015/2016

There is groundfish processing located in Crescent City, trucking fish in from out of town, and another which offloads out-of-town vessels but trucks those catches to Eureka for processing. The latter operates the local ice plant, as well.

Employment Levels

This section summarizes community-level employment based on participants' reported employment (including any combination of full-time, part-time, seasonal, and/or self-employment) in the groundfish fishery, other fisheries, or non-fishing industries. Additionally, we summarize how respondents within the community rated different components of job quality related to their role in the commercial fishing industry.

Crescent City's groundfish fishing employment levels have ranked within the bottom two all three years when compared to other communities. Employment in other fisheries declined slightly since 2010 but levels have been higher than groundfish since 2012 (Table CC-3), accounting for the level of groundfish fishing activity reported by participants in interviews.

> "Participant 1: *But neither one of us have been draggin' since this started.*
> Participant 2:*: Right, 5 years or whatever. I haven't drug in about 5 years."*

In comparison to other communities, non-fishing employment levels ranked in the top two in 2010 and 2015/2016 (with a drop in 2012). Crescent City participants' ratings for job satisfaction remained relatively consistent across all three years while compensation, job stability and standard of living increased slightly, ranking in the top 3 by 2015/2016 when compared to other communities (Table CC-4).

Despite job stability's fairly high ranking, participants discussed the challenges maintaining a processing workforce and vessel crew, also discussed in Section 3.1.3(a)(1) Utilization of Non-whiting Species Allocations;

> "*It's hard, it's hard 'cause I can't always promise 'em 40 hours a week so they go get other jobs. I mean they got to. And then I have to find as many people as I can when it does bust loose. So we ran into this problem a couple weeks ago. I mean went… the wind down in Fort Bragg forever and that boat could not get out so everybody I had on standby went to the lily fields up in Smith River and Oregon. Went a got other jobs and then when finally did get a load in I started callin' people up, you know, "Sorry I got job now." But I also get probably 2 people a day comin' in wantin' an application so I just… It's a lot of new hires, getting' em into the system. Gettin' their info and then I can't work 'em for 2 weeks cause I don't have any work and then well, their gone. They gotta live too and pay rent.*" – Processor, CA, 2012

> "*The fish ain't coming in steady here,* [name omitted] *they got one drag boat working for them, now out of the whole coast. The stability for the dock workers and the plant workers and the crews is not there like it was.*" – Fisherman, Crescent City, 2015/2016

> "*In order to keep a crew, I mean we try to fish year round in something. Whether that's shrimp or crab or, you know, at this point it's gonna be the trawl fishery, I think. So in order to keep your crew and so they can, that can have a good income and want to hang around, we have to keep that boat goin' year round.*" – Fisherman, Crescent City, 2015/2016

Table CC-3. Community-level employment (includes any combination of full-time, part-time, seasonal and/or self-employment), in percentages of total respondents within community sample, and rank* from highest to lowest in comparison with other communities.

	2010		2012		2015/2016	
	%	Rank	%	Rank	%	Rank
Groundfish	80.0	7/9	50.0	9/11	50.0	12/12
Other fisheries	80.0	4/13	66.7	5/11	66.7	6/10
Non-fishing	40.0	2/11	33.3	5/11	50.0	2/12
Not applicable	0		0		0	
Prefer not to answer	0		0		0	
Response rate	100		100		100	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Table CC-4. Respondents' rated the following items related to their role in the commercial fishing industry on a Likert-scale Poor (1)-Excellent (4). Presented as community-level mean, and rank* from highest to lowest in comparison with other communities.

	2010		2012		2015/2016	
	Mean	Rank	Mean	Rank	Mean	Rank
Job satisfaction	3.2	6/10	3.0	9/10	3.3	6/10
Compensation	2.6	7/12	2.8	7/11	3.3	1/12
Method of pay	2.8	8/12	3.2	4/9	3.5	1/12
Job stability	2.8	5/13	3.2	1/9	3.2	3/10
Standard of living	2.8	5/8	3.0	6/10	3.3	3/9
Relationships	3.4	4/9	3.2	11/12	3.5	6/11
Not applicable	0		0		0	
Prefer not to answer	0		0		0	
Response rate	100		100		100	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Catch Shares Characteristics

The goal of the catch shares characteristics section is to describe the community based on participants' reported perspectives about catch shares. While, the previous sections provide information related to how the community may have been impacted by catch shares, this section responds directly to catch shares impacts by summarizing participants' perspectives on how they have been personally affected by catch shares.

Support for catch shares in Crescent City has decreased since 2010, with a significant drop since 2012 (60% in 2012 to 33.3% in 2015/2016) leaving the community ranked in the bottom two, compared to other communities (Box CC-3).

BOX CC-3. The following characteristics related to catch shares impacts are presented as percentages of total respondents within the community sample, followed by the community rank* from highest to lowest in comparison with other communities for **2015/2016** survey (2010 and 2012 below).

2015/2016

Support for the catch shares program | **33.3%** | Rank 8 out of 10
2010=40.0% (2/11), 2012=60.0% (3/11)

Positively affected by catch shares | **16.7%** | Rank 10 out of 12
2010 (expect to be affected)=40.0% (2/11), 2012=20.0% (7/12)

Negatively affected by catch shares | **66.7%** | Rank 3 out of 12
2010 (expect to be affected)=0% (13/13), 2012=40.0% (6/12)

Changed species caught post-catch shares | ***Cannot present due to confidentiality***

Agree that safety has improved as result of catch shares | ***Cannot present due to confidentiality***

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Participant interviews echoed several themes identified in other communities along the coast, including cost of observers [Section 3.2 Community Performance (3.2.2(f); 3.2.2(g)(4)(c); 3.2.2(g)(6); 3.2.2(h)(1) & 3.2.3(d))] and increased price of leasing QP, driven by fixed gear market competition (Section 3.2.2(g)(3)(a) Participating in Multiple Fisheries) specifically high-risk or choke species, due to low allocations of petrale, yellow-eye and black cod. Black cod was associated with targeting Dover sole and observations of Washington and Oregon vessels fishing off Crescent City.

> "*The big part of the problem here is, is times of a lot of black cod and the drag boats from up north – even Washington, Westport boats - come all the way down here to fish dover because it's mixed with black cod. So then when we were allocated the fish, we don't have enough black cod to fish all this big pile of dover we got.*" – Fishermen, Crescent City, 2015/2016

Discussed as one impact of the IFQ (Section 3.3.3(c)(d) Effect of IFQ Program and other Factors on Attainment) anxiety or stress associated with these low bycatch allocations was the reason Crescent City participants provided for concentrating their fishing efforts on other fisheries and away from groundfish;

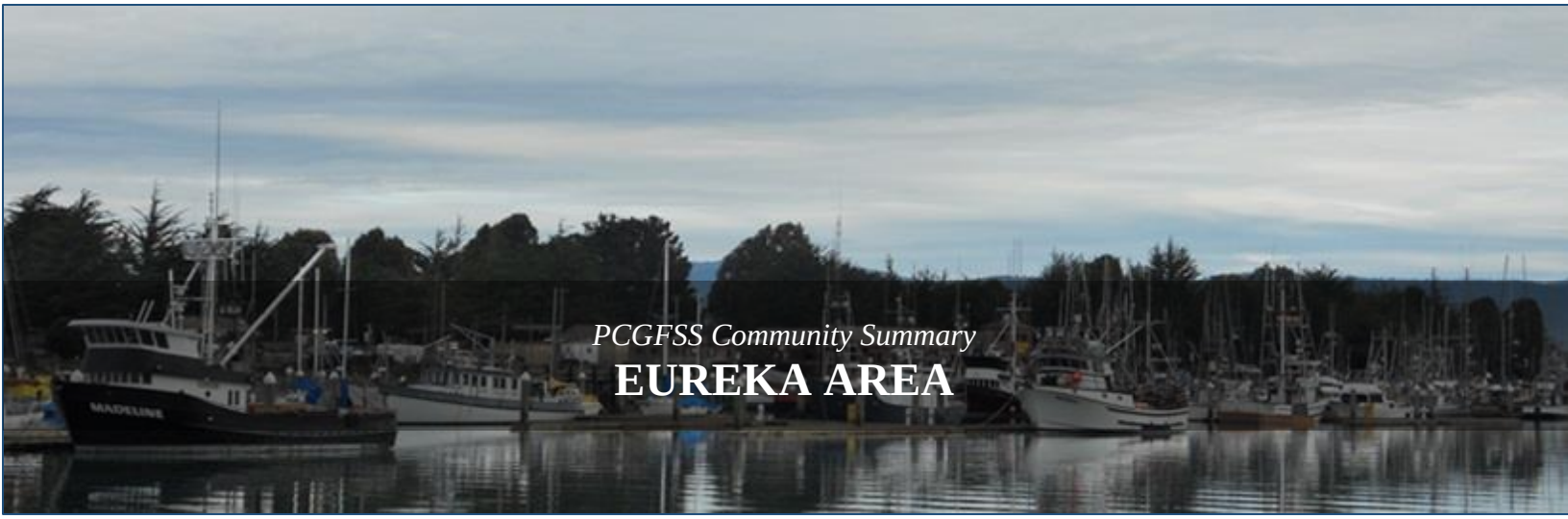
> "*...I listen to people and kind of paid attention to the industry a little bit and I'm afraid to even put a drag net on. We're gonna try to this year. Because crabbing is so bad I gotta fill-in that, I gotta fill it in, now. So we're gonna go dragging this year and I just don't know if I can go to the beach or go deep. And with 9,000lbs of petrale, shit, I've had 20,000lbs trips. You know 4 days, 20,000.* " – Fisherman, Crescent City, 2015/2016

> "*Really hurt us is what it did. The guys that's got more quota and can go get it off their other boats, 'cause not everybody's gonna – You can go through there and accidently hit yellow eye and you're done until that quota's caught up. I mean, you repay it. And for me and* [name omitted]*, if I caught 400lbs I'd probably be dead for 10 years, probably even more."*
> – Fishermen, Crescent City, 2015/2016

Summary

Crescent City participants have forgone groundfish trawl fishing since the implementation of catch shares in favor of Dungeness crab and pink shrimp, which were reportedly more profitable compared to the cost

of operating under the IFQ program. However, with a poor crab season and anticipation that shrimp stocks will begin cycling down, these fishers may return to groundfish but not without concerns over low bycatch allocations and cost of leasing QP and observers. Should Crescent City participants refocus their efforts on groundfish then this increased activity may provide a more consistent supply of fish and in turn more opportunities for the local processing workforce and fishing crews.



PCGFSS Community Summary

EUREKA AREA

This summary sheet provides a snapshot of the Eureka Area community based on data from the PCGFSS. This information should be used to gain a better understanding of the individuals in this community that participated in the PCGFSS (primarily individuals involved in the groundfish trawl fishery in some capacity), and how these individuals may have been impacted by the implementation of catch shares. Where applicable a "rank" (highest to lowest for a given year and survey item) is presented to allow for easy comparison across communities.

Eureka, located on Humboldt Bay along the north coast of California about 100 miles south of the Oregon border, serves as the county seat of Humboldt County encompassing 9.5 square miles of land and 5 square miles of water (Norman, 2007). According to the US Census Bureau Population Estimates Program, the population of Eureka in 2015 is estimated to be 27,017—a 4.7% increase from 1990. The median household income[12] (adjusted to 2015 dollars) is estimated to be $37,094 (US Census Bureau ACS 2015).

The area in which Eureka is situated was once occupied by the Wyot tribe, among several others in the surrounding region of Humboldt County, who "utilized the natural resources for food, medicine and basketry" (Norman, 2007). Today, the Wyot tribe is located on the Table Bluff Reservation, 16 miles south of Eureka. The early 19th Century saw first traders arrive in Humboldt Bay, followed by gold prospectors in the 1850s and the town's founding in 1856. The economy shifted to timber, salmon and agriculture as the gold rush subsided. Humboldt Bay - one of the largest on the West Coast - with its complex habitats supporting a multitude of fish and invertebrates species, clams, mussels and oysters, remains integral to the economic health of Eureka (Norman, 2007).

PCGFSS Participants

The goal of the PCGFSS Participants section is to describe the community based on some of the general characteristics that participants reported in the PCGFSS. These general characteristics provide information about who the participants within each year represent. In Section 3.2 Community Performance, the Eureka Area is defined as an aggregation of communities including Eureka, Fields Landing, Humboldt and Loleta. While all PCGFSS respondents in the Eureka Area are connected to the

[12] US. Census data reported for median income is supported by the American Community Survey (ACS) and available on the U.S. Census website www.census.gov.

groundfish fishery in Eureka, they may reside in locations near but outside of Eureka. When interpreting the results presented in this section, it is important to keep in mind that while there is some overlap in participants across years, not every survey year contains the same sample of individuals. Table E-1. summarizes the percentage of respondents in the Eureka Area who were the same between years, and is meant to aid in the interpretation of the results presented here.

Table E-1. Total number of participants, and percentage of return respondents in the Eureka Area.

	2010	**2012**	**2015/2016**
% Return respondents from 2010	-	72.2	50.0
% Return respondents from 2012	-	-	60.0
Number of participants	22	18	20

In comparison to other communities, Eureka Area participants are older, have worked longer in the PCGTF, and derive between 79-88% of their income from commercial fishing (Box E-1). Table E-2 summarizes the roles that Eureka participants hold within the industry. In comparison with other communities, the Eureka area has ranked in the bottom three in terms of the percentage of 2012 PCGFSS participants that are QS owners/co-owners, vessel owners/co-owners and captain/crew members, suggesting a decline each study year since 2010.

BOX E-1. The following demographics and family history characteristics are presented as averages, followed by the community rank* from highest to lowest in comparison with other communities for the **2015/2016** survey (2010 and 2012 below).

2015/2016

Age | **56.9 years** | Rank 3 out of 13
2010=47.0 (11/13), 2012=53.6 (5/12)

Number of years working in commercial fishing | **32.7 years** | Rank 4 out of 13
2010=25.3 (9/12), 2012=30.4 (7/13)

Number of years working in the PCGTF | **28.9 years** | Rank 2 out of 13
2010=22.1 (9/13), 2012=27.6 (1/12)

Number of generations family has commercially fished | **2.1 generations** | Rank 9 out of 11
2010=3.4 (4/10), 2012=2.5 (5/12)

Percent income from commercial fishing | **81.1%** | Rank 6 out of 13
2010=88.1% (7/13), 2012=78.9% (9/12)

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Table E-2. Role of respondents within the Coos Bay Area, presented as a percentage of the total number of participants within the community sample, and rank* from highest to lowest in comparison with other communities. Multiple response item: respondents could fall in more than one role category.

	2010		2012		2015/2016	
Role Category	%	Rank	%	Rank	%	Rank
QS owner/co-owner**	36.4	6/12	22.2	9/12	10.0	10/11
Absentee owner/co-owner	-	-	11.1	6/8	5.0	9/10
Vessel owner/co-owner	36.4	6/12	33.3	5/8	10.0	12/12
Captain/Crew	50.0	5/12	33.3	8/11	30.0	10/12
Shoreside Processor	4.6	7/9	5.6	9/10	5.0	8/11
Catcher-Processor/Mothership	0	2/2	0	3/3	0	2/2
Buyer (not processor)	0	5/5	0	6/6	0	6/6
Other***	31.8	3/9	44.4	2/12	60.0	1/13
Not applicable	0		0		0	
Prefer not to answer	0		0		0	
Response rate	100		100		100	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

** 2010: refers to "permit owner"

*** Other represents the percentage of respondents that do not fall in any of the other role categories, and encompasses: Risk pool manager, QS/QP manager, Observer, Industry supplier, Fisherman's wife.

Fishery Participation Levels

This section supplements the general community description by characterizing the community based on respondents' current and planned participation in various fisheries. Fisheries participation data presented here reflects the fisheries that PCGFSS respondents in Eureka participate in, and does not account for where these participants may land their catch.

Eureka fishermen[13] consistently targeted sablefish, dover and petrale sole and longspine and shortspine thornyheads all three years (Table E-3). During the same time period, Dungeness crab and pink shrimp were the top two, non-IFQ fisheries for Eureka community fishermen. Of those who participated in 2015/2016, only 15.8% planned to increase their groundfish trawl participation while 10.5% reported plans to decrease their activity (Box E-2). This small percentage of fishers anticipating altering the amount of groundfish fishing activity may suggest their levels of activity have reached an operational stability. This could be interpreted as some fishers may have reached an optimal level of groundfish trawl activity for their business while others may have been constrained by costs or allocations and are unable to increase their activity levels.

Participants noted changes in fishing practices and effort, particularly among Eureka's smaller vessels. Due to issues catching black cod, a choke species, while targeting dover sole or fishing nearshore trying to avoid petrale, small vessels are deciding to lease quota rather than fish it. The cost of leasing additional quota pounds and observers were reasons participants provided for such decisions. This has employment consequences as well, discussed further in the Employment Levels section.

[13] The survey item summarized in Table E-2 only applies to fishermen, which were defined as captain, crew, and/or other roles directly related to the harvesting of fish.

Table E-3. Top five groundfish and other species that Eureka respondents commercially fished since catch shares was implemented (2010: commercially fished in the last 5 years).

