

# Net Revenue Analysis for Electronic Monitoring on the West Coast

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# 1 Introduction

The vessels that participate on the West Coast Groundfish Trawl Catch Share Program are very diverse. Target species in the fishery range from \$0.10 per pound to upwards of \$3.00 per pound, different species are targeted by different vessels, participation ranges from Southern California to Northern Washington, and vessel length ranges from less than 60 feet to more than 100 feet. These characteristics and others result in different profit margins. It therefore follows that changing the cost structure for monitoring fisheries could have varying effects on different sectors of the fisheries.

We have divided the catch share program into five fisheries: At-sea Pacific whiting, Shoreside Pacific whiting, DTS trawl with trawl endorsement, Non-whiting, non-DTS trawl with trawl endorsement, and Groundfish fixed gear with trawl endorsement. The first section provides summaries for all fisheries, then there is a separate fishery specific section. In the fishery specific sections, we first summarize the data by home port, vessel length, and whether the vessel fished in Alaska. In many cases, some of these “breakouts” are not shown in order to prevent displaying confidential information.

After the summaries, we then calculate the variable cost net revenue and total cost net revenue at various levels of daily electronic monitoring costs and annual electronic monitoring costs. For our purposes, we consider the daily monitoring costs to include the cost of maintaining the equipment and reviewing the data collection by the equipment on-board. The annual cost would include either the cost of renting the equipment or purchasing the equipment (amortized over several years), depending on how the final program is implemented. For all statistics shown, observer costs are not included, however, the variable cost net revenue and total cost net revenue with observer coverage can be found by looking at the variable EM costs where the fixed EM costs are zero.

## 1.1 Data

Estimating the net revenue earned by operating a commercial fishing vessel requires data on vessel revenues and costs. Since the same entity that owns a commercial fishing vessel may also be engaged in any number of other fishing related or non-related activities, it is important to define which revenues and costs are included in the measurement of net revenue.

The NWFSC Economic Data Collection (EDC) program focuses on collecting revenue and cost information directly related to the operation of a commercial fishing vessel. There are a variety of costs that are associated with running a catcher vessel that are not requested on the form because it is difficult to determine the share of the cost associated with the vessel. These costs include items that can be used for activities other than fishing, or are too difficult to allocate to a particular vessel in a multi-vessel company. These expenses include office space, pickup trucks, storage of equipment, professional fees,

and marketing. In general, the data collection forms attempt to capture costs that are directly related to vessel maintenance and fishing operations, and not costs that are related to activities or equipment off the vessel. For these reasons, the aggregated measures of costs (variable costs, fixed costs, and total costs) underestimate the true costs of operating a business. Therefore, the measures of net revenue overstate actual net revenue.

Throughout this report, two types of net revenue are calculated.

- **Variable cost net revenue:** Total ex-vessel revenue minus variable costs (see Section 2.2 for the costs included in variable costs).
- **Total cost net revenue:** Total ex-vessel revenue minus variable costs and fixed costs (see Section 2.2 for the costs included in fixed costs).

Variable cost net revenue is useful to examine changes in fishery operations that are not so great as to affect fixed costs. For example, the cost of fishing an additional day, or catching an additional metric ton of fish, is better represented by only considering variable costs. Total cost net revenue is usually a better summary measure of financial gain or loss for an entire year, season, or fishery. For these analyses, we focus on total cost net revenue.

Since most vessels operate in multiple fisheries, much of the available cost data pertain to multiple fisheries. While some of the costs, such as vessel repairs and maintenance, are joint costs, other costs, such as fuel, are not necessarily joint costs but are not reported separately by fishery in the survey. While it is not necessary to disaggregate costs in order to analyze net revenue for all vessel operations, it is necessary in order to analyze net revenue associated with operations in the West Coast groundfish fishery (or any other individual fishery). The methods used for disaggregation can be found in the Economic Data Collection Program Catcher Vessel Report 2009-11.<sup>1</sup>

## 1.2 Data Sources

For the shoreside sector, landings and ex-vessel revenue were obtained from state fish tickets. The at-sea sector deliveries to motherships were obtained from the NORPAC database and the ex-vessel revenues were obtained from the NWFSC Economic Data Collection (EDC) Program. All cost data were obtained from the EDC Program.

The costs were categorized into variable costs and fixed costs. Note that costs related to obtaining a limited entry trawl permit and quota are not included.

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<sup>1</sup>Steiner, E., A. Harley, and T. Lee. 2014. Economic Data Collection Program Catcher Vessel Report 2009-11, Northwest Fisheries Science Center. Available at [www.nwfsc.noaa.gov/research/divisions/fram/economic/economic\\_data.cfm](http://www.nwfsc.noaa.gov/research/divisions/fram/economic/economic_data.cfm).

## Variable Costs

- Bait
- Captain
- Communications
- Crew
- Fishing association dues
- Food
- Freight
- Fuel and lubrication
- Ice
- License fees
- Observer costs
- Offloading
- Supplies
- Travel
- Trucking

## Fixed Costs

- Fishing gear
- Processing equipment
- Vessel and on-board equipment
- Insurance premium payments
- Moorage

### 1.3 Simulating Costs for Electronic Monitoring

In order to analyze the potential effects of the costs of electronic monitoring on the annual profitability of vessels by fishery, we first calculate the total cost net revenue including all fishing revenue and all fishing costs as described above. **Each statistic reported represents the average vessel while participating**

**in that fishery.** The costs and earnings associated with that vessel are be apportioned to each of the fisheries in which it participates.

For each fishery, the average total cost net revenue is first reported in the fishery summary tables, and includes the cost of observers. In the electronic monitoring cost tables, the cost of observer coverage was not included and therefore the first row in each of these tables where EM variable costs per day and EM fixed costs per year shows the total cost net revenue assuming that the vessel paid \$0 for monitoring, whether the monitoring was observer coverage or electronic monitoring. We chose a set of variable costs per day, \$0, \$150, \$300, \$450, \$600, \$750, and annual fixed costs \$0, \$2,000, \$4,000, \$6,000. This assumes that the fixed costs paid are only for the vessels' operation in that fishery.

## 2 West Coast Groundfish Catch Share fisheries

We use data from PacFIN and the Economic Data Collection (EDC) program to calculate 2011 revenue and 2011 variable costs. Due to the patchiness of fixed costs, an average of 2009-2011 was used.

### 2.1 West Coast Groundfish Catch Share fisheries summary

**Table 1:** Number of vessels per fishery in 2011. A vessel will be counted in all fisheries in which they participated.

	Number of vessels
At-sea Pacific whiting	18
Shoreside Pacific whiting	26
DTS trawl with trawl endorsement	64
Non-whiting, non-DTS trawl with trawl endorsement	48
Groundfish fixed gear with trawl endorsement	26

**Table 2:** Number of vessels by home port in 2011.

	Number of vessels
Astoria	14
Brookings	7
Coos Bay	14
Crescent City	3
Eureka	7
Fort Bragg	7
Morro Bay	7
Newport	20
Other Puget Sound	5
San Francisco	7
Seattle	10
South and central WA coast	4
Warrenton	10

**Table 3:** Number of vessels by length class in 2011.

	Number of vessels
Small vessel (< 60 ft)	33
Medium vessel (> 60 ft, ≤ 80 ft)	48
Large vessel (> 80 ft)	33

**Table 4:** who either only fished on the West Coast or also fished in Alaska in 2011.

	Number of vessels
Fished in AK and West Coast	26
Only West Coast	88

**Table 5:** Average revenue, variable costs, fixed costs, variable cost net revenue, and total cost net revenue (\$). Revenues and variable costs are 2011 values, fixed costs are the average of 2009-2011 fixed costs.

