Summary of data for preliminary analysis of economic effects of Salmon Bycatch Mitigation in the West coast trawl fisheries.

Introduction

Material in this document is provided in support of a Regulatory Impact Review/Initial Regulatory Flexibility Analysis (RIR/IRFA). An RIR/IRFA provides assessments of the economic benefits and costs of the action alternatives, as well as their distribution (the RIR), and the impacts of the action on directly regulated small entities (the IRFA). An RIR/IRFA addresses the statutory requirements of the Magnuson Stevens Fishery Conservation and Management Act, the National Environmental Policy Act, Presidential Executive Order 12866, and the Regulatory Flexibility Act. An RIR/IRFA is a standard document produced by the Fishery Management Councils and the National Marine Fisheries Service to provide analytical background for decision-making.

Trawl Sector Landings and Revenue Summaries

Table 1 through Table 6 display numbers of participating catcher vessels and buyers and delivered ex-vessel revenue in West Coast trawl fisheries sectors during recent years (2016-2018). These data are provided as indicators of the location and intensity of the economic effects of trawl fisheries activity on West Coast ports. For this summary trawl fisheries sectors consist of the following groups of catcher vessels and associated buyers/primary processors: at-sea whiting catcher-processors, at-sea whiting motherships, shorebased whiting, shorebased non-whiting bottom trawl, and shorebased non-whiting midwater trawl. The following tables and associated text are provided to illustrate the number of potentially affected trawl sector participants and the magnitude and geographic distribution of participants' trawl sector economic activity (ex-vessel revenues). Unfortunately, confidentiality constraints limit the amount of detail that can be reported for vessels and/or buyers at the state and port area level. Areas and years where confidentiality constraints preclude disclosure of data are denoted with "c" in the tables[1].

Table 1 summarizes participation in all federal non-whiting trawl sector fisheries during 2016-2018. Non-whiting trawl fisheries consist of combined shorebased non-whiting bottom trawl and shorebased non-whiting midwater trawl sectors. The table shows a total of 78 catcher vessels participated in non-whiting trawl fisheries during the period, delivering a total of $85.5 million in ex-vessel revenue (current dollars) to 33 shorebased buyers. More than 2/3 of these vessels delivered to port areas in Oregon, which received a similar share of total ex-vessel revenue. Astoria-Tillamook received the largest numbers of vessels making deliveries each year, followed by Newport or Coos Bay and Eureka.

Table 2 summarizes participation in bottom trawl sector fisheries during 2016-2018. The table shows a total of 68 catcher vessels participated in bottom trawl fisheries during the period, delivering a total of $71.1 million in ex-vessel revenue (current dollars) to 30 shorebased buyers. More than 2/3 of these vessels delivered to port areas in Oregon, which received a similar share of total ex-vessel revenue.

[1] In order to avoid disclosure of possibly confidential economic information, the tables show data (entity counts and ex-vessel revenues) only in cases where at least 3 entities (harvesting vessels or buyers) are present.

Astoria-Tillamook received the largest portion of vessels making deliveries each year, followed by Newport or Coos Bay and Eureka.

Table 3 summarizes participation in the midwater rockfish trawl sector fishery during 2017 and 2018 (there was no midwater rockfish trawl fishery in 2016). The table shows a total of 34 catcher vessels participated in this fishery during the period, delivering a total of $14.2 million in ex-vessel revenue (current dollars) to 14 shorebased buyers. More than 82 percent of these vessels delivered to port areas in Oregon, which received more than 88 percent of total ex-vessel revenue. Astoria-Tillamook received the largest portion of vessels making deliveries each year, followed by Newport and the Washington Coast.

Table 4 summarizes participation in the shorebased whiting sector fishery during 2016-2018. The table shows a total of 29 catcher vessels participated in the fisheries during the period, delivering a total of $61.2 million in ex-vessel revenue (current dollars) to 11 shorebased buyers. More than 86 percent of these vessels delivered to port areas in Oregon, which received 71 percent of total ex-vessel revenue. Astoria-Tillamook received the largest portion of vessels making deliveries each year, followed by Newport or the Washington Coast. There were no shorebased whiting deliveries to port areas south of Newport during the period.