2010	%	2012	%	2015/2016	%
Longspine Thorneyhead	92.3	Sablefish	87.5	Petrale Sole	87.5
Shortspine Thorneyhead	92.3	Dover Sole	87.5	Dover Sole	87.5
Sablefish	92.3	Shortspine Thornyhead	75.0	Sablefish	62.5
Dover Sole	92.3	Petrale Sole	75.0	Longspine Thornyhead	62.5
Petrale Sole	92.3	Longspine Thornyhead	62.5	Big Skate	50.0
		Rex Sole	62.5	Longnose Skate	50.0
		Longnose Skate	62.5	Shortspine Thornyhead	50.0
Dungeness Crab	76.9	Dungeness Crab	75.0	Dungeness Crab	75.0
Pink Shrimp	53.8	Pink Shrimp	62.5	Pink Shrimp	75.0
Tuna	15.4	Pacific Halibut	12.5		
		Pacific Salmon	12.5		
		Tuna	12.5		

BOX E-2. The following fishery participation characteristics are presented as percentages of the total respondents within the community sample, followed by the community rank* from highest to lowest in comparison with other communities for the **2015/2016** survey (2012 below).

2015/2016

Plan to increase activity in PCGTF | **15.8%** | Rank 11 out of 11

2012=17.7% (5/8)

Plan to decrease activity in PCGTF | **10.5%** | Rank 3 out of 9

2012=0% (3/3)

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

While the majority of groundfish trawlers in this community have traditionally participated in other fisheries, they appear to have increased their level of activity in Dungeness crab and pink shrimp.

> *"…just shrimp and crab. We just do more of that. I already wrote that. Fished crab for 2 to 3 weeks in December and then boom be right back to dragging. Now we gotta milk it out. Travel outta town to early crab seasons. Fish 'til February*. " – Fisherman, Eureka, 2012

One reason, at least in part, for the reported increase is attributed to low groundfish allocations;

> "*There's an increase. In shrimpin'. Everybody's tryin' to… a lot of guys don't very big bottom fish limit. A lot of guys, they don't have very big limit and so they want to do somethin' else to fill in their summer. So tuna fish or shrimp.* " Fisherman, Eureka, 2015/2016

But, as with many aspects of the marine system, most everything is cyclical. One participant speculated, "*And when the shrimp cycles go away and they can't go shrimpin' we'll see how long their drag fish quota lasts*" (QS Owner, Eureka, 2015/2016). This presents an interesting situation, which may come about once shrimp cycles down,

> *"I mean these guys in the past, like I said, they could lease their quota, get some bucks for that, not have any cost of going out and catching it and then go shrimping and go crabbing and have a pretty good life. The reality's gonna hit this year when more guys are gonna go, 'I need to go groundfish fishin' and we're gonna find out that… well you never know what could happen."* - Processor, CA, 2015/2016

The reality this participant speaks to also involves the availability of quota pounds once those who previously leased out their quota begin fishing it once more, removing it from the QP leasing market. Demand for those quota pounds will persist in the face of reduced supply which would likely increase the price for what remains on the QP marketplaces.

Infrastructure

Infrastructure in the Eureka Area, as with other California communities, has experienced losses due to vessel reductions and an aging industry as discussed in Section 3.2.2(c) Changes in Infrastructure. While Eureka has fared better than others, participants foresee further reductions because of a lack of new entrants to take the place of those who have retired or plan to in the near future, which will require participants to search farther afield for services.

> "*The Port of Humboldt Bay is lacking in services. I mean, besides me, us here, we don't have a marine electrician anymore. The mechanics are down to nothin'. Electronics is down to nothin'. That's sad. That's a reason for nobody to come here anymore. But it's also, it's hard to survive.*" – Other Industry Participant, Eureka, 2015/2016

> *"We can get whatever we need. Well, we are, you know if hydraulic leak, I guess. I don't know what'll happen when FabCast goes out of business. But it will be somebody. Be more of a pain in the butt. There's a lot of big companies up north. Yeah, well I have my winches right now up in Coos Bay bein' worked on. And then there was, I don't know about Eureka, but there'll always be somebody. You know, we have problems gettin' our radar equipment worked on or electronics. He retired. No one took it over. Couple guys tried but, there's just not enough money, there's not as much money in it. Like I say, when there was 30-40 drag boats in the harbor you'd sell quite a bit of stuff. Now, what is there six? Five? Four?*" - Fisherman, Eureka, 2015/2016

Employment Levels

This section summarizes community-level employment based on participants' reported employment (including any combination of full-time, part-time, seasonal, and/or self-employment) in the groundfish fishery, other fisheries, or non-fishing industries. Additionally, we summarize how respondents within the community rated different components of job quality related to their role in the commercial fishing industry.

Eureka's groundfish fishing employment levels have fluctuated widely from 100% in 2010 to a low of 44.4% in 2012 then rebounding to 70% in 2015/2016. Employment in other fisheries followed a similar trend but did not fluctuate nearly as much. Compared to other communities, Eureka has ranked in the bottom three in these two areas of employment since 2012 (Table E-4). Eureka participants' ratings of the well-being categories listed in Table E-5 remained relatively stable across all three study years. However, when compared to other communities, Eureka's rankings for job satisfaction, job stability and standard of living all declined from their 2010 ranks with the exception of compensation which remained in the top four all three years.

Table E-4. Community-level employment (includes any combination of full-time, part-time, seasonal and/or self-employment), in percentages of total respondents within community sample, and rank* from highest to lowest in comparison with other communities.

	2010		2012		2015/2016	
	%	Rank	%	Rank	%	Rank
Groundfish	100.0	1/9	44.4	11/11	70.0	9/12
Other fisheries	68.2	7/13	38.9	9/11	50.0	7/10
Non-fishing	9.1	8/11	44.4	2/11	20.0	8/12
Not applicable	0		0		0	
Prefer not to answer	0		0		0	
Response rate	100		100		100	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Table E-5. Respondents' rated the following items related to their role in the commercial fishing industry on a Likert-scale Poor (1)-Excellent (4). Presented as community-level mean, and rank* from highest to lowest in comparison with other communities.

	2010		2012		2015/2016	
	Mean	Rank	Mean	Rank	Mean	Rank
Job satisfaction	3.6	1/10	3.5	3/10	3.3	8/10
Compensation	3.2	1/12	3.1	4/11	3.3	2/12
Method of pay	3.4	2/12	3.4	1/9	3.1	8/12
Job stability	2.7	7/13	2.7	5/9	3.1	6/10
Standard of living	3.0	2/8	2.9	8/10	3.2	5/9
Relationships	3.4	5/9	3.7	2/12	3.3	10/11
Not applicable	0		0		0	
Prefer not to answer	0		0		0	
Response rate	100		100		100	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

The challenges for small vessels discussed previously also present employment issues. When these vessel choose to lease their quota rather than fishing, it reduces jobs for crew. This situation is discussed in detail in Section 3.2.4, Small Vessels, and Section 3.2.2(g)(3)(c)), Consolidation Impacts. In addition, since small vessels tended to fish nearshore, making day trips – as opposed to multi-day trips on larger vessels – they created the traditional, entry level jobs which are diminished as small vessels reduced their fishing activity.

> "*Where, like a lot of guys would start off on smaller boats, where they're maybe day boats. Go out and fish for the day and come in, unload. You know, do that for a while.*" – Fisherman, Eureka, 2015/2016

For both fishers and processors, groundfish is no longer a year-round job as it once was (3.2.2(f) Changes in Employment). This results in an inconsistent supply of fish, which translates into inconsistent work for processors' workforce (3.2.2(c) Changes in Infrastructure).

> "*We are having a tough time keeping the crew. Their income levels have been hit like I said, and it's hard for them to get the hours to qualify for insurance. And it's just tough, it's difficult, it's difficult to look people in the eye that need more work…*" – Processor, CA, 2012

From another perspective one Eureka fisher stated income was more stable with fewer boats and people in the fishery.

> "*Well, I mean, the income's more stable because I get to go fishin' more because there's less people fishin'.[…] Income's better but days on the ocean's less.*" – Fisherman, Eureka, 2015/2016

Another participant offered a summation of the income potential for someone in the fishing industry, today;

> "*…quite frankly even now today, fishing is one of the more profitable endeavors you could go into. It's not all doom and gloom. You talk about back deck workers, where can somebody with no educational background, they graduated high school… where you're maybe running a boat for somebody and it's a good producing vessel, a trawler dragger, a shrimper, a crabber where you can make $120,000 a year and you're gonna maybe spend 150 days a year on the ocean. Back deck guys making $60,000 a year.*" – Other Industry Participant, Eureka, 2015/2016

Catch Shares Characteristics

The goal of the catch shares characteristics section is to describe the community based on participants' reported perspectives about catch shares. While, the previous sections provide information related to how the community may have been impacted by catch shares, this section responds directly to catch shares impacts by summarizing participants' perspectives on how they have been personally affected by catch shares.

Support for catch shares has steadily increased since 2010, from 18.2% to 52.6% in 2015/2016 ranking Eureka in the middle compared to other communities. This increase in support may be related to a significant decrease in reports by those being negatively affected by catch shares, but the community remained in the bottom four for those who reported being positively affected. Given the reporting in Box X-2, participant views of catch shares appears mixed.

Eureka participants reported issues related directly the catch shares, identifying the cost of observers and leasing quota pounds and low allocations of choke species as the most challenging aspects of the management program.

Cost was a frequent theme across interviews in the Eureka Area. Observer costs were particularly frequent, occurring in half of the community's interviews. The significance of observer costs is discussed further in Section 3.2 Community Performance (3.2.2(f); 3.2.2(g)(4)(c); 3.2.2(g)(6); 3.2.2(h)(1) & 3.2.3(d)). The participants speak to the impacts of the broader program-related fees;

> "*So we got 3%, adaptive management, 5% buyback and then our observer costs. That's before the, so that's 10, 11%. That used to be our full, that used to our operating expense, 10%; fuel, ice bait, oil. That's what it used to be.*" – Fisherman, Eureka, 2015/2016

> "*The cost of the program is consuming a huge amount of that revenue. And it's the costs in the program that's resulted in fewer people participating.*" – Other Industry Participant, 2015/2016

BOX E-3. The following characteristics related to catch shares impacts are presented as percentages of total respondents within the community sample, followed by the community rank* from highest to lowest in comparison with other communities for **2015/2016** survey (2010 and 2012 below).

2015/2016

Support for the catch shares program | **52.6%** | Rank 6 out of 10
2010=18.2% (7/11), 2012=31.3% (9/11)

Positively affected by catch shares | **21.1%** | Rank 8 out of 12
2010 (expect to be affected)=4.8% (10/11), 2012=18.8% (8/12)

Negatively affected by catch shares | **26.3%** | Rank 7 out of 12
2010 (expect to be affected)=61.9% (1/13), 2012=56.3% (5/12)

Changed species caught post-catch shares | **37.5%** | Rank 5 out of 8
2010 (change in last 5 years)=7.7% (8/8), 2012=25.0% (7/10)

Agree that safety has improved as result of catch shares | **37.5%** | Rank 6 out of 8

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Low allocations of bycatch or choke species, discussed previously as a factor for increasing effort in other fisheries, create problems for catching the full allotment of target species, which is discussed in Section 3.1.3(a)(1) Utilization of Non-whiting Species Allocations, Section 3.3.3 Effects of IFQ Program and other Factors on Attainment and related by the follow participants;

> "*I mean we had boats that were done fishin' in September this year. Didn't have any more quota to fish. Didn't have the right species to fish. Ran out of arrowtooth or black cod or whatever it is so they could necessarily execute a dover fishery…*" – Processor, Eureka, 2015/2016

> *"…no one knew what was going on with this catch shares program. And then we found out that we really didn't have enough fish to catch. [after a pause] And if I didn't belong to a company with a group of boat, I don't, I wouldn't of, I don't think I would've survived.*" - Fisherman, Eureka, 2015/2016

The low allocations, along with the ability for fishers to catch their groundfish quota when they choose, has created an inconsistent supply according to processors, in terms of a lack of fish as discussed previously. But the other side of that issue is dealing with gluts of fish coming in all at one time.

> "*Yeah. It's lack of participation. It's fishing, we fish ourselves into gluts, now. So you have a fishery in some ports, because shrimp is from April to October. So the guys will go fishing in November, December, January, February and get all their quota caught. So you get this rush of fish at one time and then they don't fish again until next November, except for the small, a few boats that are year-round draggers and trawlers. And so, you get these market gluts. You put way too much fish of the same species on the market at one time and then you don't have enough to supply the customers and you start losin' shelf space. When you asked about market competition… it's all from imported fish that are takin' over our space. It's not market competition among ourselves with groundfish species on the West Coast. It's losing our space on the shelves because we're inconsistent. We either have too much at one time or not enough for the rest of the year.*" – Processor, Eureka, 2015/2016

Despite the catch shares-associated challenges participants reported, some saw benefits emerge from the management program;

> "*I mean before the, I wouldn't've been able to lease my pounds before the quota share thing came in. So there's more, there's more advantages.*" – QS Owner, Eureka, 2015/2016

When asked about safety under the catch shares program, 37.5% of participants agreed safety has improved, ranking Eureka in the middle compared to other communities (Box X-2). Participants attributed improvements in safety to fewer fishing trips but also credited observers and the safety inspections they performed before each trip.

> "*Because we have observers. Because we have observers we go through our safety stuff more often. So that would be a direct result.*" – Fisherman, Eureka, 2015/2016

Summary

Eureka participants reported changes in fishing practices spurred by increased activity in Dungeness crab and pink shrimp. Program associated costs and low bycatch allocations created challenges for small vessels resulting in some to lease out their quota, foregoing groundfish fishing altogether. This may result in reduced employment opportunities for crew. Processors reported workforce retention issues due to inconsistent supplies of groundfish. Overall, Eureka participants faced operational challenges from program fees, observer costs and low allocations of bycatch or choke species. Despite this, some participants noted benefits from catch shares in the form of more stable income, flexibility to lease QP and focus on other fisheries and improved safety, reflecting the community's mixed levels of support for the management program.

PCGFSS Community Summary

FORT BRAGG AREA

This summary sheet provides a snapshot of the Fort Bragg Area community based on data from the PCGFSS. This information should be used to gain a better understanding of the individuals in this community that participated in the PCGFSS (primarily individuals involved in the groundfish trawl fishery in some capacity), and how these individuals may have been impacted by the implementation of catch shares. Where applicable a "rank" (highest to lowest for a given year and survey item) is presented to allow for easy comparison across communities.

Fort Bragg is located about 170 miles north of San Francisco, along California's Medocino coast. According to the US Census Bureau Population Estimates Program, the population of Fort Bragg in 2015 is estimated to be 7,289—a 17.38% increase from 1990. The median household income[14] (adjusted to 2015 dollars) is estimated to be $33,867 (US Census Bureau ACS 2015).

Pomo Indians originally inhabited the region of northern California where Fort Bragg is situated, relying on coastal and marine life including salmon, shellfish and marine mammals. The fur trade brought Russian traders and later Spanish missionaries established the first European settlements in the early 1800s (Norman, 2007), which eventually led to the relocation of tribes to smaller reservations. Fort Bragg was founded in 1857 as a military outpost to guard the Mendocino Indian Reservation. The timber industry boomed in the late 1800s, followed later by a fishing industry built on salmon, based on the Noyo River (Norman, 2007). Commercial harvest expanded into other fisheries, surviving fish stock collapses of the mid-1990s and on through to their ongoing recovery in 2010s. Commercial and recreational fishing remains an important part of Fort Bragg's economy today.

PCGFSS Participants

The goal of the PCGFSS Participants section is to describe the community based on some of the general characteristics that participants reported in the PCGFSS. These general characteristics provide information about who the participants within each year represent. In Section 3.2 Community Performance, the Fort Bragg Area is defined as an aggregated community including Fort Bragg, Albion, Casper, Elk, Little River and Point Arena. The majority of PCGFSS participants in this area are associated with Fort Bragg. When interpreting the results presented in this section, it is important to keep in mind that while there is some overlap in participants across years, not every survey year contains the

[14] US. Census data reported for median income is supported by the American Community Survey (ACS) and available on the U.S. Census website www.census.gov .

same sample of individuals. Table FBA-1. summarizes the percentage of respondents in the Fort Bragg Area who were the same between years, and is meant to aid in the interpretation of the results presented here.

Table FBA-1. Total number of participants, and percentage of return respondents in the Fort Bragg Area.

	2010	2012	2015/2016
% Return respondents from 2010	-	66.7	68.8
% Return respondents from 2012	-	-	87.5
Number of participants	20	21	16

In comparison to other communities, the Fort Bragg Area participants are older, and able to trace their commercial fishing heritage back three generations. They've been working longer in the PCGTF compared to other communities yet derive less of their income from commercial fishing (Box FBA-1).

Table FBA-2 summarizes the roles that Fort Bragg participants hold within the industry. In comparison with other communities, Fort Brag ranked in the top 3 in terms of the percentage of 2015/2016 PCGFSS that are QS owners/co-owners and vessel owners/co-owners, a significant increase from 2010 and 2012. This may reflect a shift in ownership along the West Coast, due in part to divestiture and QS acquisition by community quota funds (Section 3.2.2(d)(3) Redistribution of QS to Comply with Divestiture) and discussed in the Additional Themes section of the community summary.

BOX FBA-1. The following demographics and family history characteristics are presented as averages, followed by the community rank* from highest to lowest in comparison with other communities for the **2015/2016** survey (2010 and 2012 below).