	Revenue	Variable costs	Fixed costs	Variable cost net revenue	Total cost net revenue
At-sea Pacific whiting	\$624,685	\$258,240	\$145,557	\$365,198	\$219,641
Shoreside Pacific whiting	\$823,096	\$412,466	\$230,478	\$406,509	\$176,031
DTS trawl with trawl endorsement	\$310,979	\$184,240	\$72,763	\$124,849	\$52,086
Non-whiting, non-DTS trawl with trawl endorsement	\$97,853	\$61,022	\$16,705	\$36,107	\$19,402
Groundfish fixed gear with trawl endorsement	\$288,449	\$141,976	\$64,724	\$144,919	\$80,196

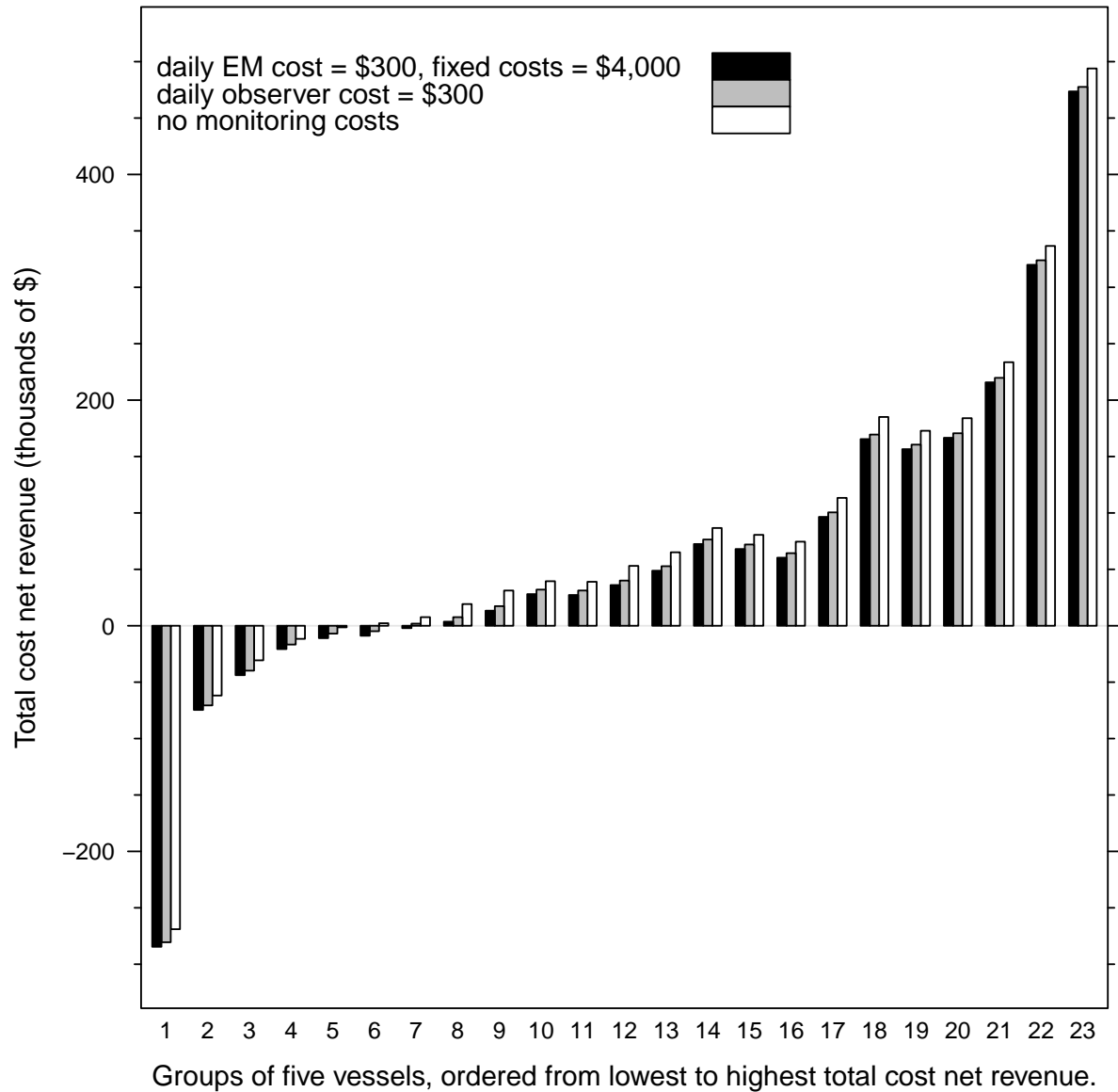
**Table 6:** Average variable cost and variable cost net revenue per day and per pound.

	Variable cost per day	Variable cost per 1,000 lbs	Variable cost net revenue per day	Variable cost net revenue per 1,000 lbs
At-sea Pacific whiting	\$8,530	\$43	\$11,435	\$58
Shoreside Pacific whiting	\$8,331	\$57	\$7,794	\$51
DTS trawl with trawl endorsement	\$4,532	\$442	\$2,850	\$257
Non-whiting, non-DTS trawl with trawl endorsement	\$4,246	\$441	\$2,511	\$233
Groundfish fixed gear with trawl endorsement	\$4,211	\$1,609	\$3,931	\$1,315



## **2.2 West Coast Groundfish Catch Share fisheries EM costs**

The total cost net revenue for the vessels that participated in the catch share program in 2011 ranged from less than -\$200 thousand to more than \$400 thousand (Figure 1). There are many factors that could contribute to a very low total cost net revenue. A purchase of a vessel would result in the appearance of a really large negative net revenue, even when amortized over the life of the our data collection. Another driver behind negative total cost net revenue would be certain years where a vessel spent the majority of its time in the ship yard, incurring large costs, and not earning anything from catching fish. We attempt to display the finest resolution possible with relation to ports, vessel sizes, and fisheries, but due to small number of vessels in each port/fishery, it is not always possible to drill down to the finest level.



**Figure 1:** Total cost net revenue for the 5 groundfish fisheries. The vessels are grouped into groups of 5 to protect confidential data. Total cost net revenue is shown for three levels of monitoring costs, no costs (white), observer costs set to \$300 (grey), and a daily electronic monitoring cost of \$300 and an annual fixed cost of \$4,000 (black).

**Table 7: Total cost net revenue in all groundfish fisheries by length class.** Average total cost net revenue per vessel in the 5 groundfish fisheries by vessel length class. The EM variable costs represent the per day cost to the vessel, the EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Small vessel (< 60 ft)	Medium vessel (> 60 ft, ≤ 80 ft)	Large vessel (> 80 ft)
\$0	\$0	\$76,386	\$87,042	\$255,831
\$0	\$150	\$69,989	\$77,821	\$246,159
\$0	\$300	\$63,593	\$68,600	\$236,486
\$0	\$450	\$57,196	\$59,378	\$226,814
\$0	\$600	\$50,800	\$50,157	\$217,142
\$0	\$750	\$44,403	\$40,936	\$207,469
\$2,000	\$0	\$74,386	\$85,042	\$253,831
\$2,000	\$150	\$67,989	\$75,821	\$244,159
\$2,000	\$300	\$61,593	\$66,600	\$234,486
\$2,000	\$450	\$55,196	\$57,378	\$224,814
\$2,000	\$600	\$48,800	\$48,157	\$215,142
\$2,000	\$750	\$42,403	\$38,936	\$205,469
\$4,000	\$0	\$72,386	\$83,042	\$251,831
\$4,000	\$150	\$65,989	\$73,821	\$242,159
\$4,000	\$300	\$59,593	\$64,600	\$232,486
\$4,000	\$450	\$53,196	\$55,378	\$222,814
\$4,000	\$600	\$46,800	\$46,157	\$213,142
\$4,000	\$750	\$40,403	\$36,936	\$203,469
\$6,000	\$0	\$70,386	\$81,042	\$249,831
\$6,000	\$150	\$63,989	\$71,821	\$240,159
\$6,000	\$300	\$57,593	\$62,600	\$230,486
\$6,000	\$450	\$51,196	\$53,378	\$220,814
\$6,000	\$600	\$44,800	\$44,157	\$211,142
\$6,000	\$750	\$38,403	\$34,936	\$201,469