Table 5 and Table 6 summarize participation in the at-sea whiting sector fisheries during 2016-2018. Table 5 shows a total of 18 catcher vessels participated in the at-sea whiting mothership fishery during the period, delivering $35.1 million ex-vessel revenue (current dollars) to 7 mothership buyers. Table 6 shows a total of 9 catcher-processor vessels participated in the at-sea whiting fishery during the period, catching $65.7 million ex-vessel revenue equivalent (current dollars). Since at-sea sector catch is not landed in West Coast ports for processing, associating the economic activity of at-sea whiting fisheries with West Coast ports is problematic. However prior investigations have associated a majority of the catcher-processor and mothership vessels with the Seattle-Puget Sound region, and the bulk of the at-sea sector catcher vessels with ports that also have shorebased whiting processing, i.e., Washington Coast, Astoria and Newport.

Table 1. Participation in Total Non-whiting Trawl Fisheries by Catcher Vessels and Shorebased Buyers

Catcher Vessel Counts by Landing State				
State	**2016**	**2017**	**2018**	**Total**
Washington	3	5	13	14
Oregon	43	48	47	56
California	17	21	19	24
Total	**59**	**67**	**69**	**78**

Total Buyer Counts and Ex-vessel Revenue				
	2016	**2017**	**2018**	**Total**
Total Buyer Count	19	25	21	33
Ex-vessel Revenue ($mil.)	26.7	30.6	28.1	85.5

Landed Ex-vessel Revenue by State ($mil.)				
State	**2016**	**2017**	**2018**	**Total**
Washington	0.6	1.4	2.0	4.0
Oregon	19.4	22.3	20.0	61.8
California	6.7	7.0	6.1	19.7
Total	**26.7**	**30.6**	**28.1**	**85.5**

Catcher Vessel Counts by Landing Port Area				
Port Area	**2016**	**2017**	**2018**	**Total**
Puget Sound	3	4	4	6
Washington Coast	-	c	9	9
Astoria-Tillamook	22	24	27	32
Newport	10	13	15	20
Coos Bay	12	9	9	12
Brookings	7	5	5	8
Crescent City	c	3	c	3
Eureka	8	8	10	11
Fort Bragg	5	6	4	7
San Francisco	c	4	3	4
Monterey	c	-	-	c
Morro Bay	c	c	c	c
Total	**59**	**67**	**69**	**78**

Buyer Counts by Landing Port Area				
Port Area	**2016**	**2017**	**2018**	**Total**
Puget Sound	c	c	c	c
Washington Coast	-	c	c	3
Astoria-Tillamook	c	4	4	4
Newport	c	3	c	4
Coos Bay	c	c	c	c
Brookings	c	c	c	c
Crescent City	c	c	c	c
Eureka	4	c	4	5
Fort Bragg	5	5	c	5
San Francisco	c	5	4	6
Monterey	c	-	-	c
Morro Bay	c	c	c	3
Total	**19**	**25**	**21**	**33**

Landed Ex-vessel Revenue by Port Area ($mil.)				
Port Area	**2016**	**2017**	**2018**	**Total**
Puget Sound	c	c	c	c
Washington Coast	-	c	c	0.9
Astoria-Tillamook	c	11.9	10.4	33.5
Newport	c	5.5	c	15.7
Coos Bay	c	c	c	c
Brookings	c	c	c	c
Crescent City	c	c	c	c
Eureka	4.0	c	4.3	12.5
Fort Bragg	1.6	1.9	c	4.6
San Francisco	c	0.4	0.5	1.0
Monterey	c	-	-	c
Morro Bay	c	c	c	0.8
Total	**26.7**	**30.6**	**28.1**	**85.5**

c - Denotes value withheld to preclude disclosure of potentially confidential data.

Source: PacFIN trawl sector landings data.

Table 2. Participation in Bottom Trawl Fisheries by Catcher Vessels and Shorebased Buyers

Catcher Vessel Counts by Landing State				
State	**2016**	**2017**	**2018**	**Total**
Washington	3	5	5	7
Oregon	42	43	38	49
California	17	20	19	23
Total	**58**	**62**	**57**	**68**

Total Buyer Counts and Ex-vessel Revenue				
	2016	**2017**	**2018**	**Total**
Total Buyer Count	19	21	19	30
Ex-vessel Revenue ($mil.)	26.7	25.4	19.1	71.1