2015/2016

Age | **59.3 years** | Rank 2 out of 13
2010=56.4 (2/13), 2012=56.6 (1/12)

Number of years working in commercial fishing | **35.8 years** | Rank 1 out of 13
2010=37.0 (1/12), 2012=32.9 (4/13)

Number of years working in the PCGTF | **28.9 years** | Rank 1 out of 13
2010=31.0 (2/13), 2012=23.9 (4/12)

Number of generations family has commercially fished | **3.0 generations** | Rank 2 out of 11
2010=5.0 (2/10), 2012=2.7 (3/12)

Percent income from commercial fishing | **77.9%** | Rank 10 out of 13
2010=77.8% (10/13), 2012=71.8% (11/12)

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Table FBA-2. Role of respondents within the Fort Bragg Area, presented as a percentage of the total number of participants within the community sample, and rank[*] from highest to lowest in comparison with other communities. Multiple response item: respondents could fall in more than one role category.

	2010		2012		2015/2016	
Role Category	%	Rank	%	Rank	%	Rank
QS owner/co-owner[**]	25.0	8/12	28.6	8/12	43.8	2/11
Absentee owner/co-owner	-	-	9.5	7/8	25.0	3/10
Vessel owner/co-owner	35.0	7/12	33.3	5/8	43.8	1/12
Captain/Crew	15.0	11/12	38.1	7/11	31.3	9/12
Shoreside Processor	15.0	4/9	9.5	6/10	12.5	6/11
Catcher-Processor/Mothership	0	2/2	0	3/3	0	2/2
Buyer (not processor)	0	5/5	0	6/6	0	6/6
Other[***]	45.0	1/9	42.9	3/12	25.0	7/13
Not applicable	0		0		0	
Prefer not to answer	0		0		0	
Response rate	100		100		100	

[*]Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

[**] 2010: refers to "permit owner"

[***] Other represents the percentage of respondents that do not fall in any of the other role categories, and encompasses: Risk pool manager, QS/QP manager, Observer, Industry supplier, Fisherman's wife.

Fishery Participation Levels

This section supplements the general community description by characterizing the community based on respondents' current and planned participation in various fisheries. Fisheries participation data presented here reflects the fisheries that PCGFSS respondents in Fort Bragg participate in, and does not account for where these participants may land their catch.

Fort Bragg fishermen[15] consistently targeted sablefish, dover and petrale sole and longspine thornyheads all three years, while lingcod – previously fished by most participants - has not been targeted since 2010 (Table FBA-3). Fishermen also reported targeting Dungeness crab and tuna during the same time periods. Of those who participated in 2015/2016, 46.7% planned to increase their groundfish fishing activity, a significant increase from 2012 when no participant planned to increase their activity (Box FBA-2). One participant expressed uncertainty when asked about their plans for groundfish fishing,

> "*Well, prefer to increase it. Just don't know if the opportunity's there.*" – QS Owner, Fort Bragg Area, 2015/2016

The uncertainty expressed in this comment may suggest that plans to increase groundfish fishing are dependent on the right conditions to create opportunities for expansion rather than definite plans.

[15] The survey item summarized in Table FBA-2 only applies to fishermen, which were defined as captain, crew, and/or other roles directly related to the harvesting of fish.

Table FBA-3. Top five groundfish and other species that Fort Bragg Area respondents commercially fished since catch shares was implemented (2010: commercially fished in the last 5 years).

2010	%	2012	%	2015/2016	%
Lingcod	100.0	Sablefish	88.9	Sablefish	100.0
Sablefish	100.0	Chilipepper	77.8	Longspine Thorneyhead	85.7
Chilipepper	85.7	Longspine Thorneyhead	77.8	Dover Sole	85.7
Longspine Thorneyhead	85.7	Dover Sole	77.8	Shortspine Thorneyhead	71.4
Shortspine Thorneyhead	85.7	Petrale Sole	77.8	Petrale Sole	71.4
Dover Sole	85.7			Longnose Skate	71.4
Petrale Sole	85.7				
Dungeness Crab	57.1	Dungeness Crab	66.7	Dungeness Crab	42.9
Tuna	57.1	Pacific Salmon	22.2	Tuna	14.3
		Tuna	11.1	Pink Shrimp	14.3
		Alaska King Crab	11.1		

BOX FBA-2. The following fishery participation characteristics are presented as percentages of the total respondents within the community sample, followed by the community rank* from highest to lowest in comparison with other communities for the **2015/2016** survey (2012 below).

2015/2016

Plan to increase activity in PCGTF | **46.7%** | Rank 2 out of 11
2012=0% (8/8)

Plan to decrease activity in PCGTF | **0%** | Rank 9 out of 9
2012=0% (3/3)

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Participants discussed making fewer fishing trips - an issue in both 2012 and 2015/2016 - and struggling to stretch their groundfish allocations out as long as possible. While conversely, fewer groundfish trips allows those who fish multiple fisheries the flexibility do so;

> "*Like the* [vessel name omitted], *for example, used to fish maybe 6 or 7 months out of the year and, it's luck now to fish four. And that's stretching and that's when he stretches his quota out.*" QS Owner, Fort Bragg, 2015/2016

> "*They fish until their quota's caught. Some of them can make it stretch out all year long and others will catch it, if they've go multiple fisheries and you can catch it all in the summer months… like if you're a crab boat and you can catch all your trawl fish before crab season or after crab season…*" – Other Industry Participant, Fort Bragg, 2015/2016

Participants indicated a shift to other fisheries by augmenting reliance on groundfish with tuna, Dungeness crab, salmon and shrimp. This is discussed further in the Employment Levels section as the theme pertains to income dependence.

Infrastructure

As reported by other California ports and detailed in Section 3.2.2(c) Changes in Infrastructure, Fort Bragg has lost vessels and portions of its infrastructure over time with more anticipated in the near future.

> "*But you know what built the town and the infrastructure in this town was commercial fishing and logging. You know we lost the logging, pretty much, you know. And the fishing, we're losing it too losin' a lot of the infrastructure.*" - Fisherman, Fort Bragg, 2012

The loss of the port's fuel dock and potential loss of its ice house were frequently discussed all three study years. While Fort Bragg does have a locally-based net builder, there is no electrical repair provider and the remaining mechanical repair provider reports a thirty day wait period for service. This provider is also phasing out their marine work, which will require fishers to search further afield for their mechanical repair needs.

> "*So many of our local businesses, some of them have quit or not working anymore or whatever, retirin'. I've had to go out and find outside suppliers, you know*." –Other Industry Participant, Fort Bragg, 2015/2016

While there are no formal haul-out facilities, crew are able to utilize the harbor's parking lot for net repairs and to perform other vessel-related maintenance.

Employment Levels

This section summarizes community-level employment based on participants' reported employment (including any combination of full-time, part-time, seasonal, and/or self-employment) in the groundfish fishery, other fisheries, or non-fishing industries. Additionally, we summarize how respondents within the community rated different components of job quality related to their role in the commercial fishing industry.

According to participant reporting, Fort Bragg's fishing employment levels (groundfish and other fisheries) have rebounded to their 2010 levels. Despite this, Fort Bragg still ranked in the bottom three compared to other communities, with the exception of groundfish in 2015/2016 (Table FBA-4).

In Table FBA-5 participants' ratings for job satisfaction, compensation, job stability and standard of living remained fairly stable across all three study years. Interestingly, standard of living and compensation shifted from ranking in the top three in 2010 - compared to other communities - to the bottom two and three, respectively, since 2012. This could indicate that these categories have improved for other communities since catch shares' implementation while income and standard of living stagnated locally. Job stability in Fort Bragg has consistently ranked in the bottom two compared to other communities while job satisfaction ranked in the top four, except for an apparent temporary drop in 2012.

Participants indicated that while groundfish was once their primary source of income dependence has reportedly, shifted, to other fisheries such as Dungeness crab, salmon and shrimp. This dependence on other fisheries is also discussed in Section 3.1.2(d) (1) Participation, and Section 3.1.3(c) Interdependencies with Other Fisheries

> "*And before we used to… groundfish was our mainstay. That kept us, we could survive on groundfish. Now if we didn't have crabs or salmon we would be, we wouldn't be here to do groundfish. 'Cause it's just, it has not become a viable fishery anymore.*" – Processor, CA, 2015/2016

> "*So, I wouldn't necessarily say it's supplement the groundfish fisheries. It's workin' that way now, though. In fact it's kind of carryin' my business, to be on honest with ya, the crab fish is. In the past it was a nice little shot. You maybe go crab fishin' for a month and half, two months out*

of the year and the rest of the year you do your groundfish. You know, in a lot of years we would make as much money crab fishin' in that 2-month period that we would make the rest of the year groundfishin'. Yeah, now we're make a lot more, a lot more money crab fishin'. A lot less money in groundfish 'cause we're not fishin' very much." – Fisherman, Fort Bragg, 2015/2016

Table FBA-4. Community-level employment (includes any combination of full-time, part-time, seasonal and/or self-employment), in percentages of total respondents within community sample, and rank* from highest to lowest in comparison with other communities.

	2010		2012		2015/2016	
	%	Rank	%	Rank	%	Rank
Groundfish	80.0	7/9	47.6	10/11	81.3	5/12
Other fisheries	50.0	10/13	38.1	10/11	50.0	7/10
Non-fishing	35.0	3/11	52.4	1/11	31.3	6/12
Not applicable	0		0		0	
Prefer not to answer	0		0		0	
Response rate	100		100		100	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Table FBA-5. Respondents' rated the following items related to their role in the commercial fishing industry on a Likert-scale Poor (1)-Excellent (4). Presented as community-level mean, and rank* from highest to lowest in comparison with other communities.

	2010		2012		2015/2016	
	Mean	Rank	Mean	Rank	Mean	Rank
Job satisfaction	3.4	3/10	3.1	7/10	3.4	4/10
Compensation	2.9	3/12	2.6	8/11	2.7	9/12
Method of pay	3.1	5/12	3.0	6/9	2.9	11/12
Job stability	2.2	11/13	2.3	7/9	2.6	9/10
Standard of living	3.0	2/8	2.9	7/10	3.0	7/9
Relationships	3.5	2/9	3.5	5/12	3.3	10/11
Not applicable	12.5		0		0	
Prefer not to answer	0		0		0	
Response rate	80.0		100		93.8	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

In 2010, some participants felt secure that their diversification in salmon, Dungeness crab and tuna would carry them through the changes brought by catch shares. Reported shifts to other fisheries or reliance on diversification continued through 2012 and into 2015/2016. But, with recent issues in the other fisheries participants rely upon – domoic acid closing or truncating Dungeness crab season and multiple, poor salmon seasons – the situation may increase income uncertainty.

Participants continued to identify a reduction in income as it related to fewer fishing trips, referenced previously in the Fishery Participation Levels section. Resulting from a reduced number of trips, with months in between, crew find themselves seeking second jobs;

"*But mostly, the last few years I've just been doin' the drag boat. But if we don't go out for months at a time, I have to go find a job. I did firewood for a few years, crab fishin', urchin divin', black cod fishin'. It sucks to have to go down there and find a job for just a minute. 'I'll*

work for ya for a month and then I gotta go back to my other job.' That's kinda hard to do." – Fisherman, Fort Bragg, 2015/2016

"*Before I was able to fully employ them all year long and with the IFQ program we're not workin' all year long. So they're actually workin' second jobs. I haven't been but my crew has been workin' second jobs to kind of make ends meet.*" ." – Fisherman, Fort Bragg, 2015/2016

"*It's kinda sad, though. 'Cause you know who really gets screwed is the crews. They're the ones that are makin' the least amount of money.*" QS Owner, Fort Bragg, 2015/2016

Another participant reflected on the number of vessels built in Fort Bragg, that have remained in the port and whose owners will eventually exit the fishery;

"*You take a look at the fleet here in Fort Bragg like my boat was built here in Fort Bragg before the trawl fisheries. Boat was launched in 1980 as a trawler.It's been here in this port ever since the [names omitted], these boats were all built here . And they've remained in the trawl fisheries the whole time. And these guys are little by little, like [name omitted], I think he's gonna call it quits. I think* [name omitted]*'s already, one of his boats isn't even fishin', you know. Little by little they're just gonna fall by the wayside.*" - Fisherman, Fort Bragg, 2012

This introduces an additional factor for employment in the local fishery, related to the graying of the fleet identified by Russell et al. (2014) and discussed in Section 3.2.3(c) (2) Aging of the Fishing Workforce. If these vessels remain active in the community then there will be continued opportunities for crew but if they are sold to other areas those jobs may well be lost.

Catch Shares Characteristics

The goal of the catch shares characteristics section is to describe the community based on participants' reported perspectives about catch shares. While, the previous sections provide information related to how the community may have been impacted by catch shares, this section responds directly to catch shares impacts by summarizing participants' perspectives on how they have been personally affected by catch shares.

Fort Bragg's support for catch shares increased only a small amount since 2010, while consistently ranking in the bottom two compared to other communities (Box FBA-3). This may be reflected in the steady increase of those who reported being "negatively affected" and, possibly, in the large increase of those who changed the species caught since catch shares' implementation as discussed previously in Fisheries Participation Levels and Employment Levels.

Frequent catch shares-related themes that emerged in Fort Bragg involved cost of observers, cost of leasing quota pounds and allocations of high-risk or choke species, which pose challenges for catching the full allocation of target species.

The cost and availability of observers is a frequent theme in southern California ports but also for this small, isolated community located away from more centralized fishing centers and main thoroughfares. As discussed in Section 3.2 Community Performance (3.2.2(f); 3.2.2(g)(4)(c); 3.2.2(g)(6); 3.2.2(h)(1) & 3.2.3(d)), the cost of observers and their travel to the area presented significant financial challenges for small vessels like those operating out of Fort Bragg. Low observer availability during times of optimal weather and sea conditions resulted in lost trips for this port's vessels in some years.

"*Oh yeah, that observer is $15-$20,000 a year. That's a wage for a person. That comes out of my check. So I'm payin' directly to that.*" – Fisherman, Fort Bragg, 2015/2016

"*Probably the scheduling was the biggest. You know watching the weather and trying to, 2 days ahead of time get a hold of one and still be in the weather window for the trip, was probably the hardest challenge.*" – Fisherman, Fort Bragg, 2015/2016

BOX FBA-3. The following characteristics related to catch shares impacts are presented as percentages of total respondents within the community sample, followed by the community rank* from highest to lowest in comparison with other communities for **2015/2016** survey (2010 and 2012 below).

2015/2016

Support for the catch shares program | **18.8%** | Rank 9 out of 10
2010=10.0% (9/11), 2012=17.7% (10/11)

Positively affected by catch shares | **12.5%** | Rank 11 out of 12
2010 (expect to be affected)=15.0% (6/11), 2012=17.7% (9/12)

Negatively affected by catch shares | **68.8%** | Rank 2 out of 12
2010 (expect to be affected)=55.0% (3/13), 2012=64.7% (4/12)

Changed species caught post-catch shares | **85.7%** | Rank 1 out of 8
2010 (change in last 5 years)=33.3% (3/8), 2012=70.0% (2/10)

Agree that safety has improved as result of catch shares | **28.6%** | Rank 7 out of 8

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

In an effort to alleviate some of the expenses, two vessels have turned to video monitoring (VM) with others anticipating similar changes in the near future.

"*Yeah, I put the cameras on last year. That's going save a little on the observer costs, yeah. […] So I did 3 years with observers. And I would say the observers….there was times when I couldn't get one.*" Fisherman, Fort Bragg, 2015/2016

But switching to VM requires a catch monitor when delivering catches. This shifts the same observer cost burden to the processors.

"*Catch monitors… for the boats that have cameras. And, well and the observers. I mean, we gotta pay observer costs for a guy to be here in the plant to watch us weigh the fish. […] if they're using a camera the catch monitor, we call 'em, they come here and we get billed for it. The boat doesn't.*" – Processor, CA, 2015/2016

Participants spoke of the need to lease quota pounds over and above their own allocation of choke species – low allocated species that is often caught along with target species - in order to continue fishing. These comments discuss how the additional cost of leasing quota pounds affect profits;

"*We used to catch a lot more fish before the catch shares. Or we catch approximately the same but it costs us an extra $100,000 a year to do it. We had to buy it from you or somebody else otherwise, we're done*." – QS Owner, Fort Bragg, 2015/2016

> "*Because once I have my fish caught and I have to start leasing, I have to start leasing fish, it's really not profitable. If I have to lease a bunch of fish it's not even worth going for me so I just don't go.*" – Fisherman, Fort Bragg, 2015/2016

The issue with low choke species allocations translates into an inability to catch one's full quota allocation, which tends to result in an inconsistent supply of fish for the processors and other businesses that depend on regular landings of groundfish (Section 3.1.3(a)(1) Utilization of Non-whiting Species Allocations).

> *"…three of our boats went out of the IFQ; the Terra Dawn, the Blue Pacific and the Verna Jean. They left the fishery in September, I wanna say, because there was no more, they couldn't find any black cod or any petrale. They needed those two species in order to prosecute their other holdings. They couldn't find them. So they left the fishery.*[16]" QS Owner, Fort Bragg, 2015/2016

> "*Because of the inconsistency and of the, the products, the species we used to get where we don't anymore. I mean we get, right now we get dover, thorny-head, sablefish, petrale once in a while and chili peppers once in a while. That's it.*" – Processor, CA, 2012

When asked if safety had improved since catch shares few credited the management program, as observed by the level of agreement and low ranking compared to other communities (Box X-2). Instead participants felt safety declined, in part, due to reduced income resulting in delayed vessel maintenance (Section 3.1.3(d) Safety: Alternative measures of risk-taking and safety).