**Table 8: Total cost net revenue in all groundfish fisheries grouped by whether the vessel fished in Alaska.** Average total cost net revenue per vessel in the 5 groundfish fisheries by whether a vessel fished in Alaska and on the West Coast or only on the West Coast. The EM variable costs represent the per day cost to the vessel, the EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Fished in AK and West Coast	Only West Coast
\$0	\$0	\$314,632	\$79,162
\$0	\$150	\$305,862	\$70,650
\$0	\$300	\$297,091	\$62,138
\$0	\$450	\$288,320	\$53,625
\$0	\$600	\$279,550	\$45,113
\$0	\$750	\$270,779	\$36,601
\$2,000	\$0	\$312,632	\$77,162
\$2,000	\$150	\$303,862	\$68,650
\$2,000	\$300	\$295,091	\$60,138
\$2,000	\$450	\$286,320	\$51,625
\$2,000	\$600	\$277,550	\$43,113
\$2,000	\$750	\$268,779	\$34,601
\$4,000	\$0	\$310,632	\$75,162
\$4,000	\$150	\$301,862	\$66,650
\$4,000	\$300	\$293,091	\$58,138
\$4,000	\$450	\$284,320	\$49,625
\$4,000	\$600	\$275,550	\$41,113
\$4,000	\$750	\$266,779	\$32,601
\$6,000	\$0	\$308,632	\$73,162
\$6,000	\$150	\$299,862	\$64,650
\$6,000	\$300	\$291,091	\$56,138
\$6,000	\$450	\$282,320	\$47,625
\$6,000	\$600	\$273,550	\$39,113
\$6,000	\$750	\$264,779	\$30,601

**Table 9: Total cost net revenue in all groundfish fisheries by home port region.** Average total cost net revenue for all vessels in the 5 groundfish fisheries, the EM variable costs represent the per day cost to the vessel, the EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. Vessels are grouped by home port. Some ports were grouped together to protect confidential data. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Washington	Astoria	Newport	Southern Oregon	Crescent City or Eureka	Fort Bragg	Other California
\$0	\$0	\$164,611	\$122,961	\$256,072	\$95,657	\$46,545	\$31,968	\$73,169
\$0	\$150	\$154,834	\$111,826	\$246,742	\$87,979	\$39,930	\$25,883	\$67,524
\$0	\$300	\$145,057	\$100,691	\$237,413	\$80,300	\$33,315	\$19,797	\$61,879
\$0	\$450	\$135,279	\$89,556	\$228,084	\$72,622	\$26,700	\$13,711	\$56,234
\$0	\$600	\$125,502	\$78,421	\$218,755	\$64,943	\$20,085	\$7,625	\$50,589
\$0	\$750	\$115,725	\$67,286	\$209,425	\$57,265	\$13,470	\$1,540	\$44,944
\$2,000	\$0	\$162,611	\$120,961	\$254,072	\$93,657	\$44,545	\$29,968	\$71,169
\$2,000	\$150	\$152,834	\$109,826	\$244,742	\$85,979	\$37,930	\$23,883	\$65,524
\$2,000	\$300	\$143,057	\$98,691	\$235,413	\$78,300	\$31,315	\$17,797	\$59,879
\$2,000	\$450	\$133,279	\$87,556	\$226,084	\$70,622	\$24,700	\$11,711	\$54,234
\$2,000	\$600	\$123,502	\$76,421	\$216,755	\$62,943	\$18,085	\$5,625	\$48,589
\$2,000	\$750	\$113,725	\$65,286	\$207,425	\$55,265	\$11,470	\$-460	\$42,944
\$4,000	\$0	\$160,611	\$118,961	\$252,072	\$91,657	\$42,545	\$27,968	\$69,169
\$4,000	\$150	\$150,834	\$107,826	\$242,742	\$83,979	\$35,930	\$21,883	\$63,524
\$4,000	\$300	\$141,057	\$96,691	\$233,413	\$76,300	\$29,315	\$15,797	\$57,879
\$4,000	\$450	\$131,279	\$85,556	\$224,084	\$68,622	\$22,700	\$9,711	\$52,234
\$4,000	\$600	\$121,502	\$74,421	\$214,755	\$60,943	\$16,085	\$3,625	\$46,589
\$4,000	\$750	\$111,725	\$63,286	\$205,425	\$53,265	\$9,470	\$-2,460	\$40,944
\$6,000	\$0	\$158,611	\$116,961	\$250,072	\$89,657	\$40,545	\$25,968	\$67,169
\$6,000	\$150	\$148,834	\$105,826	\$240,742	\$81,979	\$33,930	\$19,883	\$61,524
\$6,000	\$300	\$139,057	\$94,691	\$231,413	\$74,300	\$27,315	\$13,797	\$55,879
\$6,000	\$450	\$129,279	\$83,556	\$222,084	\$66,622	\$20,700	\$7,711	\$50,234
\$6,000	\$600	\$119,502	\$72,421	\$212,755	\$58,943	\$14,085	\$1,625	\$44,589
\$6,000	\$750	\$109,725	\$61,286	\$203,425	\$51,265	\$7,470	\$-4,460	\$38,944

### 3 At-sea whiting

In 2011, there were 18 vessels that participated in the At-sea Pacific whiting fishery. Most of those vessels also fished in Alaska and had home ports in either Newport or Seattle, other ports cannot be shown to protect confidential information.

#### 3.1 At-sea whiting summary

**Table 10:** Number of vessels per length category in the At-sea Pacific whiting fishery

	Number of vessels
Small vessel (< 90 ft)	5
Medium vessel (> 90 ft, ≤ 110 ft)	6
Large vessel (> 110 ft)	7

**Table 11:** Number of vessels per port in the At-sea Pacific whiting fishery, some ports are not shown to protect confidential data.