Landed Ex-vessel Revenue by State ($mil.)				
State	**2016**	**2017**	**2018**	**Total**
Washington	0.6	1.3	0.9	2.8
Oregon	19.4	17.1	12.6	49.1
California	6.7	6.9	5.6	19.2
Total	**26.7**	**25.4**	**19.1**	**71.1**

CatcherVessel Counts by Landing Port Area				
Port Area	**2016**	**2017**	**2018**	**Total**
Puget Sound	3	4	4	6
Washington Coast	-	c	c	c
Astoria-Tillamook	22	20	17	26
Newport	9	11	9	13
Coos Bay	12	9	9	12
Brookings	7	5	5	8
Crescent City	c	3	c	3
Eureka	8	7	10	10
Fort Bragg	5	6	4	7
San Francisco	c	4	3	4
Monterey	c	-	-	c
Morro Bay	c	c	c	c
Total	**58**	**62**	**57**	**68**

Buyer Counts by Landing Port Area				
Port Area	**2016**	**2017**	**2018**	**Total**
Puget Sound	c	c	c	c
Washington Coast	-	c	c	c
Astoria-Tillamook	c	c	3	3
Newport	c	c	c	3
Coos Bay	c	c	c	c
Brookings	c	c	c	c
Crescent City	c	c	c	c
Eureka	4	c	4	5
Fort Bragg	5	5	c	5
San Francisco	c	4	4	6
Monterey	c	-	-	c
Morro Bay	c	c	c	3
Total	**19**	**21**	**19**	**30**

Landed Ex-vessel Revenue by Port Area ($mil.)				
Port Area	**2016**	**2017**	**2018**	**Total**
Puget Sound	c	c	c	c
Washington Coast	-	c	c	c
Astoria-Tillamook	c	c	5.5	25.0
Newport	c	c	c	12.1
Coos Bay	c	c	c	c
Brookings	c	c	c	c
Crescent City	c	c	c	c
Eureka	4.0	c	3.9	12.0
Fort Bragg	1.6	1.9	c	4.6
San Francisco	c	0.4	0.5	1.0
Monterey	c	-	-	c
Morro Bay	c	c	c	0.8
Total	**26.7**	**25.4**	**19.1**	**71.1**

c - Denotes value withheld to preclude disclosure of potentially confidential data.

Source: PacFIN trawl sector landings data.

Table 3. Participation in Mid-water Rockfish Trawl Fisheries by Catcher Vessels and Shorebased Buyers

Catcher Vessel Counts by Landing State				
State	**2016**	**2017**	**2018**	**Total**
Washington	-	c	10	10
Oregon	-	21	20	28
California	-	c	c	c
Total	**---**	**23**	**26**	**34**

Total Buyer Counts and Ex-vessel Revenue				
	2016	**2017**	**2018**	**Total**
Total Buyer Count	---	11	12	14
Ex-vessel Revenue ($mil.)	-	5.2	9.0	14.2

Landed Ex-vessel Revenue by State ($mil.)				
State	**2016**	**2017**	**2018**	**Total**
Washington	-	c	1.2	1.2
Oregon	-	5.2	7.4	12.6
California	-	c	c	c
Total	**-**	**5.2**	**9.0**	**14.2**

Catcher Vessel Counts by Landing Port Area				
Port Area	**2016**	**2017**	**2018**	**Total**
Puget Sound	-	-	c	c
Washington Coast	-	c	8	8
Astoria-Tillamook	-	13	15	21
Newport	-	6	9	10
Coos Bay	-	3	c	4
Brookings	-	-	c	c
Crescent City	-	-	-	-
Eureka	-	c	c	c
Fort Bragg	-	-	-	-
San Francisco	-	-	-	-
Monterey	-	-	-	-
Morro Bay	-	-	-	-
Total	**---**	**23**	**26**	**34**

Buyer Counts by Landing Port Area				
Port Area	**2016**	**2017**	**2018**	**Total**
Puget Sound	-	-	c	c
Washington Coast	-	c	c	c
Astoria-Tillamook	-	4	4	4
Newport	-	3	c	3
Coos Bay	-	c	c	c
Brookings	-	-	c	c
Crescent City	-	-	-	-
Eureka	-	c	c	c
Fort Bragg	-	-	-	-
San Francisco	-	-	-	-
Monterey	-	-	-	-
Morro Bay	-	-	-	-
Total	**---**	**11**	**12**	**14**

Landed Ex-vessel Revenue by Port Area ($mil.)				
Port Area	**2016**	**2017**	**2018**	**Total**
Puget Sound	-	-	c	c
Washington Coast	-	c	c	c
Astoria-Tillamook	-	3.7	4.9	8.6
Newport	-	1.3	c	3.6
Coos Bay	-	c	c	c
Brookings	-	-	c	c
Crescent City	-	-	-	-
Eureka	-	c	c	c
Fort Bragg	-	-	-	-
San Francisco	-	-	-	-
Monterey	-	-	-	-
Morro Bay	-	-	-	-
Total	**-**	**5.2**	**9.0**	**14.2**

c - Denotes value withheld to preclude disclosure of potentially confidential data.