> "*…I hauled my boat out, every year for 30 years. Now, I'm 3 years without a haul out. I just don't have the money to do it. [...] And that's gonna be what winds up happening, you're gonna start seein' some guys basically, they'll go broke, you know they blow-up a main engine or defer maintenance and they wind up sinking or something like that. You're gonna start seeing some of it. I guarantee I'm not the only one that's deferin' some maintenance because they don't have any money.*" – Fisherman, Fort Bragg, 2015/2016

Additional Themes

Fort Bragg has formed a risk pool or community trust, the Fort Bragg Groundfish Conservation Trust, which has recently, "*…acquired a really nice portfolio of quota which will help tremendously. We can keep it local. Our boats will know that they have access, affordable, reliable access to quota,*" (Other Industry Participant, Fort Bragg, 2015/2016). Working closely with other community trusts in Morro Bay and Half Moon Bay, these efforts have served to reduce some of the uncertainty for its members.

Summary

Fort Bragg with its long history of commercial fishing still holds on despite ongoing challenges. While groundfish remains a significant fishery for the community's fishers, financial necessity has elevated the importance of other fisheries such as Dungeness crab, salmon and tuna. Yet, with the vessel losses of the past and participants taking fewer fishing trips, the future of the remaining infrastructure and potential for job opportunities are called into question. Catch shares related costs and allocations of high-risk species continue to challenge fishing operations. Yet, through the formation of the community trust, its acquisition of community quota shares and partnering with other communities, Fort Bragg has seen progress toward meeting and overcoming some of those challenges.

[16] "*…left the fishery*", in this instance, refers to vessels that stopped groundfish trawling for the remainder of the year.

PCGFSS Community Summary

PRINCETON/HALF MOON BAY

This summary sheet provides a snapshot of the Princeton/Half Moon Bay community based on data from the PCGFSS. This information should be used to gain a better understanding of the individuals in this community that participated in the PCGFSS (primarily individuals involved in the groundfish trawl fishery in some capacity), and how these individuals may have been impacted by the implementation of catch shares. Where applicable a "rank" (highest to lowest for a given year and survey item) is presented to allow for easy comparison across communities.

Half Moon Bay, encompassing an area of 6.5 square miles, and Princeton (just north of Half Moon Bay) are located along the California coast 30 miles south of San Francisco. Prior to the arrival of Spaniards in the late 1700s, the area between San Francisco and Big Sur was inhabited by approximately 40 tribal groups (Norman et al. 2007). Half Moon Bay was established in 1840, but not incorporated until 1959, whereas Princeton was established between 1906 and 1909, but never incorporated (Norman et al. 2007). In the early 1900s, the railroad brought tourists to the area from San Francisco (Norman et al. 2007). Though tourism declined after the railroad failed, the area came alive again in the 1920s as a haven for rumrunners (Norman et al. 2007).

According to the US Census Bureau's Population Estimates Program, the population of Half Moon Bay in 2015 is estimated to be 12,657—a 42.7% increase from 1990. Median household income [17] (in 2015 dollars) is estimated to be $103,255 (US Census Bureau ACS 2015). The Half Moon Bay Area Chamber of Commerce (2016) describes the major industries in the area as tourism, agriculture (specifically floriculture), and commercial fishing.

PCGFSS Participants

The goal of this section is to describe the community based on some of the general characteristics that participants reported in the PCGFSS. These general characteristics provide information about who the participants within each year represent. In Section 3.2 Community Performance, Princeton/Half Moon Bay is included in the San Francisco Area. However, the PCGFSS has sufficient data to report on the community. PCGFSS participants in this analysis represent similar participation from both Half Moon Bay and El Granada. When interpreting the results presented in this section, it is important to keep in

[17] US. Census data reported for median income is supported by the American Community Survey (ACS) and available on the U.S. Census website www.census.gov.

mind that while there is some overlap in participants across years, not every survey year contains the same sample of individuals. Table HMB-1. summarizes the percentage of respondents in Princeton/Half Moon Bay who were the same between years, and is meant to aid in the interpretation of the results presented here.

Table HMB-1. Total number of participants, and percentage of return respondents in Princeton/Half Moon Bay.

	2010	2012	2015/2016
% Return respondents from 2010	-	50.0	42.9
% Return respondents from 2012	-	-	42.9
Number of participants	13	8	14

In comparison to other communities, Half Moon Bay participants are somewhat younger, have been working in the PCGTF for a comparable number of years, and derive between 80-95% of their income from commercial fishing (Box HMB-1). Table HMB-2 summarizes the roles that Half Moon Bay participants hold within the industry. In comparison with other communities, Half Moon Bay ranks comparably in terms of the percentage of PCGFSS respondents that are QS owners/co-owners, and relatively high in vessel owners/co-owners and captain/crew members.

BOX HMB-1. The following demographics and family history characteristics are presented as averages, followed by the community rank* from highest to lowest in comparison with other communities for the **2015/2016** survey (2010 and 2012 below).

2015/2016

Age | **55.0 years** | Rank 8 out of 13
2010=56.7 (1/13), 2012=49.6 (11/12)

Number of years working in commercial fishing | **28.9 years** | Rank 10 out of 13
2010=28.8 (6/12), 2012=24.6 (6/13)

Number of years working in the PCGTF | **18.0 years** | Rank 13 out of 13
2010=25.5 (6/13), 2012=16.2 (11/12)

Number of generations family has commercially fished | **3.1 generations** | Rank 1 out of 11
2010=2.6 (7/10), 2012=2.6 (4/12)

Percent income from commercial fishing | **79.6%** | Rank 7 out of 13
2010=84.2% (8/13), 2012=95.0% (1/12)

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Table HMB-2. Role of respondents within Half Moon Bay, presented as a percentage of the total number of participants within the community sample, and rank* from highest to lowest in comparison with other communities. Multiple response item: respondents could fall in more than one role category.

	2010		2012		2015/2016	
Role Category	%	Rank	%	Rank	%	Rank
QS owner/co-owner**	38.5	5/12	37.5	5/12	21.4	7/11
Absentee owner/co-owner	-	-	0	8/8	14.3	6/10
Vessel owner/co-owner	38.5	5/12	37.5	4/8	42.9	3/12
Captain/Crew	61.5	4/12	62.5	2/11	50.0	3/12
Shoreside Processor	7.7	6/9	12.5	5/10	14.3	4/11
Catcher-Processor/Mothership	0	2/2	0	3/3	0	2/2
Buyer (not processor)	7.7	3/5	25.0	1/6	21.4	3/6
Other***	15.4	6/9	12.5	11/12	21.4	11/13
Not applicable	0		0		0	
Prefer not to answer	0		0		0	
Response rate	100		100		100	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.
** 2010: refers to "permit owner"
*** Other represents the percentage of respondents that do not fall in any of the other role categories, and encompasses: Risk pool manager, QS/QP manager, Observer, Industry supplier, Fisherman's wife.

Fishery Participation Levels

This section supplements the section above by characterizing the community based on PCGFSS responses to items about current and planned participation in various fisheries. Fisheries participation data presented here reflects the fisheries that PCGFSS respondents in Half Moon Bay participate in, and does not account for where these participants may land their catch.

Based on participant interviews, the number of active groundfish vessels has declined in 2015/2016[18] from five reported in 2012. The Nature Conservancy leases permits and quota to some groundfish participants – acquired by the nonprofit during the TNC sponsored 2006 buyback - while two others have chosen to lease out their quota due to program costs, a community concern for smaller vessel operations since 2010.

In all three study years, fishermen[19] in Half Moon Bay reported fishing Chilipepper in addition to a suite of other groundfish species (Table HMB-3). Participants also reported fishing for a variety of non-groundfish species including Dungeness crab, halibut, and Pacific salmon (Table HMB-3).

Despite a decrease in groundfish fishing activity, a small percentage of respondents plan to increase their participation in the fishery (Box HMB-2). This may be related to local membership in a regional risk pool which also includes the communities of Morro Bay and Fort Bragg.

In the Half Moon Bay interviews, there was a fair amount of praise for catch shares, particularly in regards to the gear and business planning flexibility the program offered. Participants noted that this flexibility allowed for a shift to other fisheries or to utilize more than one gear type:

[18] In order to ensure confidentiality the number of vessels has been withheld.
[19] The survey item summarized in Table HMB-2 only applies to fishermen, which were defined as captain, crew, and/or other roles directly related to the harvesting of fish.

"I guess, cause now I can do two, two…I can trap and trawl where before I had to, I couldn't trap, I had to just trawl. Now we are able to do both." – Fisherman, Half Moon Bay, 2015/2016

Table HMB-3. Top five groundfish and other species that Princeton/Half Moon Bay Area respondents commercially fished since catch shares was implemented (2010: commercially fished in the last 5 years).

2010	**%**	**2012**	**%**	**2015/2016**	**%**
Chilipepper	100.0	Chilipepper	60.0	Chilipepper	50.0
Petrale Sole	100.0	Sablefish	60.0	Sablefish	50.0
English Sole	77.8	English Sole	40.0	Petrale Sole	50.0
Starry Flounder	77.8	Petrale Sole	40.0	Dover Sole	25.0
Lingcod	55.6	Starry Flounder	40.0	Sanddabs	25.0
		Sanddabs	40.0	Longnose Skate	25.0
		Longnose Skate	40.0		
		Big Skate	40.0		
Dungeness Crab	77.8	Dungeness Crab	100.0	Dungeness Crab	87.5
Pacific Halibut	44.4	California Halibut	60.0	California Halibut	50.0
		Pacific Salmon	60.0	Pacific Salmon	50.0
				Alaska Pollock	12.5
				Alaska Pacific Cod	12.5

Those fishers who did make shifts to or increased activity in other fisheries it was towards California halibut, salmon and Dungeness crab. Others reported little change in their fishing activity since catch shares' implementation because their portfolios were already sufficiently diverse.

Conversely, others did not perceive there to be, or could not take advantage of flexibility in the program. Some were unable to shift to other fisheries because groundfish was the staple of their business as was the case for this participant;

"Oh, shift to other fisheries, well, there's really no other fisheries that we, we can shift to the same type of fishery, but um, still the same type of staples that we need to have for our businesses, you know, like…groundfish. Petrale, rex soles, all of that stuff. And we couldn't shift to other fisheries 'cause it's like a staple." – Buyer/Processor, CA, 2015/2016

For these buyers/processors, there was a reported inconsistent supply of groundfish [similarly reported in 3.2.2(g) (1). Community Variability] from the one local trawler, so much so they have turned to Oregon and Washington to supplement product.

As with other communities, small vessels were negatively impacted by program related costs. According to 2012 and 2015/2016 participants, this resulted in some getting priced out of the fishery and/or having to lease out their quota rather than fishing it [3.2.2(f) (1) Employment Opportunities, Income, and Stability]. This topic is also discussed in Section 3.2.2(g)(4)(b) Absentee Quota Holders, and in Section 3.2.3(d) Small Vessels as these reasons and trends pertain specifically to small vessels in other ports along the west coast.

BOX HMB-2. The following fishery participation characteristics are presented as percentages of the total respondents within the community sample, followed by the community rank* from highest to lowest in comparison with other communities for the **2015/2016** survey (2012 below).

2015/2016

Plan to increase activity in PCGTF | **16.7%** | Rank 10 out of 11
2012=0% (8/8)

Plan to decrease activity in PCGTF | **0%** | Rank 9 out of 9
2012=0% (3/3)

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Infrastructure

There are two groundfish buyers, one in Half Moon Bay and one in Princeton. Although participants discussed decreases in processors and infrastructure over time, these changes were not attributed to catch shares—which is consistent with the status of California's infrastructure reported in section 3.2.2(c) Changes in Infrastructure, typically linked to the number of active vessels and the demand they create.

> *"So we need fuel, and we, we struggled a lot this year with ice with our infrastructure being so messed up, with the salmon seasons being weak, and everything being outdated, And the fleet being low enough that they're not, it's not like a priority, right? Because like you said there's two guys fishing groundfish*." – Fisherman, Half Moon Bay, 2015/2016

A 2012 participant succinctly identified the issue many California port communities face;

> *"More biz/infrastructure…let's face it, this is suffering at all ports and catch shares hasn't changed that."* – Fisherman, Half Moon Bay, 2012

This statement, concise as it is, seems to express a broader sentiment that while catch shares may not have been the cause of infrastructure problems, it has not improved the situation either.

Employment Levels

This section summarizes community-level employment based on participants' reported employment (including any combination of full-time, part-time, seasonal, and/or self-employment) in the groundfish fishery, other fisheries, or non-fishing industries. Additionally, we summarize how respondents within the community rated different components of job quality related to their role in the commercial fishing industry.

In comparison to other communities, Half Moon Bay ranks low in terms of the percentage of participants employed in the groundfish fishery (Table HMB-4). In 2012 and 2015/2016, however, Half Moon Bay ranks highly in terms of the percentage employed in other fisheries.

Table HMB-4. Community-level employment (includes any combination of full-time, part-time, seasonal and/or self-employment), in percentages of total respondents within community sample, and rank* from highest to lowest in comparison with other communities.

	2010		2012		2015/2016	
	%	Rank	%	Rank	%	Rank
Groundfish	76.9	8/9	75.0	7/11	57.1	11/12
Other fisheries	69.2	6/13	87.5	1/11	71.4	4/10
Non-fishing	0	11/11	12.5	9/11	35.7	4/12
Not applicable	0		0		0	
Prefer not to answer	0		0		0	
Response rate	100		100		100	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

One participant discusses the challenge of sufficient employment:

> *"To see…to have to put crew members through this, to have them go like "hey, believe in me, we're gonna make some money fishing", and then be demoralized because we couldn't make that money fishing, and then to have to help them find other jobs…*" -Fisherman, Half Moon Bay, 2015/2016

Participants in Half Moon Bay had varied perspectives about job quality aspects (Table HMB-5). In comparison with other communities, in 2015/2016 Half Moon Bay ranked in the bottom four in terms of compensation, job stability, method of pay, standard of living, and relationships with co-workers. This does not mean that all participants ranked job quality items low. For instance, some reported that fishing jobs had stabilized;

> *"What it did is it gave stability, which stability made me happier, made my crew happier, made everybody happier, the stability it, and being able to, in the end, not only stability, they made more money, so yeah, the catch shares made a big difference."* – QS Permit Owner, Half Moon Bay, 2015/2016

Table HMB-5. Respondents' rated the following items related to their role in the commercial fishing industry on a Likert-scale Poor (1)-Excellent (4). Presented as community-level mean, and rank* from highest to lowest in comparison with other communities.

	2010		2012		2015/2016	
	Mean	Rank	Mean	Rank	Mean	Rank
Job satisfaction	3.0	9/10	3.1	6/10	3.6	1/10
Compensation	2.1	10/12	3.0	5/11	2.8	8/12
Method of pay	3.1	4/12	2.9	7/9	3.1	9/12
Job stability	2.2	10/13	2.7	5/9	2.6	8/10
Standard of living	2.5	8/8	3.0	6/10	3.1	6/9
Relationships	3.6	1/9	3.6	3/12	3.5	9/11
Not applicable	7.7		0		7.7	
Prefer not to answer	0		0		0	
Response rate	100		87.5		100	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

As noted in the Fishing Participation Levels section above, the ability to switch gear types to fixed gear may also be associated with increases and stability in income:

> *"I was affected positively due to increased income and income stability. That was important for me. When I started, I was making ok money, but was always worried about what's gonna happen next year. Now you feel more secure."* – Fisherman (IFQ Fixed Gear), Half Moon Bay, 2012

Other aspects of the catch shares program, such as observers, cost recovery, buyback repayment costs in addition to regular operating expenditures became a hindrance to income and business stability for other participants;

> *"August rolled around […] and all of a sudden I could not catch fish. Anywhere I went, I tried, you know, north, up front, down south, nothing was around. Fish were gone. Well, you know what that means? I was going backwards severely to the tune of about $2,000 bucks a day. In the old days, you could, a guy could go look around and scratch fish and maybe eventually find something, you know, […] I still remember all that, and that's how we used to have a lot of success, but you know, I started going backwards, I probably lost like $15,000 looking for fish, and that's not stable, that's…that's just a disaster, you know? Um, you got $600 to the observer and then I pay for, you know, offloads within my own business because I'm my own first receiver, you know, fuel was still pretty high then and then you got the everything else…cost recovery, groundfish buyback And so, if you don't catch fish up here, you're in trouble […] 'cause in the old days when it wasn't just so expensive to conduct your business you could go scratching and eventually maybe you find something to work on. So the stability doesn't feel great sometimes, especially after that experience."* - Fisherman, Half Moon Bay, 2015/2016

Another participant, citing these costs, exited and leased out his quota and ended up working as a deckhand on a fixed gear vessel.

Catch Shares Characteristics

The goal of the catch shares characteristics section is to describe the community based on participants' reported perspectives about catch shares. While, the previous sections provide information related to how the community may have been impacted by catch shares, this section responds directly to catch shares impacts by summarizing participants' perspectives on how they have been personally affected by catch shares.