	Number of vessels
Seattle	7
Newport	9

**Table 12:** Average At-sea Pacific whiting vessels by vessel length class.

	Small vessel (< 90 ft)	Medium vessel (> 90 ft, ≤ 110 ft)	Large vessel (> 110 ft)
Revenue (\$)	590,768	680,806	600,807
Variable costs (\$)	261,487	268,887	246,794
Fixed costs (\$)	113,644	108,015	200,532
Variable cost net revenue (\$)	326,778	411,182	353,228
Total cost net revenue (\$)	213,134	303,167	152,696
Variable cost (\$) per day	8,053	7,965	9,354
Variable cost (\$) per 1,000 lbs	47	40	43
Variable cost net revenue (\$) per day	8,344	11,931	13,216
Variable cost net revenue (\$) per 1,000 lbs	50	64	59
Landings (lbs)	6,012,428	6,597,562	5,866,860
Days at sea	33	35	28

**Table 13:** Average At-sea whiting vessels by home port. Some ports are not shown to protect confidential information.

	Newport	Seattle
Revenue (\$)	556,898	635,071
Variable costs (\$)	230,606	250,522
Fixed costs (\$)	116,567	172,270
Variable cost net revenue (\$)	324,691	383,403
Total cost net revenue (\$)	208,124	211,134
Variable cost (\$) per day	8,153	7,316
Variable cost (\$) per 1,000 lbs	43	40
Variable cost net revenue (\$) per day	10,466	10,963
Variable cost net revenue (\$) per 1,000 lbs	57	60
Landings (lbs)	5,522,191	6,310,637
Days at sea	30	35



## 3.2 At-sea whiting EM costs

**Table 14: Total cost net revenue in the At-sea Pacific whiting fishery by vessel length.** Average total cost net revenue for At-sea whiting vessels by vessel length. The EM variable costs represent the per day cost to the vessel, the EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Small vessel (< 90 ft)	Medium vessel (> 90 ft, ≤ 110 ft)	Large vessel (> 110 ft)
\$0	\$0	\$215,637	\$303,905	\$153,481
\$0	\$150	\$210,668	\$298,720	\$149,341
\$0	\$300	\$205,699	\$293,536	\$145,201
\$0	\$450	\$200,730	\$288,352	\$141,061
\$0	\$600	\$195,761	\$283,168	\$136,921
\$0	\$750	\$190,792	\$277,983	\$132,781
\$2,000	\$0	\$213,637	\$301,905	\$151,481
\$2,000	\$150	\$208,668	\$296,720	\$147,341
\$2,000	\$300	\$203,699	\$291,536	\$143,201
\$2,000	\$450	\$198,730	\$286,352	\$139,061
\$2,000	\$600	\$193,761	\$281,168	\$134,921
\$2,000	\$750	\$188,792	\$275,983	\$130,781
\$4,000	\$0	\$211,637	\$299,905	\$149,481
\$4,000	\$150	\$206,668	\$294,720	\$145,341
\$4,000	\$300	\$201,699	\$289,536	\$141,201
\$4,000	\$450	\$196,730	\$284,352	\$137,061
\$4,000	\$600	\$191,761	\$279,168	\$132,921
\$4,000	\$750	\$186,792	\$273,983	\$128,781
\$6,000	\$0	\$209,637	\$297,905	\$147,481
\$6,000	\$150	\$204,668	\$292,720	\$143,341
\$6,000	\$300	\$199,699	\$287,536	\$139,201
\$6,000	\$450	\$194,730	\$282,352	\$135,061
\$6,000	\$600	\$189,761	\$277,168	\$130,921
\$6,000	\$750	\$184,792	\$271,983	\$126,781

**Table 15: Total cost net revenue in the At-sea Pacific whiting fishery by home port region.**

Average total cost net revenue for at-sea whiting vessels by home port. The EM variable costs represent the per day cost to the vessel, the EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. Some ports are not shown to protect confidential data. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Seattle	Newport
\$0	\$0	\$212,280	\$209,726
\$0	\$150	\$207,066	\$205,285
\$0	\$300	\$201,851	\$200,844
\$0	\$450	\$196,637	\$196,404
\$0	\$600	\$191,423	\$191,963
\$0	\$750	\$186,209	\$187,523
\$2,000	\$0	\$210,280	\$207,726
\$2,000	\$150	\$205,066	\$203,285
\$2,000	\$300	\$199,851	\$198,844
\$2,000	\$450	\$194,637	\$194,404
\$2,000	\$600	\$189,423	\$189,963
\$2,000	\$750	\$184,209	\$185,523
\$4,000	\$0	\$208,280	\$205,726
\$4,000	\$150	\$203,066	\$201,285
\$4,000	\$300	\$197,851	\$196,844
\$4,000	\$450	\$192,637	\$192,404
\$4,000	\$600	\$187,423	\$187,963
\$4,000	\$750	\$182,209	\$183,523
\$6,000	\$0	\$206,280	\$203,726
\$6,000	\$150	\$201,066	\$199,285
\$6,000	\$300	\$195,851	\$194,844
\$6,000	\$450	\$190,637	\$190,404
\$6,000	\$600	\$185,423	\$185,963
\$6,000	\$750	\$180,209	\$181,523

## 4 Shoreside Pacific whiting

In 2011, there were 26 vessels that participated in the Shoreside Pacific whiting fishery. About half of those vessels also fished in Alaska and none had home ports in California.

### 4.1 Shoreside Pacific Whiting summary

**Table 16:** Number of vessels per length category in the Shoreside Pacific whiting fishery

	Number of vessels
Small vessel (< 80 ft)	6
Medium vessel (> 80 ft, ≤ 90 ft)	9
Large vessel (> 90 ft)	11

**Table 17:** Number of vessels by state in the Shoreside Pacific whiting fishery.

	Number of vessels
Oregon	20
Washington	6
California	0

**Table 18:** Number of vessels in the Shoreside Pacific whiting fishery who either only fished on the West Coast or also fished in Alaska.

	Number of vessels
Fished in AK and West Coast	15
Only West Coast	11

**Table 19:** Average Shoreside Pacific whiting vessels by vessel length class.

	Small vessel (< 80 ft)	Medium vessel (> 80 ft, ≤ 90 ft)	Large vessel (> 90 ft)
Revenue (\$)	602,289	783,931	975,579
Variable costs (\$)	308,750	428,629	455,814
Fixed costs (\$)	133,571	203,341	305,538
Variable cost net revenue (\$)	291,336	348,528	516,768
Total cost net revenue (\$)	157,765	145,187	211,230
Variable cost (\$) per day	5,396	8,263	9,987
Variable cost (\$) per 1,000 lbs	58	63	51
Variable cost net revenue (\$) per day	4,957	7,034	9,963
Variable cost net revenue (\$) per 1,000 lbs	54	48	51
Landings (lbs)	5,334,104	6,890,747	9,064,569
Days at sea	55	57	47

**Table 20:** Average Shoreside Pacific Whiting vessels by home port.

	Oregon	Washington
Revenue (\$)	821,537	828,293
Variable costs (\$)	411,415	415,970
Fixed costs (\$)	195,219	348,006
Variable cost net revenue (\$)	406,894	405,225
Total cost net revenue (\$)	211,674	57,219
Variable cost (\$) per day	8,089	9,137
Variable cost (\$) per 1,000 lbs	57	54
Variable cost net revenue (\$) per day	7,766	7,887
Variable cost net revenue (\$) per 1,000 lbs	52	45
Landings (lbs)	7,352,264	7,781,053
Days at sea	54	47