Source: PacFIN trawl sector landings data.

Table 4. Participation in Shorebased Whiting Trawl Fisheries by Catcher Vessels and Buyers

Catcher Vessel Counts by Landing State					**Shorebased Whiting Buyers**				
State	**2016**	**2017**	**2018**	**Total**		**2016**	**2017**	**2018**	**Total**
Washington	11	10	10	14	Total Buyer Count	8	9	8	11
Oregon	19	20	21	25	Ex-vessel Revenue ($mil.)	13.8	25.0	22.4	61.2
California	-	-	-	-					
Total	**23**	**25**	**26**	**29**					
Landed Ex-vessel Revenue by State ($mil.)									
State	**2016**	**2017**	**2018**	**Total**					
Washington	4.7	7.7	5.2	17.5					
Oregon	9.1	17.3	17.2	43.7					
California	-	-	-	-					
Total	**13.8**	**25.0**	**22.4**	**61.2**					
Catcher Vessel Counts by Landing Port Area									
Port Area	**2016**	**2017**	**2018**	**Total**					
Puget Sound	-	-	-	-					
Washington Coast	11	10	10	14					
Astoria-Tillamook	14	15	13	19					
Newport	12	9	10	17					
Coos Bay	-	-	-	-					
Brookings	-	-	-	-					
Crescent City	-	-	-	-					
Eureka	-	-	-	-					
Fort Bragg	-	-	-	-					
San Francisco	-	-	-	-					
Monterey	-	-	-	-					
Morro Bay	-	-	-	-					
Total	**23**	**25**	**26**	**29**					
Landed Ex-vessel Revenue by Port Area ($mil.)									
Port Area	**2016**	**2017**	**2018**	**Total**					
Puget Sound	-	-	-	-					
Washington Coast	4.7	7.7	5.2	17.5					
Astoria-Tillamook	4.2	10.0	9.6	23.8					
Newport	5.0	7.3	7.6	19.9					
Coos Bay	-	-	-	-					
Brookings	-	-	-	-					
Crescent City	-	-	-	-					
Eureka	-	-	-	-					
Fort Bragg	-	-	-	-					
San Francisco	-	-	-	-					
Monterey	-	-	-	-					
Morro Bay	-	-	-	-					
Total	**13.8**	**25.0**	**22.4**	**61.2**					
c - Denotes value withheld to preclude disclosure of potentially confidential data.									

Source: PacFIN trawl sector landings data.

Table 5. Participation in At-sea Whiting Fisheries by Catcher Vessels and Motherships

	2016	2017	2018	Total
Total Catcher Vessel Count	17	15	17	18
Total Mothership Count	6	5	5	7
Ex-vessel Revenue ($mil.)	12.2	11.3	11.6	35.1

Source: PacFIN trawl sector landings data.

Table 6. Participation in At-sea Whiting Fisheries by Catcher-Processors

	2016	2017	2018	Total
Total Catcher-Processor Count	9	9	9	9
Ex-vessel Revenue Equivalent ($mil.)	20.8	24.7	20.3	65.7

Source: PacFIN trawl sector landings data.

Trawl Landings Tax Estimates

Table 7 shows estimated state landings taxes associated with the shorebased trawl landings in Washington, Oregon and California detailed in the prior section. State landings tax estimates are provided as an indicator of the importance of the revenue flow from shorebased trawl sector fisheries landings to the public sectors in the three states. Trawl sector landings taxes were calculated by applying ex-vessel revenue from landings in Washington and Oregon and whole weights from landings in California by the respective tax rates for each species type in each state. The table shows an estimated average of $1.02 million (current dollars) were collected during 2016-2018; approximately 78 percent in Oregon, 16 percent in Washington and six percent in California.