Support for catch shares in Half Moon Bay is mixed—53.9% supported the program in 2015/2016 (Box X-2). In the 2010 interviews, participants were not positively anticipating catch shares' implementation, but were optimistic about flexibility and business planning. In 2012, interviewees expressed a relatively high level of support, which aligns with the 71.4% who reported being positively affected by the program (Box HMB-3).

As discussed in the previous sections, flexibility and business planning were major themes across all three study years for Half Moon Bay, and may explain the levels of support for catch shares in the community:

> *"The flexibility it allows a guy to plan his business, there's no way to grow your business, we couldn't grow as much or at the rate that we're growing now, without a program like this that we could depend on, because it's road mapped more than anything in an uncertain fishery, right?"* – Fisherman/QS Owner, Half Moon Bay, 2015/2016

> *"From a business plan point of view, now it costs less because now, with quotas you're able to go to a bank and go – I have a vessel and I have this much quota, this is how many days it can fish,*

this is how much revenue can be generated, this is my (perform?) on maintenance and repair. Here's my business plan. I know what it's going to cost me, what I can make and all things…if the boat breaks down tomorrow, I still have my quota, if the boat sinks, I still have my quota, I still…you know, I still have something the bank can have, I still have a way to pay my bills if I lose a whole season and have to lease the quota to someone else, I have a way to get out of this." – QS Permit Owner, Half Moon Bay, 2015/2016

BOX HMB-3. The following characteristics related to catch shares impacts are presented as percentages of total respondents within the community sample, followed by the community rank* from highest to lowest in comparison with other communities for **2015/2016** survey (2010 and 2012 below).

2015/2016

Support for the catch shares program | **53.9%** | Rank 5 out of 10
2010=8.3% (11/11), 2012=71.4% (2/11)

Positively affected by catch shares | **41.7%** | Rank 5 out of 12
2010 (expect to be affected)=8.3% (9/11), 2012=71.4% (1/12)

Negatively affected by catch shares | **25.0%** | Rank 8 out of 12
2010 (expect to be affected)=50% (5/13), 2012=28.6% (9/12)

Changed species caught post-catch shares | **62.5%** | Rank 3 out of 8
2010 (change in last 5 years)=33.3% (3/8), 2012=80.0% (1/10)

Agree that safety has improved as result of catch shares | **50.0%** | Rank 4 out of 8

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

While the flexibility for business planning offered by catch shares was viewed favorably, flexibility as it pertained to observer availability was viewed less so;

"…we have to watch the weather, so for us to watch the weather sometimes you get up in the morning, [what's?] good weather, I'll go fishing. Can't do that with the observer program, got to them 24 hrs. notice and everything, so, that, I just quit groundfish at that time. […] I've got a quota share that I can lease out…" - Fisherman, Half Moon Bay, 2015/2016

Observer costs and related challenges were a significant issue coast wide and is reported in more detail in section 3.2 [3.2.2(f); 3.2.2(g) (4) (c); 3.2.2(g) (6); 3.2.2(h) (1) & 3.2.3(d)].

Others in both 2012 and 2015 study efforts identified the same issue of availability along with cost, and also linked the problem to a decrease in safety;

"…I have to tell an observer to be on the boat and they made the trip, they live in Monterrey, 2 hours away, which they always seem to live an hour or two away, so they have to get to the boat, and I've already been saddled with expense for travel and partial-day or whatever, even if we don't go and they're on the boat, I wake up at 2 in the morning and I look at the weather and they went from 15 - 25 to 20 - 30 in the forecast, well, I've already started spending money on this day, so, I might just say "screw it", I gotta go and I'll go out in 30 knots of wind, ugly weather, because I've already paid to have an observer on my boat, so…to me that's just disgraceful that we have to operate under that type of…you know. But, to me that is a decrease in safety…" - Fisherman, Half Moon Bay, 2015/2016

Reduced income was also linked to safety in that it forced regular maintenance delays. An overall statement about the current state of safety in the fishery attributed improvements in safety, not necessarily to catch shares, but to a variety of reasons including Coast Guard requirements and to the experience of the remaining fishers;

> *"I think the coast guard is a little bit stricter on things, and I think the Federal government is a little stricter on stuff too, you know what I mean?[…] I think there's more safety. There's less guys fishing and you got the best of the best now. The guys that are fishing now are like the elite group. You know what I mean? So, they're really safety orientated."* – Buyer/Processor, CA, 2015/2016

This also has implications for any new entrants who enter the fishery after this "elite group" exits. Safety may suffer without passing along that knowledge to the next generation. This passage of knowledge, though not specifically linked to safety, was discussed in terms of knowledge of fishing methods and fishing grounds in Sections 3.2.3(b)(1) Perception of New Entrants and 3.2.3(c)(2) Aging of the Fishing Workforce. For further information on safety, see Section 3.1.3(d) Safety.

Another theme that emerged in Half Moon Bay pertained to the challenges of a one-size fits all management system, and the impacts of catch shares on the smaller ports and small, one-vessel operations:

> "*…it's a, um…conundrum this catch share. It's under the guise of protecting the fish and the resource, it's uh…it's destroying the very thing they claim to be helping because it's catering to the big boats, it's not catering to the little boats."* – Buyer, Half Moon Bay, 2015/2016

In response to these challenges, participants in Half Moon Bay expressed a need for a community-level approach, and more collaboration with management;

> *"Yeah, we need a sort of collaborative approach between NOAA and the observers program and the industry to be more fine-tuned to accommodate each port. 'Cause each port has so many different problems. So that's what we need, we need some sort of system that says, Ok, this isn't an observer program for the West Coast, or if it is, it has to be specific to Half Moon Bay, has this set of problems, Monterey has this set of problems, Morro Bay has this set of problems."* – Fisherman/QS Owner, Half Moon Bay, 2015/2016

> *"And there's just a handful of guys holding on in small port California and um…you know, that's what the people that screamed against catch shares – that was their rallying cry, right? Was that it's going to…catch shares is going to put out the small California guys and I don't think that's come to pass, but the guys that are remaining are committed and want this to work, but if everything, you know…if decisions made continue to focus around the larger ports and not take into consideration maybe some mitigating circumstances down here, no matter how hard they try, they're not going to be able to survive it."* – Other Industry Participant, Half Moon Bay, 2015/2016

Similar issues were discussed in sections 3.2.2(g) (1). Community Variability and 3.2.3(d) Small Vessels.

Additional Themes

An additional theme identified in Half Moon Bay was the formation of risk pools and trusts. Participants explained that risk pools and trusts were a way to spread the risk of bycatch among members, but also to

anchor quota shares to the communities, which may forestall consolidation and reduce the risk of losing those resources to out of the state interests [Sections 3.2.2(g), and 3.2.2(g)(2)];

> *"So, in the last 2 years, we developed, …founded HMBGMA and we're in the process now of anchoring quota in this community, for good. With the use of a trust. Fisheries Trust. Community, you know, quota fund. Same thing that Monterey and Morro Bay have done, at this point, so we're actually almost very close to sealing the deal on that…"* - Fisherman, Half Moon Bay, 2015/2016

Summary

Half Moon Bay's groundfish trawl activity has diminished since the implementation of catch shares in 2011—having seen its number of active vessels fall from five. During the same period the community's other fisheries, Dungeness crab and salmon, have experienced slight increases. Despite this, catch shares support has increased, borne primarily by the benefits of business planning and gear flexibility. Other participants, however, have experienced challenges related to program costs, which for some has resulted in exiting the fishery or leasing out their quota. Despite the challenges, the community is working to remain viable by joining a regional risk pool and creating trusts in an effort ensure local fishing is preserved by anchoring quota shares to the community.

PCGFSS Community Summary

SAN FRANCISCO AREA

This summary sheet provides a snapshot of the San Francisco Area community based on data from the PCGFSS. This information should be used to gain a better understanding of the individuals in this community that participated in the PCGFSS (primarily individuals involved in the groundfish trawl fishery in some capacity), and how these individuals may have been impacted by the implementation of catch shares. Where applicable a "rank" (highest to lowest for a given year and survey item) is presented to allow for easy comparison across communities.

The San Francisco Area is located along the California coast, encompassing 46.7 square miles of land and 185.2 square miles of surface water (Norma et al. 2007). Prior to the arrival of the Spaniards, the area between San Francisco and Big Sur was inhabited by 40 tribal groups. In the late 1700s Spain established numerous mission settlements throughout California, which would later become pueblos (Norman et al. 2007). San Francisco grew rapidly following the discovery of gold, and the fishing industry began to the develop when the Gold Rush subsided (Norman et al. 2007). The Chinese and Italians were influential to the development of the fishing industry in San Francisco. The Chinese shrimp fishery, along with the Bay Area's oyster business, were the most productive fisheries in California during the late 1800s (Norman et al. 2007). Throughout the late 1800s and early 1900s the fishing industry oscillated with declines in stocks related to pollution and exploitation, while in other areas there was progress due to technology advances (Norman et al. 2007).

According to the US Census Bureau Population Estimates Program, the population of the City of San Francisco in 2015 is estimated to be 864,816—a 19.5% increase from 1990. The median household income[20] (adjusted to 2015 dollars) is estimated to be $81,294 (US Census Bureau ACS 2015). Fishermen's Wharf, the traditional home of San Francisco's fishing fleet, still serves several fishermen, though the wharf is primarily visited by tourists (Norman et al. 2007).

PCGFSS Participants

The goal of this section is to describe the community based on some of the general characteristics that participants reported in the PCGFSS. These general characteristics provide information about who the

[20] US. Census data reported for median income is supported by the American Community Survey (ACS) and available on the U.S. Census website www.census.gov.

participants within each year represent. In Section 3.2 Community Performance, the San Francisco Area is used to represent a community group composed of the following communities: San Francisco, Alameda, Oakland, Alviso, China Camp, Berkeley, Pacifica, Pinhole, Richmond, Rodeo, Vallejo, and Princeton/Half Moon Bay. PCGFSS participants are primarily representative of San Francisco. Additionally, the PCGFSS has sufficient participation in Princeton/Half Moon Bay to represent the community as a standalone community. Therefore, data for Princeton/Half Moon Bay is not included in this analysis. See the Princeton/Half Moon Bay Community write-up for more specific information on this community. It is important to keep in mind that while there is some overlap in participants across years, not every survey year contains the same sample of individuals. The analysis presented in this section represents all participants for each study year within this community. Table SFA-1. summarizes the percentage of respondents in the San Francisco Area who were the same between years, and is meant to aid in the interpretation of the results presented here.

Table SFA-1. Total number of participants, and percentage of return respondents in the San Francisco Area.

	2010	**2012**	**2015/2016**
% Return respondents from 2010	-	55.6	46.2
% Return respondents from 2012	-	-	69.2
Number of participants	10	9	13

In comparison to other communities, San Francisco Area participants are older, have been working in the PCGTF for fewer years, and derive less of their income from commercial fishing (Box SFA-1). Table SFA-2 summarizes the roles that San Francisco Area participants hold within the industry. In all three years, the San Francisco Area ranks in the bottom three in terms of the percentage of QS owners/co-owners and/or vessel owners/co-owners.

BOX SFA-1. The following demographics and family history characteristics are presented as averages, followed by the community rank* from highest to lowest in comparison with other communities for the **2015/2016** survey (2010 and 2012 below).

2015/2016

Age | **64.4 years** | Rank 1 out of 13
2010=55.0 (3/13), 2012=55.4 (3/12)

Age started work in commercial fishing | **24.6 years** | Rank 2 out of 12
2010=28.6 (1/13), 2012=23.0 (3/12)

Number of years working in the PCGTF | **18.8 years** | Rank 11 out of 13
2010=24.6 (7/13), 2012=14.1 (12/12)

Number of generations family has commercially fished | **3.0 generations** | Rank 2 out of 11
2010=2.0 (10/10), 2012=1.2 (12/12)

Percent income from commercial fishing | **74.2%** | Rank 11 out of 13
2010=77.6% (11/13), 2012=85.6% (6/12)

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Table SFA-2. Role of respondents within the San Francisco Area, presented as a percentage of the total number of participants within the community sample, and rank[*] from highest to lowest in comparison with other communities. Multiple response item: respondents could fall in more than one role category.

	2010		2012		2015/2016	
Role Category	%	Rank	%	Rank	%	Rank
QS owner/co-owner[**]	20.0	10/12	11.1	11/12	16.7	9/11
Absentee owner/co-owner	-	-	0	8/8	0	10/10
Vessel owner/co-owner	30.0	8/12	22.2	8/8	25.0	9/12
Captain/Crew	20.0	9/12	22.2	10/11	16.7	12/12
Shoreside Processor	30.0	3/9	44.4	1/10	16.7	3/11
Catcher-Processor/Mothership	0	2/2	0	3/3	0	2/2
Buyer (not processor)	0	5/5	11.1	2/6	25.0	2/6
Other[***]	40.0	2/9	22.2	7/12	33.3	6/13
Not applicable	0		8.3		0	
Prefer not to answer	0		0		0	
Response rate	100		100		100	

[*]Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.
[**] 2010: refers to "permit owner"
[***] Other represents the percentage of respondents that do not fall in any of the other role categories, and encompasses: Risk pool manager, QS/QP manager, Observer, Industry supplier, Fisherman's wife.

Fishery Participation Levels

The San Francisco Area's groundfish trawl participation is minimal[21]. Participants attributed program cost-related reasons to the low level of activity. Based on reporting in Section 3.2.2(c). Changes in Infrastructure it is probable earlier resident vessels exited the fishery during the 2003 buyback. Other fixed gear types are more active, focusing primarily on black cod and other non-groundfish fisheries (Table SFA-3), like Dungeness crab. Most vessels in the area are small (< 50ft), independently owned, which, according to participants, have experienced significant challenges under the Catch Shares program.

Fishery participation in San Francisco has shifted away from groundfish—with the exception of black cod—into other fisheries, particularly into Dungeness crab and shrimp. It is unclear whether previously active trawlers abandoned groundfish for other fisheries or they exited the industry entirely. Originally predicted by participants in the 2010 baseline data collection, the 'shift to other fisheries' theme continued through 2012 and into the 2015/2016 study years. For one participant, the cost and availability of observers was the reason for the shift, "*That's why I just go for halibut right now and I freeze my catch-shares permit,*" leading this fisherman to decide to lease out his quota;

> *So I write to rent my quota and fish just halibut and that's the only way I survive. Very, very little. And at the end of the year whatever I make I spend into the boat.* - Fisherman, San Francisco, 2015/2016

Another participant decided against entering the groundfish fishery because of the same issues with cost, a sentiment shared by other central California communities [section 3.2.2(g) (6) Fixed Gear Fisheries];

[21] PCGFSS survey data is removed from this section to protect confidentiality.

At one point I was considering renting catch shares, but decided not to after finding out the costs of observer coverage. – Fisherman (Non-IFQ Fixed Gear), San Francisco, 2015/2016

According to participants, cumulative program costs and observer availability, determine participation in the groundfish Fishery—issues which often limit access to fishing and result in lost trips. In turn, this has led some to lease out their quota rather than fishing it [3.2.2(f)(1) Employment Opportunities, Income, and Stability]. This topic is also discussed in Section 3.2.2(g)(4)(b) Absentee Quota Holders, and in Section 3.2.3(d) Small Vessels as these reasons and trends pertain specifically to small vessels in other ports along the West Coast. All told, these challenges appear to disproportionately impact the smaller vessel operations that make up this central California fishing community. Despite these challenges, some San Francisco Area participants (though fewer than in other communities) still plan to increase their activity in the PCGTF (Box SFA-2).

BOX SFA-2. The following fishery participation characteristics are presented as percentages of the total respondents within the community sample, followed by the community rank* from highest to lowest in comparison with other communities for the **2015/2016** survey (2012 below).

2015/2016

Plan to increase activity in PCGTF | **20.0%** | Rank 9 out of 11
2012=12.5% (6/8)

Plan to decrease activity in PCGTF | **10%** | Rank 4 out of 9
2012=0% (3/3)

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Infrastructure

Trawl sector related infrastructure is minimal in the San Francisco Area due to limited demand for the one remaining, resident trawl vessel. Overall, infrastructure was not a frequent theme in this community. However, when the topic was discussed, it focused on maintaining processor workforces, an issue also reported in Section 3.2.2(c) Changes in Infrastructure of the Community Performance section.

Employment Levels

This section summarizes community-level employment based on participants' reported employment (including any combination of full-time, part-time, seasonal, and/or self-employment) in the groundfish fishery, other fisheries, or non-fishing industries. Additionally, we summarize how respondents within the community rated different components of job quality related to their role in the commercial fishing industry.

In comparison with other communities, the San Francisco Area ranked in the top five for groundfish employment in 2010, and in the bottom two in both 2012 and 2015/2016 (Table SFA-3). Participants reported variable levels of job quality (Table SFA-4). Notably, in 2015/2016, San Francisco Area ranked in the top three for job satisfaction, job stability, and relationships with co-workers.

Table SFA-3. Community-level employment (includes any combination of full-time, part-time, seasonal and/or self-employment), in percentages of total respondents within community sample, and rank* from highest to lowest in comparison with other communities.

	2010		2012		2015/2016	
	%	Rank	%	Rank	%	Rank
Groundfish	90.0	4/9	44.4	11/11	58.3	10/12
Other fisheries	70.0	5/13	55.6	8/11	66.7	6/10
Non-fishing	30.0	5/11	22.2	6/11	33.3	5/12
Not applicable	0		11.1		0	
Prefer not to answer	0		0		0	
Response rate	100		100		100	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Table SFA-4. Respondents' rated the following items related to their role in the commercial fishing industry on a Likert-scale Poor (1)-Excellent (4). Presented as community-level mean, and rank* from highest to lowest in comparison with other communities.