## 4.2 Shoreside Pacific whiting EM costs

**Table 21: Total cost net revenue in the Shoreside Pacific whiting fishery by vessel length.**

Average total cost net revenue for Shoreside Pacific whiting vessels by vessel length. The EM variable costs represent the per day cost to the vessel. The EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Small vessel (< 80 ft)	Medium vessel (> 80 ft, ≤ 90 ft)	Large vessel (> 90 ft)
\$0	\$0	\$159,967	\$151,961	\$214,227
\$0	\$150	\$151,643	\$143,420	\$207,116
\$0	\$300	\$143,319	\$134,879	\$200,006
\$0	\$450	\$134,995	\$126,339	\$192,896
\$0	\$600	\$126,671	\$117,798	\$185,785
\$0	\$750	\$118,347	\$109,257	\$178,675
\$2,000	\$0	\$157,967	\$149,961	\$212,227
\$2,000	\$150	\$149,643	\$141,420	\$205,116
\$2,000	\$300	\$141,319	\$132,879	\$198,006
\$2,000	\$450	\$132,995	\$124,339	\$190,896
\$2,000	\$600	\$124,671	\$115,798	\$183,785
\$2,000	\$750	\$116,347	\$107,257	\$176,675
\$4,000	\$0	\$155,967	\$147,961	\$210,227
\$4,000	\$150	\$147,643	\$139,420	\$203,116
\$4,000	\$300	\$139,319	\$130,879	\$196,006
\$4,000	\$450	\$130,995	\$122,339	\$188,896
\$4,000	\$600	\$122,671	\$113,798	\$181,785
\$4,000	\$750	\$114,347	\$105,257	\$174,675
\$6,000	\$0	\$153,967	\$145,961	\$208,227
\$6,000	\$150	\$145,643	\$137,420	\$201,116
\$6,000	\$300	\$137,319	\$128,879	\$194,006
\$6,000	\$450	\$128,995	\$120,339	\$186,896
\$6,000	\$600	\$120,671	\$111,798	\$179,785
\$6,000	\$750	\$112,347	\$103,257	\$172,675



**Table 22: Total cost net revenue in the Shoreside Pacific whiting fishery by state.** Average total cost net revenue for Shoreside Pacific whiting vessels by home port state. The EM variable costs represent the per day cost to the vessel. The EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Washington	Oregon
\$0	\$0	\$64,317	\$214,902
\$0	\$150	\$57,250	\$206,771
\$0	\$300	\$50,183	\$198,640
\$0	\$450	\$43,116	\$190,509
\$0	\$600	\$36,050	\$182,377
\$0	\$750	\$28,983	\$174,246
\$2,000	\$0	\$62,317	\$212,902
\$2,000	\$150	\$55,250	\$204,771
\$2,000	\$300	\$48,183	\$196,640
\$2,000	\$450	\$41,116	\$188,509
\$2,000	\$600	\$34,050	\$180,377
\$2,000	\$750	\$26,983	\$172,246
\$4,000	\$0	\$60,317	\$210,902
\$4,000	\$150	\$53,250	\$202,771
\$4,000	\$300	\$46,183	\$194,640
\$4,000	\$450	\$39,116	\$186,509
\$4,000	\$600	\$32,050	\$178,377
\$4,000	\$750	\$24,983	\$170,246
\$6,000	\$0	\$58,317	\$208,902
\$6,000	\$150	\$51,250	\$200,771
\$6,000	\$300	\$44,183	\$192,640
\$6,000	\$450	\$37,116	\$184,509
\$6,000	\$600	\$30,050	\$176,377
\$6,000	\$750	\$22,983	\$168,246

**Table 23: Total cost net revenue in the Shoreside Pacific whiting fishery by whether the vessel fished in Alaska.** Average total cost net revenue for Shoreside Pacific whiting vessels grouped by whether the vessel fished only on the West Coast or in Alaska and the West Coast. The EM variable costs represent the per day cost to the vessel. The EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Fished in AK and West Coast	Only West Coast
\$0	\$0	\$251,836	\$82,401
\$0	\$150	\$243,830	\$74,680
\$0	\$300	\$235,824	\$66,958
\$0	\$450	\$227,817	\$59,237
\$0	\$600	\$219,811	\$51,516
\$0	\$750	\$211,805	\$43,795
\$2,000	\$0	\$249,836	\$80,401
\$2,000	\$150	\$241,830	\$72,680
\$2,000	\$300	\$233,824	\$64,958
\$2,000	\$450	\$225,817	\$57,237
\$2,000	\$600	\$217,811	\$49,516
\$2,000	\$750	\$209,805	\$41,795
\$4,000	\$0	\$247,836	\$78,401
\$4,000	\$150	\$239,830	\$70,680
\$4,000	\$300	\$231,824	\$62,958
\$4,000	\$450	\$223,817	\$55,237
\$4,000	\$600	\$215,811	\$47,516
\$4,000	\$750	\$207,805	\$39,795
\$6,000	\$0	\$245,836	\$76,401
\$6,000	\$150	\$237,830	\$68,680
\$6,000	\$300	\$229,824	\$60,958
\$6,000	\$450	\$221,817	\$53,237
\$6,000	\$600	\$213,811	\$45,516
\$6,000	\$750	\$205,805	\$37,795

## **5 DTS trawl with trawl endorsement**

In 2011, there were 63 vessels that participated in the DTS trawl with trawl endorsement fishery. Home ports were located throughout the entire West Coast. Whether the vessel fished in Alaska and the West Coast or just on the West Coast cannot be displayed to protect confidential information.

## 5.1 DTS trawl with trawl endorsement summary

**Table 24:** Number of vessels by port/state in the DTS trawl with trawl endorsement fishery.

	Number of vessels
Washington	5
Astoria	15
Newport	8
Southern Oregon	15
Crescent City or Eureka	10
Fort Bragg	6
Other California	4

**Table 25:** Average DTS trawl with trawl endorsement vessels split by whether the vessels fished only on the West Coast or who also fished in Alaska.

	Fished in AK and West Coast	Only West Coast
Revenue (\$)	87,466	318,307
Variable costs (\$)	70,620	187,965
Fixed costs (\$)	50,949	73,478
Variable cost net revenue (\$)	15,047	128,449
Total cost net revenue (\$)	-35,902	54,970
Variable cost (\$) per day	9,219	4,378
Variable cost (\$) per 1,000 lbs	1,037	422
Variable cost net revenue (\$) per day	1,486	2,895
Variable cost net revenue (\$) per 1,000 lbs	170	260
Landings (lbs)	73,170	498,956
Days at sea	8	47

**Table 26:** Average DTS trawl with trawl endorsement vessels by vessel length class.

	Small vessel (< 65 ft)	Medium vessel (> 65 ft, ≤ 75 ft)	Large vessel (> 75 ft)
Revenue (\$)	224,608	310,464	382,799
Variable costs (\$)	131,048	179,682	232,341
Fixed costs (\$)	67,107	84,664	66,570
Variable cost net revenue (\$)	91,827	128,909	148,421
Total cost net revenue (\$)	24,720	44,245	81,851
Variable cost (\$) per day	3,460	3,978	5,922
Variable cost (\$) per 1,000 lbs	393	380	539
Variable cost net revenue (\$) per day	2,432	2,835	3,210
Variable cost net revenue (\$) per 1,000 lbs	267	263	243
Landings (lbs)	341,986	519,892	572,487
Days at sea	40	48	48

**Table 27:** Average DTS trawl with trawl endorsement vessels by home port. Some ports are not shown to protect confidential information.