Table 7. Estimated Average Annual Fish Landings Taxes from Trawl Sector Landings: 2016-2018

	$ millions			
	2016	**2017**	**2018**	**Average**
Washington	0.12	0.20	0.16	0.16
Oregon	0.65	0.91	0.85	0.80
California	0.05	0.06	0.06	0.06
Total	0.82	1.17	1.07	1.02

Source: Estimated from PacFIN trawl sector landings data and average tax rates applied to landed ex-vessel revenue (Washington and Oregon) and whole weight (California) by species type.

Trawl Sector Variable Cost Net Revenue Estimates

Table 8 and Table 9 show total and average variable cost net revenue estimates for vessels participating in shorebased and at-sea trawl sector fisheries, respectively, during 2009-2017. Vessel net revenue estimates are provided as an indicator of the financial resiliency of participants in trawl sector fisheries. Note that many vessels participate in several different trawl sector fisheries during the year and/or from year to year. For example, a catcher vessel delivering whiting to at-sea motherships may also participate in shorebased whiting, non-whiting midwater rockfish, and non-whiting bottom trawl (DTS and/or non-DTS) fisheries. Vessels participating in West coast trawl fisheries may also participate in other fisheries on the West Coast (e.g., fixed-gear sablefish, Dungeness crab, pink shrimp trawl) and/or Alaska, however catch data for participation in fisheries other than the West Coast trawl sector are not included in this document.

Table 8 shows mean variable cost net revenue per vessel operating in shorebased non-whiting trawl fisheries during 2009-2017 of approximately $0.12 million for DTS, $0.08 million for non-whiting midwater trawl, and $0.05 million for non-whiting/non-DTS trawl. Mean variable cost net revenue per vessel operating in the shorebased whiting fishery was approximately $0.31 million. All values are in inflation-adjusted 2017 dollars.

Table 9 shows mean variable cost net revenue per vessel operating in at-sea whiting fisheries during 2009-2017 of approximately $4.7 million for catcher-processors, $2.3 million for whiting motherships, and $0.3 million for catcher vessels delivering to whiting motherships. All values are in inflation-adjusted 2017 dollars.

Table 8. Estimated Variable Cost Net Revenue for Shorebased Trawl Catcher Vessels: 2009-2017 ($2017)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	Annual Average
Sector Total Variable Cost Net Revenue ($ mil)										
DTS trawl with trawl endorsement	12.5	9.2	8.8	6.2	6.8	5.7	6.5	7.0	7.2	**7.8**
Non-whiting midwater trawl	-	-	-	0.1	0.3	0.4	0.8	0.6	1.9	**0.7**
Non-whiting, non-DTS trawl with trawl endorse.	1.4	1.0	2.0	3.1	3.4	3.1	3.3	3.9	3.9	**2.8**
Shoreside Pacific whiting	2.3	4.2	12.5	10.2	14.4	10.4	3.7	5.7	10.6	**8.2**
Trawl only catch share fisheries	18.4	19.2	29.4	22.9	30.3	24.5	16.7	21.6	29.4	**23.6**
Number of Vessels										
DTS trawl with trawl endorsement	108	96	63	58	58	51	51	50	55	**66**
Non-whiting midwater trawl	-	-	-	5	5	9	12	9	14	**9**
Non-whiting, non-DTS trawl with trawl endorse.	89	57	43	45	43	49	36	47	48	**51**
Shoreside Pacific whiting	34	35	26	25	24	25	22	23	25	**27**
Trawl only catch share fisheries	131	122	91	89	90	86	80	80	84	**95**
Mean Variable Cost Net Revenue per Vessel ($ mil.)										
DTS trawl with trawl endorsement	0.12	0.10	0.14	0.11	0.12	0.11	0.13	0.14	0.13	**0.12**
Non-whiting midwater trawl	-	-	-	0.02	0.07	0.05	0.06	0.07	0.14	**0.08**
Non-whiting, non-DTS trawl with trawl endorse.	0.02	0.02	0.05	0.07	0.08	0.06	0.09	0.08	0.08	**0.05**
Shoreside Pacific whiting	0.07	0.12	0.48	0.41	0.60	0.41	0.17	0.25	0.42	**0.31**
Trawl only catch share fisheries	0.14	0.16	0.32	0.26	0.34	0.28	0.21	0.27	0.35	**0.25**