	2010		2012		2015/2016	
	Mean	Rank	Mean	Rank	Mean	Rank
Job satisfaction	3.3	5/10	3.0	9/10	3.6	1/10
Compensation	2.7	5/12	2.5	9/11	2.9	7/12
Method of pay	3.1	3/12	3.0	6/9	3.2	5/12
Job stability	2.9	4/13	3.0	3/9	3.2	2/10
Standard of living	2.8	6/8	3.3	2/10	2.9	8/9
Relationships	3.3	7/9	3.3	10/12	3.6	3/11
Not applicable	0		11.1		0	
Prefer not to answer	0		0		8.3	
Response rate	100		100		100	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

The 2010 baseline participants discussed concerns about opportunities for the next generation and felt their reduced quota would lead to decreased income. Through 2012 and into 2015/2016 participants reported fewer jobs and reduced income within this community, yet high levels of job stability were also reported (Table SFA-4). An inconsistent supply of groundfish translated to inconsistent work for processors' workforce creating retention challenges. From the fishing perspective, a 2012 participant related the experiences on one vessel:

> *So this CS came in, the guy sold all the quota, and then the boat became derelict. The owner got out, the captain and crew lost their jobs. He's now on the back deck of another boat working for someone else. The crew just melted into San Fran.* - QS Owner, San Francisco, 2012

This reporting of fewer jobs or reduced employment opportunities in the groundfish fishery and concern for the next generation of entrants is echoed along the West Coast, in other ports. Similar trends were reported in section 3.2.2(f) Changes in Employment section 3.2.3 New Entry identified fiscal barriers to ownership impeding previous opportunities for crew to work their way up from the deck.

Catch Shares Characteristics

The goal of the catch shares characteristics section is to describe the community based on participants' reported perspectives about catch shares. While the previous sections provide information related to how the community may have been impacted by catch shares, this section responds directly to catch shares impacts by summarizing participants' perspectives on how they have been personally affected by catch shares.

BOX SFA-3. The following characteristics related to catch shares impacts are presented as percentages of total respondents within the community sample, followed by the community rank* from highest to lowest in comparison with other communities for **2015/2016** survey (2010 and 2012 below).

2015/2016

Support for the catch shares program | **33.3%** | Rank 8 out of 10
2010=10.0% (9/11), 2012=0% (11/11)

Positively affected by catch shares | **25.0%** | Rank 7 out of 12
2010 (expect to be affected)=0% (11/11), 2012=0% (12/12)

Negatively affected by catch shares | **66.7%** | Rank 3 out of 12
2010 (expect to be affected)=60.0% (2/13), 2012=100% (1/12)

Changed species caught post-catch shares | ***Cannot present due to confidentiality***

Agree that safety has improved as result of catch shares | ***Cannot present due to confidentiality***

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Across all three years, San Francisco Area participants reported low levels of support for catch shares (Box SFA-3). Reasons associated with this lack of support are evident in the themes identified through analysis of San Francisco Area interviews. Top code intersections (unique codes used in context with one another) for the San Francisco Area included observers and cost and, allocations of bycatch/choke species and loss of business and job opportunities.

The challenges of observer costs was a dominant theme discussed widely throughout the Community Performance, section 3.2 [3.2.2(f); 3.2.2(g) (4) (c); 3.2.2(g) (6); 3.2.2(h) (1) & 3.2.3(d)]. In the San Francisco Area, the intersection of these two themes occurred in eight of the nine interviews conducted in the 2015/2016 data collection. Local perceptions echoed the challenges others along the West Coast reported struggling with:

> *I know in our program here, we pay 100% of it, so it's, it's hard when the observer costs are more than your fuel costs are for the entire trip, I mean, uh…it's ridiculous and my guys are all small boats…* – Fisherman, San Francisco, 2015/2016

> *…having these people on the boat, they're expensive, one, making…costs me $500/day and that's more than the crew in some cases per day…* – QS Permit Owner, San Francisco, 2015/2016

This 2012 participant spoke about the gradual elimination of government subsidies used to offset the observer costs:

Some captains will complain about future costs. Right now it's just the cost of doing business, and if the observer does something, they don't seem to mind. But the eventual cost – we'll be costing them over $400 a day. Some deckhands don't get paid that much. That will eventually be a solid financial burden. – Other Industry Participant, San Francisco, 2012

Allocations of bycatch or choke species changed the experience of groundfish fishing [section 3.2.2(h) Changes in Relationships]. Locally, the risk of catching these high-risk species have also contributed to heightened stress or anxiety, leaving some participants to wonder if it's worth the effort.

I don't have no problem to respect the limit, when I finish my limit that's fine. But if I got to go fishing, and you jeopardize, you're scared, when you put the net into the water, it's not worth the fishing. That's the only problem we got. - Fisherman, San Francisco, 2015/2016

From both the shoreside buyer/processor and fishermen perspective, participants specifically attributed a general loss of business and loss of opportunity to catch shares:

…we're not really, really happy with the catch shares program. For us, it's been a pretty big reduction in particular local-caught rockfish and groundfish, and it's been a lot of money to a lot of people, and I think it's cost a lot of jobs on the coast for a lot of fishermen, and a lot of…and it's really hurting the people that are in our position as well. - Buyer, San Francisco, 2015/2016

As a crew, I was on a good boat. It was a good year round boat. Stable job and it just wasn't for me after that. Like I was actually aspiring to take over that boat and run it. […] But once this came into effect – there's not a lot of young guys getting into fishing. That was a dream for me – to have a big boat that I could run year round. In this economy/job market, it was a big deal for someone my age to have that opportunity. And it just went out the window. […] I feel like I wasted that time in my life because it was something I was going for, and now it's just something I'm not interested in. Too many headaches, too many hassles, and really the payoff just isn't worth it. - Fisherman, San Francisco, 2012

An interesting point of safety, identified by one participant, was a link between income, maintenance and safety of the vessel.

Every time I go in the shipyard you are looking about $75,000, $100,000, painting, uh, changing, working a little bit on the propeller, or doing a little bit of work on the engine. Tomorrow, I got a mechanic that's going to come, because of the propeller. They are going to charge me one arm and leg just to look at it, if there's nothing wrong. So that's part of the main things on the boat do you go fishing. Because every time I want to go fishing I want to be safe out there. My first priority on this boat is safety, for me and my crew. […] So to maintain safety, it cost a lot money. So when I go over there fishing if I don't catch, if don't bring fish in, I lose money, I go broke." Fisherman, San Francisco, 2015/2016

The participant attributes reduced income from groundfish fishing led to delaying regular maintenance, which in turn, placed the safety of the crew and the vessel at risk, also discussed in Section 3.1.3(d) Safety: Alternative measures of risk-taking and safety.

Additional Themes

There were two additional themes that were consistent across data collection efforts. In 2010, participants foresaw a potential for out of state vessels utilizing the adjacent fishing grounds – also discussed in

Section 3.2.2(g)(5) Interactions Between Trawl Communities and Others. By 2015/2016, participants reported Oregon vessels competing for black cod fishing grounds, stating:

> *…they flood the market, and it's just a bad thing all the way around, and it just consolidates all that effort into the hands of a few people instead of being spread out into the community.*" – Fisherman, San Francisco, 2015/2016

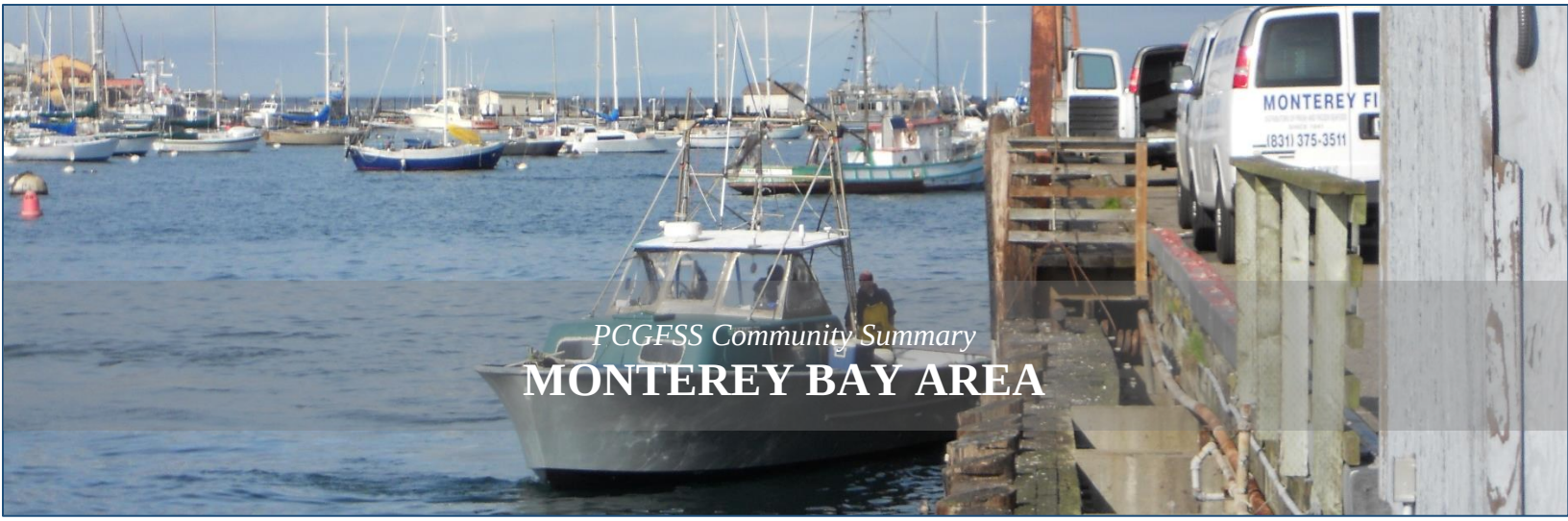
Related to reduced amounts of local trawl caught-groundfish, buyers and processors reported a need to supplement market demand with Canadian fish.

> *Canada's my partner in business. I don't want to show disrespect to Canada. But I sure wish we were augmenting what we do with some fish from CA trawlers. And I haven't bought one pound!* – Buyer, San Francisco, 2012

> *In terms of rockfish? Let's pass on that only because we're not purchasing anything locally. It's all Canada* – Buyer, San Francisco, 2015/2016

Summary

The San Francisco Area's groundfish participation is minimal. One trawl vessel remains in the area but no longer actively participates in the fishery. Other fixed gear types are more active, focusing primarily on black cod and other non-groundfish fisheries, like Dungeness crab. Most of San Francisco' vessels are small (< 50ft), independently owned vessels, which participants report have been disproportionately impacted by catch shares. Most San Francisco participants reported being negatively affected by the program, which included similar reasons identified by other communities; observer costs, bycatch allocations and general loss of business. Yet despite these challenges, some still plan to increase in groundfish fishing.



PCGFSS Community Summary

MONTEREY BAY AREA

This summary sheet provides a snapshot of the Monterey Bay Area community based on data from the PCGFSS. This information should be used to gain a better understanding of the individuals in this community that participated in the PCGFSS (primarily individuals involved in the groundfish trawl fishery in some capacity), and how these individuals may have been impacted by the implementation of catch shares. Where applicable a "rank" (highest to lowest for a given year and survey item) is presented to allow for easy comparison across communities.

Located along the central coast of California, approximately 345 miles north of Los Angeles and 113 miles south of San Francisco, the community of Monterey rests nestled in the southernmost crook of Monterey Bay. Monterey and the nearby community of Moss Landing - 18 miles to the north - encompass approximately 9 square miles of land and 3.5 square miles of water (Norman et al. 2007). According to the US Census Bureau Population Estimates Program, the population of Monterey Bay in 2015 is estimated to be 28,338—an almost 12% decrease from 1990. The median household income[22] (adjusted to 2015 dollars) is estimated to be $66,166 (US Census Bureau ACS 2015).

Originally home to the Ohlone/Costanoan Esselen tribe, Monterey served as the capitol of Alta (upper) California during Mexican rule and was the location of the signing of the California state constitution in 1849 (Norman et al. 2007). Monterey evolved into a successful fishing port, thanks in large part to the efforts of Chinese fishermen. The canning industry began in 1902 and expanded throughout World War I, driven by wartime demand for canned fish. During World War II, Monterey earned the moniker, "Sardine Capital of the World", because of the community's Cannery Row - where canneries were historically located - made even more famous by John Steinbeck's novel of the same name. Today, Monterey is home to the Monterey Bay Aquarium and a successful tourism industry centered around the area's commercial fishing heritage (Norman et al. 2007).

PCGFSS Participants

The goal of the PCGFSS Participants is to describe the community based on some of the general characteristics that participants reported in the PCGFSS. These general characteristics provide information about who the participants within each year represent. In Section 3.2 Community

[22] US. Census data reported for median income is supported by the American Community Survey (ACS) and available on the U.S. Census website www.census.gov.

Performance, the Monterey Area is defined as an aggregated community including Monterey, Moss Landing, Santa Cruz, and Watsonville. The majority of PCGFSS respondents in this area are associated with Monterey, while a small minority is associated with Moss Landing. When interpreting the results presented in this section, it is important to keep in mind that while there is some overlap in participants across years, not every survey year contains the same sample of individuals. Table MONT.BA-1. summarizes the percentage of respondents in the Monterey Bay Area who were the same between years, and is meant to aid in the interpretation of the results presented here.

Table MONT.BA-1. Total number of participants, and percentage of return respondents in the Monterey Bay Area.

	2010	**2012**	**2015/2016**
% Return respondents from 2010	-	36.4	47.1
% Return respondents from 2012	-	-	29.4
Number of participants	12	11	17

In comparison to other communities, the Monterey Bay area participants have been working longer in the PCGTF (except for 2012), derive less of their income from commercial fishing, and are somewhat younger, with just two generations involved in commercial fisheries (Box MONT.BA-1). One participant shared a memory of his first fishing trip;

> "*I had to wait until I was 7 to go fishing with my dad. Remember that day perfectly. He finally let me go and I grabbed my gear and it felt like it took forever to get to Point Sur. I started captaining at 16.*" - QS Permit Owner, Monterey Bay Area, 2012

BOX MONT.BA-1. The following demographics and family history characteristics are presented as averages, followed by the community rank* from highest to lowest in comparison with other communities for the **2015/2016** survey (2010 and 2012 below).

2015/2016

Age | **52.9 years** | Rank 10 out of 13
2010=54.0 (5/13), 2012=52.3 (7/12)

Number of years working in commercial fishing | **31.3 years** | Rank 6 out of 13
2010=32.6 (3/12), 2012=24.5 (11/13)

Number of years working in the PCGTF | **27.3 years** | Rank 4 out of 13
2010=30.0 (3/13), 2012=19.4 (8/12)

Number of generations family has commercially fished | **2.2 generations** | Rank 8 out of 11
2010=3.5 (3/10), 2012=1.7 (10/12)

Percent income from commercial fishing | **60.4%** | Rank 12 out of 13
2010=80.9% (9/13), 2012=75.7% (10/12)

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Table MONT.BA-2 summarizes the roles that Monterey Bay participants hold within the industry. In comparison with other communities, Monterey Bay ranks in the bottom four in terms of the percentage of QS owners/co-owners and vessel owners/co-owners since 2012, a significant drop from 2010. Shoreside processing saw a similar reduction, yet buyers remained in the top three all three years

Table MONT.BA-2. Role of respondents within the Monterey Bay Area, presented as a percentage of the total number of participants within the community sample, and rank[*] from highest to lowest in comparison with other communities. Multiple response item: respondents could fall in more than one role category.

	2010		2012		2015/2016	
Role Category	%	Rank	%	Rank	%	Rank
QS owner/co-owner[**]	50.0	2/12	20.0	10/12	17.7	8/11
Absentee owner/co-owner	-	-	0	8/8	5.9	8/10
Vessel owner/co-owner	50.0	2/12	30.0	7/8	29.4	8/12
Captain/Crew	25.0	8/12	60.0	3/11	35.3	7/12
Shoreside Processor	41.7	2/9	0	10/10	5.9	8/11
Catcher-Processor/Mothership	0	2/2	0	3/3	0	2/2
Buyer (not processor)	8.3	2/5	10.0	3/6	29.4	1/6
Other[***]	16.7	5/9	30.0	5/12	35.3	5/13
Not applicable	0		0		0	
Prefer not to answer	0		0		0	
Response rate	100		100		100	

[*]Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.
[**] 2010: refers to "permit owner"
[***] Other represents the percentage of respondents that do not fall in any of the other role categories, and encompasses: Risk pool manager, QS/QP manager, Observer, Industry supplier, Fisherman's wife.

Fishery Participation Levels

This section supplements the general community description by characterizing the community based on respondents' current and planned participation in various fisheries. Fisheries participation data presented here reflects the fisheries that PCGFSS respondents in Monterey Bay participate in, and does not account for where these participants may land their catch.

In all three study years fishermen[23] in the Monterey Bay area reported targeting sablefish (black cod) in addition to various other groundfish including Dover sole, chilipepper and thornyhead rockfish (Table MONT.BA-3). Fishermen also targeted non-groundfish and non-IFQ species such as California halibut, Dungeness crab and Pacific salmon. Only 35% of participants planned to increase groundfish activity in 2015/2016, a significant drop from the nearly 67% who planned an increase in 2012 (Box MONT. BA-2).