	Washington	Astoria	Newport	Southern Oregon	Crescent City or Eureka	Fort Bragg	Other California
Revenue (\$)	364,917	391,704	188,297	329,650	288,142	315,185	166,966
Variable costs (\$)	219,796	224,646	107,399	202,319	168,055	200,470	90,264
Fixed costs (\$)	54,678	71,688	67,167	77,248	75,571	104,118	39,727
Variable cost net revenue (\$)	143,611	164,215	79,893	125,480	118,236	113,286	75,189
Total cost net revenue (\$)	88,933	92,528	12,726	48,233	42,666	9,168	35,462
Variable cost (\$) per day	3,340	3,940	4,844	5,097	4,181	6,342	3,659
Variable cost (\$) per 1,000 lbs	583	336	475	444	441	545	433
Variable cost net revenue (\$) per day	1,268	2,798	2,834	3,121	3,254	3,178	2,539
Variable cost net revenue (\$) per 1,000 lbs	96	234	257	251	326	322	295
Landings (lbs)	499,720	733,296	290,953	483,567	423,671	374,996	254,202
Days at sea	69	58	27	44	43	35	36

## 5.2 DTS trawl with trawl endorsement EM costs

**Table 28: Total cost net revenue in the DTS trawl with trawl endorsement fishery by vessel length.** Average total cost net revenue for DTS trawl with trawl endorsement vessels by vessel length. The EM variable costs represent the per day cost to the vessel, the EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. Vessels are grouped in vessel length classes and also by whether the vessel also fished in Alaska. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Small vessel (< 65 ft)	Medium vessel (> 65 ft, ≤ 75 ft)	Large vessel (> 75 ft)
\$0	\$0	\$26,452	\$46,117	\$83,888
\$0	\$150	\$20,486	\$38,956	\$76,635
\$0	\$300	\$14,519	\$31,794	\$69,382
\$0	\$450	\$8,552	\$24,633	\$62,128
\$0	\$600	\$2,586	\$17,472	\$54,875
\$0	\$750	\$-3,381	\$10,310	\$47,622
\$2,000	\$0	\$24,452	\$44,117	\$81,888
\$2,000	\$150	\$18,486	\$36,956	\$74,635
\$2,000	\$300	\$12,519	\$29,794	\$67,382
\$2,000	\$450	\$6,552	\$22,633	\$60,128
\$2,000	\$600	\$586	\$15,472	\$52,875
\$2,000	\$750	\$-5,381	\$8,310	\$45,622
\$4,000	\$0	\$22,452	\$42,117	\$79,888
\$4,000	\$150	\$16,486	\$34,956	\$72,635
\$4,000	\$300	\$10,519	\$27,794	\$65,382
\$4,000	\$450	\$4,552	\$20,633	\$58,128
\$4,000	\$600	\$-1,414	\$13,472	\$50,875
\$4,000	\$750	\$-7,381	\$6,310	\$43,622
\$6,000	\$0	\$20,452	\$40,117	\$77,888
\$6,000	\$150	\$14,486	\$32,956	\$70,635
\$6,000	\$300	\$8,519	\$25,794	\$63,382
\$6,000	\$450	\$2,552	\$18,633	\$56,128
\$6,000	\$600	\$-3,414	\$11,472	\$48,875
\$6,000	\$750	\$-9,381	\$4,310	\$41,622



**Table 29: Total cost net revenue in the DTS trawl with trawl endorsement fishery by whether the vessel fished in Alaska.** Average total cost net revenue for DTS trawl with trawl endorsement vessels grouped by whether the vessel fished in Alaska and the West Coast or only on the West Coast. The EM variable costs represent the per day cost to the vessel, the EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. Vessels are grouped in vessel length classes and also by whether the vessel also fished in Alaska. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Fished in AK and West Coast	Only West Coast
\$0	\$0	\$-34,103	\$56,864
\$0	\$150	\$-35,378	\$49,847
\$0	\$300	\$-36,653	\$42,830
\$0	\$450	\$-37,928	\$35,813
\$0	\$600	\$-39,203	\$28,796
\$0	\$750	\$-40,478	\$21,779
\$2,000	\$0	\$-36,103	\$54,864
\$2,000	\$150	\$-37,378	\$47,847
\$2,000	\$300	\$-38,653	\$40,830
\$2,000	\$450	\$-39,928	\$33,813
\$2,000	\$600	\$-41,203	\$26,796
\$2,000	\$750	\$-42,478	\$19,779
\$4,000	\$0	\$-38,103	\$52,864
\$4,000	\$150	\$-39,378	\$45,847
\$4,000	\$300	\$-40,653	\$38,830
\$4,000	\$450	\$-41,928	\$31,813
\$4,000	\$600	\$-43,203	\$24,796
\$4,000	\$750	\$-44,478	\$17,779
\$6,000	\$0	\$-40,103	\$50,864
\$6,000	\$150	\$-41,378	\$43,847
\$6,000	\$300	\$-42,653	\$36,830
\$6,000	\$450	\$-43,928	\$29,813
\$6,000	\$600	\$-45,203	\$22,796
\$6,000	\$750	\$-46,478	\$15,779

**Table 30: Total cost net revenue in the DTS trawl with trawl endorsement fishery by home port region.** Average total cost net revenue for DTS trawl with trawl endorsement vessels, the EM variable costs represent the per day cost to the vessel, the EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. Vessels are grouped by home port. Some ports were grouped together to protect confidential data. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Washington Astoria	Newport	Southern Oregon	Crescent City or Eureka	Fort Bragg	Other California	
\$0	\$0	\$90,443	\$95,370	\$13,731	\$50,082	\$44,516	\$10,596	\$36,975
\$0	\$150	\$80,135	\$86,710	\$9,726	\$43,470	\$38,079	\$5,287	\$31,551
\$0	\$300	\$69,827	\$78,050	\$5,721	\$36,858	\$31,642	\$-23	\$26,127
\$0	\$450	\$59,519	\$69,390	\$1,716	\$30,246	\$25,205	\$-5,332	\$20,703
\$0	\$600	\$49,212	\$60,730	\$-2,289	\$23,634	\$18,768	\$-10,642	\$15,279
\$0	\$750	\$38,904	\$52,070	\$-6,295	\$17,022	\$12,331	\$-15,951	\$9,855
\$2,000	\$0	\$88,443	\$93,370	\$11,731	\$48,082	\$42,516	\$8,596	\$34,975
\$2,000	\$150	\$78,135	\$84,710	\$7,726	\$41,470	\$36,079	\$3,287	\$29,551
\$2,000	\$300	\$67,827	\$76,050	\$3,721	\$34,858	\$29,642	\$-2,023	\$24,127
\$2,000	\$450	\$57,519	\$67,390	\$-284	\$28,246	\$23,205	\$-7,332	\$18,703
\$2,000	\$600	\$47,212	\$58,730	\$-4,289	\$21,634	\$16,768	\$-12,642	\$13,279
\$2,000	\$750	\$36,904	\$50,070	\$-8,295	\$15,022	\$10,331	\$-17,951	\$7,855
\$4,000	\$0	\$86,443	\$91,370	\$9,731	\$46,082	\$40,516	\$6,596	\$32,975
\$4,000	\$150	\$76,135	\$82,710	\$5,726	\$39,470	\$34,079	\$1,287	\$27,551
\$4,000	\$300	\$65,827	\$74,050	\$1,721	\$32,858	\$27,642	\$-4,023	\$22,127
\$4,000	\$450	\$55,519	\$65,390	\$-2,284	\$26,246	\$21,205	\$-9,332	\$16,703
\$4,000	\$600	\$45,212	\$56,730	\$-6,289	\$19,634	\$14,768	\$-14,642	\$11,279
\$4,000	\$750	\$34,904	\$48,070	\$-10,295	\$13,022	\$8,331	\$-19,951	\$5,855
\$6,000	\$0	\$84,443	\$89,370	\$7,731	\$44,082	\$38,516	\$4,596	\$30,975
\$6,000	\$150	\$74,135	\$80,710	\$3,726	\$37,470	\$32,079	\$-713	\$25,551
\$6,000	\$300	\$63,827	\$72,050	\$-279	\$30,858	\$25,642	\$-6,023	\$20,127
\$6,000	\$450	\$53,519	\$63,390	\$-4,284	\$24,246	\$19,205	\$-11,332	\$14,703
\$6,000	\$600	\$43,212	\$54,730	\$-8,289	\$17,634	\$12,768	\$-16,642	\$9,279
\$6,000	\$750	\$32,904	\$46,070	\$-12,295	\$11,022	\$6,331	\$-21,951	\$3,855

## 6 Non-whiting, non-DTS trawl with trawl endorsement

In 2011, there were 48 vessels that participated in the Non-whiting, non-DTS trawl with trawl endorsement fishery. Of those, only four fished in Alaska. Home ports were located throughout the entire West Coast.