Source: FISHEyE application maintained by NOAA Fisheries NWFSC: (http://dataexplorer.northwestscience.fisheries.noaa.gov/fisheye/PerformanceMetrics/)

Table 9. Estimated Variable Cost Net Revenue for At-sea Whiting Sector Vessels: 2009-2017 ($2017)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	Annual Average
Total Variable Cost Net Revenue ($ mil)										
Motherships	7.8	18.0	13.3	8.0	9.5	14.0	5.1	12.6	14.5	**11.4**
At-sea Catcher Vessels	2.3	4.8	6.2	3.4	5.3	5.0	2.4	4.3	5.8	**4.4**
Catcher-Processors	20.7	37.6	33.8	29.0	41.9	60.8	35.9	48.9	38.6	**38.6**
Number of Participating Vessels										
Motherships	6	6	5	5	5	5	3	6	4	**5**
At-sea Catcher Vessels	19	21	18	16	18	19	14	17	15	**17**
Catcher-Processors	5	6	9	9	9	9	9	9	9	**8**
Mean Variable Cost Net Revenue per Vessel ($ mil.)										
Motherships	1.3	3.0	2.7	1.6	1.9	2.8	1.7	2.1	3.6	**2.3**
At-sea Catcher Vessels	0.1	0.2	0.3	0.2	0.3	0.3	0.2	0.3	0.4	**0.3**
Catcher-Processors	4.1	6.3	3.8	3.2	4.7	6.8	4.0	5.4	4.3	**4.7**

Source: FISHEyE application maintained by NOAA Fisheries NWFSC: (http://dataexplorer.northwestscience.fisheries.noaa.gov/fisheye/PerformanceMetrics/)

Estimated Cost of Selective Flatfish Trawl Gear

Some alternatives under the proposed action would require use of selective flatfish trawl net (SFFT) gear in certain times and/or areas in order to reduce salmon bycatch in bottom trawl fisheries. Cost estimates solicited from regional net makers for sample SFFT gear based on the specifications shown in Figure 1 of Agenda Item F.3.a Supplemental NMFS Report April 2017[2] (i.e., approximately 102.5' 8" footrope with attachments, 132.25' cutback headrope with no center floats, 5 1/2" net with floats and mini bridles and intermediate, 4 1/2" be double 5mm codend with chafer) range from approximately $18,000 to $25,000 per net.

[2] F3a_Sup_NMFS_Rpt_Apr2017BB.pdf "Influence of selective flatfish trawl gear on Chinook bycatch projections in the bottom trawl sector".

Trawl Sector Landings from Catch Taken in Block Area Closure Zones

Table 10 and Table 11 show the regional distribution of landings and ex-vessel revenue of trawl groundfish species caught in areas designated for possible Block Area Closures (BACs) under Groundfish FMP Amendment 28 (Essential Fish Habitat). Under certain alternatives of the proposed salmon bycatch mitigation action, BACs would be eligible for possible temporary closure in order to mitigate salmon bycatch. Table 10 and Table 11 are reproduced from the decision document produced to analyze that action[3].

Since Rockfish Conservation Areas (RCAs) have generally been closed to fishing since 2001, BACs were split into portions lying outside and within trawl RCA boundaries. Landings data from catch taken inside the RCA boundaries (approximated by the area between 100 fm and 150 fm depth contours[4]) were available only for years prior to 2002, so Table 10 shows the distribution of landings from trawl catch taken in those areas during 1997-2001. Table 11 shows landings from trawl catch taken in BAC areas outside RCA boundaries during a more recent period, 2011-2014.

Table 10 shows that port groups with the highest shares of non-whiting trawl groundfish ex-vessel revenue during 1997-2001 landed from catch in BCA areas between 100 fm and 150 fm depth were located on Northern California and Central Oregon coasts: San Francisco (15.6%), Newport (14%), Monterey (10.8%), Coos Bay (10.7%), Fort Bragg (10.1%), Eureka (8.8%) and Crescent City (8.3%). Port groups with the lowest shares of non-whiting trawl groundfish ex-vessel revenue during 1997-2001 landed from catch in BCA areas between 100 fm and 150 fm depth were Astoria (5%), Brookings (5.7%) and Morro Bay (6.5%).