Possibly, reflecting the reported 2015/2016 increase in absentee ownership from zero in 2012 to 5.9% (Table MONT.BA-2), some participants reluctantly decided to lease out their whole quota;

> "*Early on in the catch shares program, I leased some black cod in, but now I'm leasing it all out, and not fishing it.* […] *I do get some profit from leasing quota shares which I could not have done before, but that then means I'm not fishing, and fishing is what I want to be doing.*" – Fisherman, Monterey Bay Area, 2015/2016

There is some indication groundfish was relied upon to a higher degree than it may be now. A 2012 participant explained, "*Groundfish acts as a stabilizer – while salmon and sardines go up and down,*

[23] The survey item summarized in Table MONT.BA-2 only applies to fishermen, which were defined as captain, crew, and/or other roles directly related to the harvesting of fish.

groundfish has always been the bread and butter in this harbor." Yet by 2015/2016, groundfish fishing has changed somewhat, at least for one participant.

> "*I'm having such trouble making ends meet in groundfish that I've been leaving the wife and kids at home and going to up Astoria crabbing, up to San Francisco catching California halibut."* – Fisherman, Monterey Bay Area, 2015/2016

In terms of this, another participant describes what it takes to adapt to the challenges brought by policy and regulatory changes;

> "*Diversification is the key to success. I have to be flexible so that I can go wherever fish are and catch whatever is plentiful at any given time. But it's not a simple matter – in order to do that, I need to spend a lot of money on permits and gear and a lot of time, fishing in every season. This means I sacrifice a lot and spend a lot to even make a living.*" – Fisherman, Monterey Bay Area, 2012

Table MONT.BA-3. Top five groundfish and other species that Monterey Area fishermen commercially fished since catch shares was implemented (2010: commercially fished in the last 5 years).

2010	**%**	**2012**	**%**	**2015/2016**	**%**
Chilipepper	83.3	Sablefish	83.3	Sablefish	100.0
Sablefish	83.3	Dover Sole	83.3	Longspine Thorneyhead	83.3
Dover Sole	83.3	Chilipepper	66.7	Shortspine Thorneyhead	83.3
Petrale Sole	83.3	Longspine Thorneyhead	66.7	Dover Sole	66.7
Longspine Thorneyhead	66.7	Shortspine Thorneyhead	66.7	Longnose Skate	50.0
Shortspine Thorneyhead	66.7	English Sole	66.7		
Lingcod	66.7	Petrale Sole	66.7		
Dungeness Crab	16.7	Dungeness Crab	16.7	California Halibut	50.0
		Pacific Halibut	16.7	Dungeness Crab	33.3
		California Halibut	16.7	Pacific Salmon	33.3
		Pacific Salmon	16.7	Squid	16.7
		Herring	16.7		
		Mackerel	16.7		
		Tuna	16.7		
		Ridgeback Prawn	16.7		
		Squid	16.7		

BOX MONT.BA-2. The following fishery participation characteristics are presented as percentages of the total respondents within the community sample, followed by the community rank* from highest to lowest in comparison with other communities for the **2015/2016** survey (2012 below).

2015/2016

Plan to increase activity in PCGTF | **35.3%** | Rank 4 out of 11
2012=66.7% (1/8)

Plan to decrease activity in PCGTF | **5.9%** | Rank 7 out of 9
2012=0% (3/3)

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Infrastructure

The City of Monterey owns and maintains the wharf, hoist and warehouse building yet given the current level of trawl activity, they are unsure as to the direction of future waterfront investment

> *"Well the transition to catch shares has me and the city thinking very hard about what mix of tenants we should have in the wharf and harbor buildings, with groundfish being a big question mark. We have a catch 22 here, because the city wants to support the economy, and that means supporting the fishermen and the infrastructure they need to keep working, but the fishermen have to be landing enough so that there is demand for the infrastructure."* – Other Industry Participant, Monterey Bay Area, 2015/2016

Other discussion about infrastructure assessed the status of local, processing capacity stating, "*We don't have the infrastructure here to do processing, due to the gentrification of the harbor area – it has happened here and at lots of other harbors too*" (Buyer, CA, 2015/2016) similarly reported in Section 3.2.2(c) Changes in Infrastructure. However, the same participant reasoned better access to the fishery for smaller vessels could increase the demand for associated infrastructure,

> "*With smaller boats, we could support a strong infrastructure, including fuel dock, local markets and local restaurants. One boat bringing in big volume infrequently, or even frequently, does not work in Moss Landing.*" - Buyer, CA, 2015/2016

Employment Levels

This section summarizes community-level employment based on participants' reported employment (including any combination of full-time, part-time, seasonal, and/or self-employment) in the groundfish fishery, other fisheries, or non-fishing industries. Additionally, we summarize how respondents within the community rated different components of job quality related to their role in the commercial fishing industry.

In the Monterey Bay Area, employment levels in the groundfish fishery have remained stable since 2010 while employment in other fisheries has increased (Table MONT.BA-4), possibly echoing the increase in non-groundfish fishing activity reported in the previous section. Participants also reported increased employment in non-fishing employment. This may be related to issues with job stability reported in Table X-4 and identified in participant interviews;

> "*I think I need to take a job this summer instead of fishing, just to get some bills paid.*" – Fisherman, Monterey Bay Area, 2015/2016

While job satisfaction remained somewhat high all three years of the study despite consistently ranking among the bottom three compared to other communities (Table MONT.BA-5), some participants' experiences ran contrary to the community trend.

> *"Stress kills the love of my job. My job satisfaction would be excellent if I did not have to work so hard to stay within the law."* – Fisherman, Monterey Bay Area, 2015/2016

Monterey Bay Area participants have reported issues with large, infrequent landings by large out-of-state vessels fishing offshore (discussed further in the Additional Themes section) challenging local buying or processing capacity. In that context one participant noted, "*We need a low volume steady stream, which could also be an economic opportunity for new entrants*" (Buyer, CA, 2015/2016). Based on this reasoning, a steady stream of low volume landings would provide sufficient stability to create more

employment opportunities for both fishing crew and the processing/buying workforce.

Table MONT.BA-4. Community-level employment (includes any combination of full-time, part-time, seasonal and/or self-employment), in percentages of total respondents within community sample, and rank* from highest to lowest in comparison with other communities.

	2010		2012		2015/2016	
	%	Rank	%	Rank	%	Rank
Groundfish	75.0	9/9	80.0	5/11	76.5	7/12
Other fisheries	33.3	13/13	20.0	11/11	47.1	8/10
Non-fishing	33.3	4/11	20.0	7/11	52.9	1/12
Not applicable	0		0		0	
Prefer not to answer	0		0		0	
Response rate	100		100		100	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Table MONT.BA-5. Respondents' rated the following items related to their role in the commercial fishing industry on a Likert-scale Poor (1)-Excellent (4). Presented as community-level mean, and rank* from highest to lowest in comparison with other communities.

	2010		2012		2015/2016	
	Mean	Rank	Mean	Rank	Mean	Rank
Job satisfaction	3.1	7/10	3.1	8/10	3.2	9/10
Compensation	2.1	11/12	2.0	11/11	2.1	12/12
Method of pay	2.6	11/12	2.4	9/9	2.8	12/12
Job stability	2.1	12/13	2.2	9/9	2.4	10/10
Standard of living	2.5	8/8	2.3	10/10	2.7	9/9
Relationships	3.3	7/9	3.7	1/12	3.7	2/11
Not applicable	0		0		13.3	
Prefer not to answer	0		0		0	
Response rate	100		100		93.8	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Catch Shares Characteristics

The goal of the catch shares characteristics section is to describe the community based on participants' reported perspectives about catch shares. While, the previous sections provide information related to how the community may have been impacted by catch shares, this section responds directly to catch shares impacts by summarizing participants' perspectives on how they have been personally affected by catch shares.

Support for catch shares is extremely low among Monterey Bay Area participants, ranking consistently within the bottom two all three years compared to other communities. This level of support is possibly reflected by the 60.0% who reported being negatively affected by the program in 2012 and 2015/2016, respectively (Box MONT.BA-3).

As reported on extensively in Section 3.2 Community Performance [3.2.2(f); 3.2.2(g) (4) (c); 3.2.2(g) (6); 3.2.2(h) (1) & 3.2.3(d)], program-related costs, observer costs especially, and their availability have become a significant financial challenge for many participants along the West Coast. For Monterey Bay

Area participants these costs have affected the ability to go fishing, to respond to local market demands and for some expenditures have become unsustainable.

> *"We absolutely want to get along with the department, but it is not easy, with mounting costs and lack of availability. All we want to do is be able to go fishing"* – Fisherman, Monterey Bay Area, 2015/2016

> *"There have been times when the market says: bring us x amount of fish on Monday. They tend to like landing on a Monday. However, I can't get an observer until Sunday. So, 12 hours out plus 12 hours back, I can only fish 1 day. I can't even fill a semi with that, and what I do catch is definitely not enough to pay expenses, as they are now. You end up stuck in the hole. I can't afford the observer fees, and I don't want to be the guy everyone points at and says, 'he doesn't pay his bill!'"* – Fisherman, Monterey Bay Area, 2015/2016

> *"I just ran my first trip in groundfish under catch shares, and I got taken to the cleaners on my quota bill, and I'm not happy about that. This seems to me to be an unfair application of the rules. Between observer costs, fuel, bait, and buyback, my guys are not getting a paycheck on this trip. That is what I call not sustainable."* – Fisherman, Monterey Bay Area, 2015/2016

BOX MONT.BA-3. The following characteristics related to catch shares impacts are presented as percentages of total respondents within the community sample, followed by the community rank* from highest to lowest in comparison with other communities for **2015/2016** survey (2010 and 2012 below).

2015/2016

Support for the catch shares program | **6.7%** | Rank 10 out of 10
2010=9.1% (10/11), 2012=33.3% (8/11)

Positively affected by catch shares | **0%** | Rank 12 out of 12
2010 (expect to be affected)=9.1% (8/11), 2012=11.1% (10/12)

Negatively affected by catch shares | **60.0%** | Rank 4 out of 11
2010 (expect to be affected)=36.4% (8/13), 2012=66.7% (3/12)

Changed species caught post-catch shares | **33.3%** | Rank 6 out of 8
2010 (change in last 5 years)=42.9% (1/8), 2012=16.7% (8/10)

Agree that safety has improved as result of catch shares | **0%** | Rank 8 out of 8

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Issues of safety and how it has changed since the implementation of catch shares is detailed in Section 3.1.3(d) Safety. Locally, Monterey Bay Area participants did not attribute any improvements in safety to the IFQ program (Box X-2). Participants felt safety was hindered by sparse observer availability during good weather giving them little choice but to fish marginal weather. Also identified in Section 3.1.3 Safety, other participants linked income, deferred vessel maintenance and safety;

> *"If a guy can't afford to take a boat to the shipyard, he's going to defer maintenance, and that increases the danger to the crew and to everybody. All those little things you would find if you had the boat in the shipyard for regular maintenance don't get found if you defer the maintenance."* – Fisherman, Monterey Bay Area, 2015/2016

Additional Themes

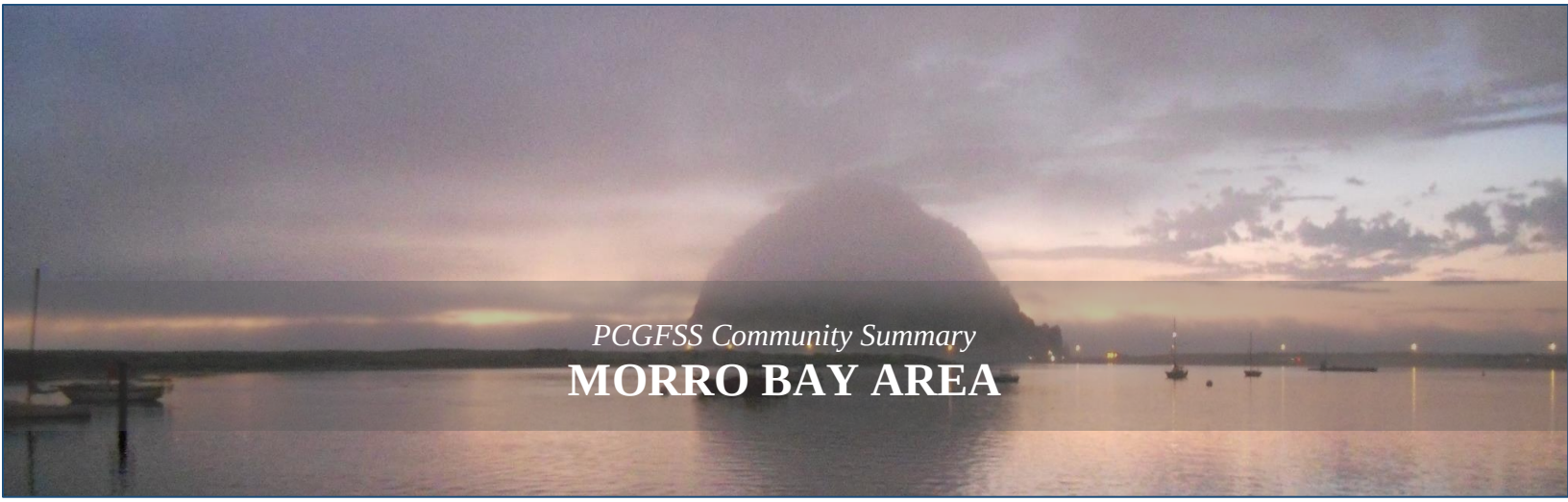
An additional theme was prevalent in this area concerning the impacts large, out-of-state vessels have on the fleet of the smaller resident boats, a topic also discussed in Section 3.2.2(g) (5) Interactions between Trawl Communities and Others. As briefly noted earlier, the volume caught by these large vessels is beyond the community's processing or buying capacity.

> *"We really need to give the small guys more access. What is happening in the larger trawl fleet – the bigger boats – overshadows the needs of our small boats. We need more opportunities to fish the resource sustainable and more connection to the resource for the consumer. We need volumes that match our supply and our demand. For example, if a trawler catches 30,000 pounds of fish, our community can't take it, so it goes elsewhere."* – Buyer, CA, 2015/2016

This "overshadowing" of the small vessels and related discussion about the opportunities a well-supported small boat fleet could bring speaks to how this community and its fishery developed over time. Because of a traditional reliance on smaller vessels and the catch volumes they provided, they are not set up for the larger catches of today.

Summary

The Monterey Bay Area exhibits similar challenges as other central California fishing communities including issues related to observer availability and cost, shifts in employment trends and the burdens of small vessels. However, addressing the issues identified both locally and reported on in Section 3.2.3(d)) Small Vessels it may be possible for these small vessel fishing communities to achieve stability and become more sustainable.



PCGFSS Community Summary

MORRO BAY AREA

This summary sheet provides a snapshot of the Morro Bay Area community based on data from the PCGFSS. This information should be used to gain a better understanding of the individuals in this community that participated in the PCGFSS (primarily individuals involved in the groundfish trawl fishery in some capacity), and how these individuals may have been impacted by the implementation of catch shares. Where applicable a "rank" (highest to lowest for a given year and survey item) is presented to allow for easy comparison across communities.

Located along the California coast in San Luis Obispo County, the community of Morro Bay is situated equidistance between Los Angeles and San Francisco. Morro Bay encompasses 5.2 square miles of land and 5 square miles of water (Norman et al. 2007). Coastal Chumash Indians originally settled in the area and utilized marine, coastal and river resources for subsistence. Taking its name from the extinct volcano, Morro Rock – dubbed the Gibraltar of the Pacific -Morro Bay was utilized as a safe harbor by 18th century Spanish galleons. The town of Morro Bay was founded in 1870 where the main wharf was built and is still known today as the "Embarcadero". By the 1930's the wharf became a bustling area of commerce for commercial fishermen landing albacore, tuna and cod (Norman et al. 2007). In the 1940s Morro Bay's wharf became an operations site for the U.S. Naval during World War II, falling into disrepair soon after the end of the war. Despite a rise and fall of various fisheries, Morro Bay remains a significant fishing port for halibut, rockfish, sole, and other species. The community now combines commercial fishing with a growing coastal tourism industry (Norman et al. 2007).

According to the US Census Bureau Population Estimates Program, the population of Morro Bay in 2015 is estimated to be 10,639—a 10% increase from 1990. The median household income[24] (adjusted to 2015 dollars) is estimated to be $51,338 (US Census Bureau ACS 2015). Home to 4 of California's 127 marine protection areas, Morro Bay is known for its locally caught seafood (Morro Bay Chamber of Commerce, 2017).

PCGFSS Participants

The goal of the PCGFSS Participants section is to describe the community based on some of the general characteristics that participants reported in the PCGFSS. These general characteristics provide

[24] US. Census data reported for median income is supported by the American Community Survey (ACS) and available on the U.S. Census website www.census.gov.

information about who the participants within each year represent. In Section 3.2 Community Performance, the Morro Bay Area is defined as an aggregation of communities including Morro Bay, Avila, and San Luis Obispo. While all PCGFSS respondents in the Morro Bay Area are connected to the groundfish fishery in Morro Bay, they may reside in locations near but outside of Morro Bay. When interpreting the results presented in this section, it is important to keep in mind that while there is some overlap in participants across years, not every survey year contains the same sample of individuals. Table MOR.BA-1. summarizes the percentage of respondents in the Morro Bay Area who were the same between years, and is meant to aid in the interpretation of the results presented here.