### 6.1 Non-whiting, non-DTS trawl with trawl endorsement summary

**Table 31:** Number of vessels per length category in the Non-whiting, non-DTS trawl with trawl endorsement and whether the vessels also fished in Alaska

	Fished in AK and West Coast	Only West Coast
Small vessel (< 65 ft)	0	17
Medium vessel (> 65 ft, ≤ 75 ft)	0	11
Large vessel (> 75 ft)	4	16

**Table 32:** Number of vessels by port/state in the Non-whiting, non-DTS trawl with trawl endorsement fishery.

	Number of vessels
Washington	5
Astoria	14
Newport	8
Southern Oregon	9
Crescent City or Eureka	4
Fort Bragg	4
Other California	4

**Table 33:** Average Non-whiting, non-DTS trawl with trawl endorsement vessels by vessel length class.

	Small vessel ( < 65 ft)	Medium vessel (> 65 ft, ≤ 75 ft)	Large vessel ( > 75 ft)
Revenue (\$)	89,098	91,115	109,000
Variable costs (\$)	50,931	52,247	74,426
Fixed costs (\$)	17,004	19,358	14,992
Variable cost net revenue (\$)	37,256	38,180	33,990
Total cost net revenue (\$)	20,252	18,822	18,998
Variable cost (\$) per day	3,240	3,868	5,310
Variable cost (\$) per 1,000 lbs	439	418	456
Variable cost net revenue (\$) per day	2,745	2,838	2,131
Variable cost net revenue (\$) per 1,000 lbs	304	283	144
Landings (lbs)	140,912	154,682	183,170
Days at sea	20	16	16

**Table 34:** Non-whiting, non-DTS trawl with trawl endorsement vessels by home port. Some ports are not shown to protect confidential information.

	Washington	Astoria	Newport	Southern Oregon	Crescent City or Eureka	Fort Bragg	Other California
Revenue (\$)	161,739	158,892	60,266	42,093	23,843	118,038	58,815
Variable costs (\$)	112,257	93,917	34,927	24,608	15,670	86,269	36,075
Fixed costs (\$)	24,274	23,530	12,108	10,104	3,101	17,645	20,074
Variable cost net revenue (\$)	48,673	63,801	24,917	17,001	8,044	31,260	21,749
Total cost net revenue (\$)	24,400	40,272	12,809	6,897	4,943	13,615	1,675
Variable cost (\$) per day	4,463	3,650	3,468	4,651	5,280	5,938	3,983
Variable cost (\$) per 1,000 lbs	428	328	421	443	590	465	720
Variable cost net revenue (\$) per day	1,522	2,465	1,211	3,440	3,219	2,378	3,836
Variable cost net revenue (\$) per 1,000 lbs	189	218	90	312	337	231	341
Landings (lbs)	259,225	290,001	114,566	53,005	26,412	173,644	52,619
Days at sea	29	25	12	11	3	13	19

## 6.2 Non-whiting, non-DTS trawl with trawl endorsement EM costs

**Table 35: Total cost net revenue in the Non-whiting, non-DTS trawl with trawl endorsement fishery by vessel length.** Average total cost net revenue for Non-whiting, non-DTS trawl with trawl endorsement vessels by vessel length. The EM variable costs represent the per day cost to the vessel, the EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. Vessels are grouped in vessel length classes and also by whether the vessel also fished in Alaska. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Small vessel (< 65 ft)	Medium vessel (> 65 ft, ≤ 75 ft)	Large vessel (> 75 ft)
\$0	\$0	\$21,163	\$19,510	\$19,582
\$0	\$150	\$18,156	\$17,182	\$17,224
\$0	\$300	\$15,148	\$14,855	\$14,865
\$0	\$450	\$12,141	\$12,528	\$12,507
\$0	\$600	\$9,133	\$10,200	\$10,149
\$0	\$750	\$6,125	\$7,873	\$7,791
\$2,000	\$0	\$19,163	\$17,510	\$17,582
\$2,000	\$150	\$16,156	\$15,182	\$15,224
\$2,000	\$300	\$13,148	\$12,855	\$12,865
\$2,000	\$450	\$10,141	\$10,528	\$10,507
\$2,000	\$600	\$7,133	\$8,200	\$8,149
\$2,000	\$750	\$4,125	\$5,873	\$5,791
\$4,000	\$0	\$17,163	\$15,510	\$15,582
\$4,000	\$150	\$14,156	\$13,182	\$13,224
\$4,000	\$300	\$11,148	\$10,855	\$10,865
\$4,000	\$450	\$8,141	\$8,528	\$8,507
\$4,000	\$600	\$5,133	\$6,200	\$6,149
\$4,000	\$750	\$2,125	\$3,873	\$3,791
\$6,000	\$0	\$15,163	\$13,510	\$13,582
\$6,000	\$150	\$12,156	\$11,182	\$11,224
\$6,000	\$300	\$9,148	\$8,855	\$8,865
\$6,000	\$450	\$6,141	\$6,528	\$6,507
\$6,000	\$600	\$3,133	\$4,200	\$4,149
\$6,000	\$750	\$125	\$1,873	\$1,791

**Table 36: Total cost net revenue in the Non-whiting, non-DTS trawl with trawl endorsement fishery by whether the vessel fished in Alaska.** Average total cost net revenue for Non-whiting, non-DTS trawl with trawl endorsement vessels grouped by whether the vessel fished in Alaska and the West Coast or just the West Coast. The EM variable costs represent the per day cost to the vessel, the EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. Vessels are grouped in vessel length classes and also by whether the vessel also fished in Alaska. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Fished in AK and West Coast	Only West Coast
\$0	\$0	\$-8,099	\$22,691
\$0	\$150	\$-8,993	\$19,957
\$0	\$300	\$-9,887	\$17,222
\$0	\$450	\$-10,782	\$14,488
\$0	\$600	\$-11,676	\$11,753
\$0	\$750	\$-12,570	\$9,019
\$2,000	\$0	\$-10,099	\$20,691
\$2,000	\$150	\$-10,993	\$17,957
\$2,000	\$300	\$-11,887	\$15,222
\$2,000	\$450	\$-12,782	\$12,488
\$2,000	\$600	\$-13,676	\$9,753
\$2,000	\$750	\$-14,570	\$7,019
\$4,000	\$0	\$-12,099	\$18,691
\$4,000	\$150	\$-12,993	\$15,957
\$4,000	\$300	\$-13,887	\$13,222
\$4,000	\$450	\$-14,782	\$10,488
\$4,000	\$600	\$-15,676	\$7,753
\$4,000	\$750	\$-16,570	\$5,019
\$6,000	\$0	\$-14,099	\$16,691
\$6,000	\$150	\$-14,993	\$13,957
\$6,000	\$300	\$-15,887	\$11,222
\$6,000	\$450	\$-16,782	\$8,488
\$6,000	\$600	\$-17,676	\$5,753
\$6,000	\$750	\$-18,570	\$3,019