Table 11 shows that port groups with the highest share of non-whiting trawl groundfish ex-vessel revenue during 2011-2014 landed from catch in BCA areas other than between 100 fm and 150 fm depth were concentrated mainly on Northern California and South-Central Oregon coasts: Morro Bay (100%), Crescent City (100%), Fort Bragg (100%), Monterey (100%), San Francisco (100%), Eureka (100%), Brookings (99.9%), Coos Bay (99.8%) and Newport (98.8%). The port group with the lowest share of non-whiting trawl groundfish ex-vessel revenue during 2011-2014 landed from catch in BCA areas other than between 100 fm and 150 fm depth was Astoria (66.3%).

[3] *Changes to Pacific Coast Groundfish Essential Fish Habitat Conservation Areas and Boundaries of the Trawl Gear Rockfish Conservation Area Final Environmental Impact Statement, Magnuson Stevens Act Analysis, Regulatory Impact Review, and Regulatory Flexibility Analysis*, NMFS and PFMC, July 25, 2019.

[4] Beginning in 2002, areas between 100 fm and 150 fm depth off the West Coast formed the core of RCAs which have since generally been closed to bottom contact fishing. RCAs have also been expanded to areas deeper than 150 fm from time to time depending on the stock status and bycatch rates affecting overfished groundfish species.

Table 10. Aggregated Non-whiting Trawl Groundfish Landings and Ex-vessel Revenue by Port Group from Catch in proposed BACs located within what became the Trawl RCA, 1997-2001.

Port Group	Landings (Thousand pounds)	Percent of Port Group Non-whiting Groundfish Landings	Infl-adj. Ex-vessel Revenue ($000, 2015)	Percent of Port Group Non-whiting Groundfish Revenue
Astoria	3,001	5.33%	1,673	5.02%
Newport	4,298	16.69%	2,510	14.05%
Coos Bay	4,279	13.14%	2,305	10.69%
Brookings	730	6.99%	428	5.67%
Oregon Total	**12,309**	**9.84%**	**6,916**	**8.61%**
Crescent City	1,938	10.38%	1,080	8.34%
Eureka	3,880	12.45%	1,912	8.81%
Fort Bragg	2,911	12.25%	1,582	10.05%
San Francisco	2,750	14.98%	1,804	15.63%
Monterey	1,612	11.55%	904	10.83%
Morro Bay	535	5.92%	392	6.50%
California Total	**13,625**	**11.85%**	**7,675**	**10.06%**
Coastwide Total	**25,934**	**8.85%**	**14,592**	**8.05%**

Source: Table 4-27 in: *Changes to Pacific Coast Groundfish Essential Fish Habitat Conservation Areas and Boundaries of the Trawl Gear Rockfish Conservation Area Final Environmental Impact Statement, Magnuson Stevens Act Analysis, Regulatory Impact Review, and Regulatory Flexibility Analysis*, NMFS and PFMC, July 25, 2019.

Table 11. Aggregated Non-whiting Trawl Groundfish Landings and Ex-vessel Revenue by Port Group from Catch in proposed BACs located outside the Trawl RCA, 2011-2014.

Port Group	Landings (Thousand pounds)	Percent of Port Group Non-whiting Groundfish Landings	Infl-adj. Ex-vessel Revenue ($000, 2015)	Percent of Port Group Non-whiting Groundfish Revenue
Astoria	37,396	64.01%	21,752	66.30%
Newport	10,797	98.87%	7,664	98.83%
Coos Bay	15,486	99.80%	10,167	99.81%
Brookings	10,166	99.93%	6,957	99.90%
Oregon Total	**73,845**	**77.71%**	**46,540**	**80.64%**
Crescent City	1,125	100%	720	100%
Eureka	18,232	99.97%	12,983	99.96%
Fort Bragg	11,666	100%	8,963	100%
San Francisco	2,638	100%	1,953	100%
Monterey	3,213	100%	2,406	100%
Morro Bay	2,641	100%	2,200	100%
California Total	**39,515**	**99.99%**	**29,225**	**99.98%**
Coastwide Total	**113,360**	**73.71%**	**75,765**	**76.64%**

Source: Table 4-26 in: *Changes to Pacific Coast Groundfish Essential Fish Habitat Conservation Areas and Boundaries of the Trawl Gear Rockfish Conservation Area Final Environmental Impact Statement, Magnuson Stevens Act Analysis, Regulatory Impact Review, and Regulatory Flexibility Analysis*, NMFS and PFMC, July 25, 2019.