Table MOR.BA-1. Total number of participants, and percentage of return respondents in the Morro Bay Area.

	2010	**2012**	**2015/2016**
% Return respondents from 2010	-	38.9	38.9
% Return respondents from 2012	-	-	66.7
Number of participants	10	18	18

In comparison to other communities, Morro Bay Area participants are of a comparable age, have worked in the PCGTF for fewer years, and derive less of their income from commercial fishing (Box MOR.BA-1). Table MOR.BA-2 summarizes the roles that Morro Bay participants hold within the industry. In comparison with other communities, the Morro Bay Area ranks lower in terms of the percentage of QS owners/co-owners (except in 2015/2016), vessel owners/co-owners (except in 2012) and captain/crew members represented. In all three years, Morro Bay ranks in the top four in terms of the percentage of shoreside processors represented.

BOX MOR.BA-1. The following demographics and family history characteristics are presented as averages, followed by the community rank* from highest to lowest in comparison with other communities for the **2015/2016** survey (2010 and 2012 below).

2015/2016

Age | **55.2 years** | Rank 7 out of 13
2010=51.9 (6/13), 2012=50.2 (8/12)

Number of years working in commercial fishing | **28.5 years** | Rank 12 out of 13
2010=18.6 (12/12), 2012=23.8 (12/13)

Number of years working in the PCGTF | **23.2 years** | Rank 7 out of 13
2010=15.7 (13/13), 2012=16.9 (9/12)

Number of generations family has commercially fished | **1.3 generations** | Rank 11 out of 11
2010=2.0 (10/10), 2012=1.4 (11/12)

Percent income from commercial fishing | **54.4%** | Rank 13 out of 13
2010=68.2% (12/13), 2012=57.8% (12/12)

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Table MOR.BA-2. Role of respondents within the Morro Bay Area, presented as a percentage of the total number of participants within the community sample, and rank* from highest to lowest in comparison with other communities. Multiple response item: respondents could fall in more than one role category.

	2010		2012		2015/2016	
Role Category	%	Rank	%	Rank	%	Rank
QS owner/co-owner**	10.0	11/12	0	12/12	27.8	6/11
Absentee owner/co-owner	-	-	0	8/8	16.7	5/10
Vessel owner/co-owner	10.0	11/12	33.3	5/8	16.7	11/12
Captain/Crew	10.0	12/12	33.3	8/11	27.8	11/12
Shoreside Processor	50.0	1/9	16.7	4/10	22.2	1/11
Catcher-Processor/Mothership	0	2/2	0	3/3	0	2/2
Buyer (not processor)	0	5/5	11.1	2/6	0	6/6
Other***	40.0	2/9	50.0	1/12	44.4	3/13
Not applicable	0		5.6		0	
Prefer not to answer	0		0		0	
Response rate	100		100		100	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

** 2010: refers to "permit owner"

*** Other represents the percentage of respondents that do not fall in any of the other role categories, and encompasses: Risk pool manager, QS/QP manager, Observer, Industry supplier, Fisherman's wife.

Fishery Participation Levels

Black cod is the focus of Morro Bay's groundfish fishery. Fixed gear and longlining are the preferred gear types among the area's IFQ, open access and Limit-A permitted vessels. With the significant reduction of trawl vessels after The Nature Conservancy (TNC) sponsored 2006 buyback, trawl plays a minimal role in the community[25]. According to participants, soon after the buyback, fixed gear filled the space left by the trawlers, which essentially, created a one species groundfish fishery.

> *"There are lots of people fishing black cod here, but leaving everything else behind. We need to examine what is NOT getting caught.*" Processor, CA, 2015/2016

Despite the potential, unintended impacts from a narrowly focused fishery, 2010 participants felt black cod had saved Morro Bay.

> *"Since TNC bought the permits, Morro Bay is like a ghost town. There might be 1 boat coming in every 2 to 3 days. Black Cod has been saving Morro Bay this last 2 years, because of its abundance. If that gets knocked [disappears], Morro Bay is dead."* – Fisherman, Morro Bay Area, 2010

While the black cod fishery may have provided enough support for its participants, one processor laments about the limited range of groundfish caught locally;

> *"I wish I had access to more groundfish. With the dearth of landings in Morro Bay, I'm rekindling relationships with Oregon suppliers to get groundfish. It's sad to see that less local product goes to the local consumer.*" – Processor, CA, 2015/2016

[25] Due to confidentiality concerns, the exact number of trawlers is withheld.

A more detailed reporting and discussion of fixed gear under catch shares can be found in Section 3.2.2(g)(4)(a) Gear Switching.

Overall, only a small percentage of 2015/2016 participants plan to increase their groundfish-related activity, whereas nearly 60% of participants in 2012 planned to increase their activity (Box MOR.BA-2).

BOX MOR.BA-2. The following fishery participation characteristics are presented as percentages of the total respondents within the community sample, followed by the community rank* from highest to lowest in comparison with other communities for the **2015/2016** survey (2012 below).

2015/2016

Plan to increase activity in PCGTF | **25.0%** | Rank 8 out of 11
2012=58.8% (2/8)

Plan to decrease activity in PCGTF | **6.3%** | Rank 6 out of 9
2012=5.9% (2/3)

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Infrastructure

Infrastructure was not a frequently discussed theme in the Morro Bay Area. A 2015/2016 participant, however, did note the cumulative effects of fisheries management and conservation efforts on the community's infrastructure;

> *"We had a federal buyback here, and then we had the Nature Conservancy buyback, so we're down to exactly 1 trawler in this harbor. Lines and pots don't wear out the gear the way trawling does, so trawl used most of the fuel, most of the services, and brought most of the fish into this harbor. We used to have 4 or 5 processing plants here – no more. This used to be a big dragger town. Along with the buybacks, the Rockfish Conservation Area and rebuilding programs affected us – the boats started dropping out then. There's no full time diesel mechanic in this town anymore, now that I'm retired. There is one guy who works on party boats, and he can do a bit. There is another guy who works on yachts, he does a bit. But there is nobody supporting the fishing boats. It's sad but it's true."* – Other Industry Participant, Morro Bay, 2015/2016

The link between the federal and TNC buybacks, and a loss of infrastructure was a reoccurring theme identified across California fishing communities.. This is discussed in detail in Section 3.2.2(c) Changes in Infrastructure. Despite regional losses of infrastructure, locally, there are potential infrastructure improvements in the works;

> *"We sure could use a boat yard here. It's estimated it would cost about $6 million to set up a boatyard. The windmill people who are trying to set up a wind farm out here, that's one of the possible deals – they can put up windmills if they give the harbor $6 million for a boatyard."* – Fisherman, Morro Bay, 2015/2016

Employment Levels

This section summarizes community-level employment based on participants' reported employment (including any combination of full-time, part-time, seasonal, and/or self-employment) in the groundfish fishery, other fisheries, or non-fishing industries. Additionally, we summarize how respondents within the

community rated different components of job quality related to their role in the commercial fishing industry.

In 2012 a participant reflected on catch shares and the role of fisheries as an employer in the community;

> *"So far Morro Bay has not been hurt by catch shares; it possibly has helped the harbor. […] However, catch shares are generally nice for the guys who get a large quota allocation, but not for anyone else. The whole program is geared to put the small guy under. Even in a small community, fisheries are a big employer, and in some cases the backbone of the community. That means the damage is done not to the fishing industry but to the community as a whole."* – Fisherman, Morro Bay, 2012

One area where catch shares has possibly helped the harbor is job stability, which participants reported steady increases in since 2010 (Table MOR.BA-4), yet Morro Bay still ranks in the bottom three compared to other communities. Additionally, Morro Bay ranks higher in 2012 and 2015/2016 than in 2010 for job satisfaction and standard of living. However, in comparison with other communities, Morro Bay consistently ranks in the bottom two in terms of compensation. Participants report that small operations are disproportionately affected by catch shares. As Morro Bay is primarily composed of small businesses, this may correspond to an apparent decline in groundfish and other fisheries employment (Table MOR.BA-3). Possibly reflecting general decreases in employment, one fixed gear fisherman discussed the challenges of keeping a regular crew;

> *"We might be able to give a guy 24 to 30 hours of work in one outing, and none of the crew want to do baiting, which would probably double their income. So, work is sporadic, and each guy probably stays 6 to 9 months before they need to move on. If I had more permits, it would be easier to keep a guy full time. As it is, a guy could make $20,000 for 24 hours a week landscaping, so why would he want to be out here doing the hard work?"* – Fisherman (Non-IFQ Fixed Gear), Morro Bay, 2015/2016

Table MOR-BA-3. Community-level employment (includes any combination of full-time, part-time, seasonal and/or self-employment), in percentages of total respondents within community sample, and rank* from highest to lowest in comparison with other communities.

	2010		**2012**		**2015/2016**	
	%	Rank	%	Rank	%	Rank
Groundfish	80.0	7/9	77.8	6/11	50.0	12/12
Other fisheries	90.0	2/13	55.6	8/11	44.4	9/10
Non-fishing	50.0	1/11	44.4	2/11	38.9	3/12
Not applicable	0		0		0	
Prefer not to answer	0		0		0	
Response rate	100		100		100	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Table MOR.BA-4. Respondents' rated the following items related to their role in the commercial fishing industry on a Likert-scale Poor (1)-Excellent (4). Presented as community-level mean, and rank* from highest to lowest in comparison with other communities.

	2010		2012		2015/2016	
	Mean	Rank	Mean	Rank	Mean	Rank
Job satisfaction	3.0	9/10	3.3	4/10	3.4	3/10
Compensation	2.0	12/12	2.2	10/11	2.6	11/12
Method of pay	2.6	10/12	2.8	8/9	3.1	10/12
Job stability	1.9	13/13	2.3	8/9	2.8	7/10
Standard of living	2.6	7/8	3.0	6/10	3.2	5/9
Relationships	3.3	8/9	3.3	9/12	3.6	5/11
Not applicable	0		5.9		7.7	
Prefer not to answer	0		0		0	
Response rate	80.0		100		72.2	

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Catch Shares Characteristics

The goal of the catch shares characteristics section is to describe the community based on participants' reported perspectives about catch shares (Box MOR.BA-3). While, the previous sections provide information related to how the community may have been impacted by catch shares, this section responds directly to catch shares impacts by summarizing participants' perspectives on how they have been personally affected by catch shares.

Support for catch shares among the Morro Bay Area participants is mixed, evident from their rating of the program and how it has affected them (Box MOR.BA-3). In 2010, participants did not discuss catch shares in-depth because people felt that after the buybacks there was little left to affect the community. However, those who did speak about the program expressed concerns about the costs and consolidation, and feared regulations would put people out of business.

BOX MOR.BA-3. The following characteristics related to catch shares impacts are presented as percentages of total respondents within the community sample, followed by the community rank* from highest to lowest in comparison with other communities for **2015/2016** survey (2010 and 2012 below).

2015/2016

Support for the catch shares program | **50.0%** | Rank 7 out of 10
2010=12.5% (8/11), 2012=47.1% (7/11)

Positively affected by catch shares | **25.0%** | Rank 7 out of 12
2010 (expect to be affected)=0% (11/11), 2012=23.5% (6/12)

Negatively affected by catch shares | **31.3%** | Rank 6 out of 12
2010 (expect to be affected)=30.0% (10/13), 2012=23.5% (11/12)

Changed species caught post-catch shares | ***Cannot present due to confidentiality***

Agree that safety has improved as result of catch shares | ***Cannot present due to confidentiality***

*Communities with equal values are given the same rank. Communities where n<5 are removed for confidentiality.

Participants spoke directly to local experiences associated with the cost of observers, views similar to those issues identified coast wide that were reported on extensively throughout Section 3.2 Community Performance (3.2.2(f); 3.2.2(g)(4)(c); 3.2.2(g)(6); 3.2.2(h)(1) & 3.2.3(d)). These reported observer costs had become a significant challenge that extended beyond the direct effects on individual vessel operations.

> *"I have quota I wanted my son to be able to fish, but he can't afford the observer costs any more than I can. So what did he have to do? He had to lease out the quota, which just compounds the problem – now you've got boats stacking quota on, going from Oregon down to Morro Bay, and sweeping up all the fish, putting the little boats that still exist at an even greater disadvantage*." – Fisherman, Morro Bay, 2015/2016

> *"…observer costs make it impossible for local guys to get into the fishery, so the community quota fund has to lease to someone else, so they lease to northern boats, who come down here with truckloads of pots and compete with our local longline fishermen."* – Fisherman, Morro Bay, 2015/2016

> *"The big problem for the Community Quota Fund in Morro Bay is that people can't get observers, and observers cost so much. If we could solve that, we could probably get guys to lease that quota, and have it landed here."* – Other Industry Participant, Morro Bay, 2015/2016

As with other aspects of catch shares, observations of safety in the fishery are mixed. Participants reported both reductions associated with derelict gear and improvements in safety attributed to Coast Guard requirements. For instance, two fixed gear fishermen describe these safety concerns as follows:

> *"So now we have a 35' boat, which could sensibly go 15 miles offshore, going out 40 or 50 miles to avoid the ghost gear, and one of the effects of catch shares here has been to make the job more dangerous than it was – to impact fishermen's safety negatively.*" – Fisherman (Non-IFQ Fixed Gear), Morro Bay, 2015/2016

> "*Safety is always improving, but it's not due to catch shares, it's because the Coast Guard are religious about inspections, and they'll call you when you are due.*" – Fisherman (Non-IFQ Fixed Gear), Morro Bay, 2015/2016

A full reporting on the topic of safety under since catch shares implementation is located in Section 3.1.3(d) Safety.

Additional Themes

In 2012, participants reported that the city of Morro Bay and The Nature Conservancy were working to form a quota pool. By 2015, the Morro Bay Quota Fund and Central Coast Groundfish Project Association were in place. The quota fund has bought quota shares from TNC, anchoring quota to the community; however, due to quota ownership caps the community has reached its limit.

Participants felt the Rockfish Conservation Areas (RCAs) should be opened for small vessels, partly for safety reasons, not having to travel farther into rougher water to fish. The RCAs encompass many of the traditional fishing grounds where small vessels used to fish.

Another prevalent theme for this community was the conflict between local California boats and the larger, Oregon-based vessels fishing black cod (Section 3.2.2(g)(5). Interactions Between Trawl

Communities and Others). The issues ranged from the local economy to safety problems from discarded gear to perceived overuse of local resources.

> *"There are some big boats from Oregon that are coming down here and catching lots of black cod, but of course the revenue all goes back to Oregon – it's not helping the economy in Morro Bay at all."* – Processor, CA, 2015/2016

> *"We have these big boats coming down from Oregon or Washington state, picking up all the black cod because they bought the quota to do that, and other than the dock that unloads their product, the money all leaves the area.*" – Buyer, Morro Bay, 2015/2016

> *"When we find a big spot of black cod and start to fish them (we use horizontal benthic long line), the big boats from Oregon and Washington come and put hundreds of traps all over, then we can't fish there at all. The longline gear and trap gear confound each other, and also if they lose traps, that screws up our gear, so it costs us thousands to fix our gear, we lose that trip, and additional cost to go find other grounds"*– Fisherman (Fixed Gear), Morro Bay, 2015/2016

> *"I did support catch shares when they first came in, because of the TNC system and what we were trying to do – to make a small central coast fishery. But then the big pot boats come down and catch 150,000 pounds of black cod in a couple months and they're gone. That seriously affects the A permit guys, so it's not working for a lot of guys the way things are now."* – Fisherman (Fixed Gear), Morro Bay, 2015/2016

> *"And their gear is different. They use 1" – 1.5" line or maybe even 1.75" groundline to the pots. They've got bigger escape rings on the pots than the local guys have, so they get bigger fish. When I was in that fishery, I would set 4 tubs with 300 hooks each. These guys are setting 30 tubs with 300 hooks each, so the black cod is getting fished much too heavily.*" – Fisherman, Morro Bay, 2015/2016

Additionally, participants discussed the large vessels' impact on local supplies and influence with observer availability;

> *"It's also made a difference because the big Oregon boats come here and use up resources. If a big boat takes 5,000 gallons of fuel, a little guy can't get 100 gallons and has to wait for a truck. Big Oregon boats used to take all the bait – but now they're bringing their own."* – Fisherman, Morro Bay, 2015/2016

> *"I had a Morro Bay guy as observer on my vessel, and Alaskan Observers took him off my boat and put him on to an Oregon boat that was landing in Morro Bay. That did not seem fair. From the observer company's point of view, the observer was probably getting more work, so he got more money and Alaskan Observers got more money, but that meant that the Morro Bay boats were hindered.*" – Fisherman (Fixed Gear), Morro Bay, 2015/2016

Summary

The Morro Bay Area is unique for its reliance on black cod, a fishery that participants feel has kept the community alive and productive despite local changes that came after two vessel buybacks, the formation of RCAs, and implementation of the catch shares IFQ. The abundance of local black cod and the flexibility offered by gear switching, however, has also attracted out-of-state vessels that compete for resources with the smaller boats of resident fleet. These issues, along with those associated with observer

costs, will continue to present challenges going forward. Efforts by the Morro Bay Quota Fund to obtain and anchor quota shares locally may bring more opportunity to the community.

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