**Table 37: Total cost net revenue in the Non-whiting, non-DTS trawl with trawl endorsement fishery by home port region.** Average total cost net revenue for Non-whiting, non-DTS trawl with trawl endorsement by home port. The EM variable costs represent the per day cost to the vessel, the EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. Some ports were grouped together to protect confidential data. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Washington Astoria	Newport	Southern Oregon	Crescent City or Eureka	Fort Bragg	Other California	
\$0	\$0	\$25,208	\$41,446	\$13,231	\$7,381	\$5,072	\$14,125	\$2,667
\$0	\$150	\$20,786	\$37,717	\$11,472	\$5,803	\$4,627	\$12,151	\$-242
\$0	\$300	\$16,363	\$33,989	\$9,713	\$4,225	\$4,183	\$10,178	\$-3,150
\$0	\$450	\$11,941	\$30,260	\$7,954	\$2,647	\$3,738	\$8,204	\$-6,058
\$0	\$600	\$7,519	\$26,532	\$6,195	\$1,069	\$3,294	\$6,231	\$-8,966
\$0	\$750	\$3,097	\$22,803	\$4,436	\$-509	\$2,849	\$4,257	\$-11,874
\$2,000	\$0	\$23,208	\$39,446	\$11,231	\$5,381	\$3,072	\$12,125	\$667
\$2,000	\$150	\$18,786	\$35,717	\$9,472	\$3,803	\$2,627	\$10,151	\$-2,242
\$2,000	\$300	\$14,363	\$31,989	\$7,713	\$2,225	\$2,183	\$8,178	\$-5,150
\$2,000	\$450	\$9,941	\$28,260	\$5,954	\$647	\$1,738	\$6,204	\$-8,058
\$2,000	\$600	\$5,519	\$24,532	\$4,195	\$-931	\$1,294	\$4,231	\$-10,966
\$2,000	\$750	\$1,097	\$20,803	\$2,436	\$-2,509	\$849	\$2,257	\$-13,874
\$4,000	\$0	\$21,208	\$37,446	\$9,231	\$3,381	\$1,072	\$10,125	\$-1,333
\$4,000	\$150	\$16,786	\$33,717	\$7,472	\$1,803	\$627	\$8,151	\$-4,242
\$4,000	\$300	\$12,363	\$29,989	\$5,713	\$225	\$183	\$6,178	\$-7,150
\$4,000	\$450	\$7,941	\$26,260	\$3,954	\$-1,353	\$-262	\$4,204	\$-10,058
\$4,000	\$600	\$3,519	\$22,532	\$2,195	\$-2,931	\$-706	\$2,231	\$-12,966
\$4,000	\$750	\$-903	\$18,803	\$436	\$-4,509	\$-1,151	\$257	\$-15,874
\$6,000	\$0	\$19,208	\$35,446	\$7,231	\$1,381	\$-928	\$8,125	\$-3,333
\$6,000	\$150	\$14,786	\$31,717	\$5,472	\$-197	\$-1,373	\$6,151	\$-6,242
\$6,000	\$300	\$10,363	\$27,989	\$3,713	\$-1,775	\$-1,817	\$4,178	\$-9,150
\$6,000	\$450	\$5,941	\$24,260	\$1,954	\$-3,353	\$-2,262	\$2,204	\$-12,058
\$6,000	\$600	\$1,519	\$20,532	\$195	\$-4,931	\$-2,706	\$231	\$-14,966
\$6,000	\$750	\$-2,903	\$16,803	\$-1,564	\$-6,509	\$-3,151	\$-1,743	\$-17,874

## **7 Groundfish fixed gear with trawl endorsement**

In 2011, there were 24 vessels that participated in the Groundfish fixed gear with trawl endorsement fishery. Of those, only four fished in Alaska. Home ports were located throughout the entire West Coast. Using 2011 revenues, costs, and days at sea, the average vessel fishing in Northern Oregon had negative net revenue, all other vessels had positive total cost net revenue, ranging, on average, from \$33 thousand to \$75 thousand. Taking into account the potential costs of electronic monitoring, small and medium sized vessels ( $\leq 60$  feet) maintained positive total cost net revenue, while, large vessels when electronic monitoring costs reached \$800/day and annual fixed costs were at least \$15 thousand. Aside from Northern Oregon vessels which had negative total cost net revenue before electronic monitoring costs were taken into account, Southern California was the only other group by vessels that experienced negative total cost net revenue once electronic monitoring costs were taken into account.

## 7.1 Groundfish fixed gear with trawl endorsement summary

**Table 38:** Number of vessels per length category in the Groundfish fixed gear with trawl endorsement.

	Number of vessels
Small vessel (< 50 ft)	8
Medium vessel (> 50 ft, ≤ 60 ft)	8
Large vessel (> 60 ft)	8

**Table 39:** Number of Groundfish fixed gear with trawl endorsement vessels that fished in Alaska or only on the West Coast.

	Number of vessels
Fished in AK and West Coast	4
Only West Coast	20

**Table 40:** Number of vessels by port/state in the Groundfish fixed gear with trawl endorsement fishery.

	Number of vessels
Washington	5
Northern Oregon	5
Southern Oregon	6
Northern California	4
Southern California	4

**Table 41:** Average Groundfish fixed gear with trawl endorsement vessels by vessel length class.

	Small vessel (< 50 ft)	Medium vessel (> 50 ft, ≤ 60 ft)	Large vessel (> 60 ft)
Revenue (\$)	163,820	360,959	340,568
Variable costs (\$)	79,952	165,980	179,996
Fixed costs (\$)	28,066	46,837	119,268
Variable cost net revenue (\$)	82,660	192,421	159,678
Total cost net revenue (\$)	54,594	145,584	40,410
Variable cost (\$) per day	2,379	5,292	4,963
Variable cost (\$) per 1,000 lbs	1,647	1,592	1,589
Variable cost net revenue (\$) per day	2,029	6,012	3,752
Variable cost net revenue (\$) per 1,000 lbs	1,178	1,577	1,189
Landings (lbs)	62,029	117,743	110,257
Days at sea	33	30	33

**Table 42:** Groundfish fixed gear with trawl endorsement vessels by home port.

	Washington	Northern Oregon	Southern Oregon	Northern California	Southern California
Revenue (\$)	293,922	353,793	364,083	182,748	192,178
Variable costs (\$)	121,892	223,805	154,406	67,055	121,071
Fixed costs (\$)	69,453	151,138	34,572	23,813	36,930
Variable cost net revenue (\$)	170,168	128,408	208,908	113,213	69,721
Total cost net revenue (\$)	100,715	-22,730	174,336	89,400	32,791
Variable cost (\$) per day	4,064	4,304	5,542	3,155	3,339
Variable cost (\$) per 1,000 lbs	1,443	1,804	1,734	1,221	1,774
Variable cost net revenue (\$) per day	4,319	2,457	6,933	3,129	1,587
Variable cost net revenue (\$) per 1,000 lbs	1,562	981	1,899	1,055	805
Landings (lbs)	82,170	153,163	94,455	65,107	79,103
Days at sea	31	39	27	25	40

## 7.2 Groundfish fixed gear with trawl endorsement EM costs

**Table 43: Total cost net revenue in the Groundfish fixed gear with trawl endorsement fishery by vessel length.** Average total cost net revenue for Groundfish fixed gear with trawl endorsement vessels by vessel length. The EM variable costs represent the per day cost to the vessel, the EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. Vessels are grouped in vessel length classes and also by whether the vessel also fished in Alaska. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Small vessel (< 50 ft)	Medium vessel (> 50 ft, ≤ 60 ft)	Large vessel (> 60 ft)
\$0	\$0	\$55,803	\$148,142	\$41,304
\$0	\$150	\$50,789	\$143,616	\$36,384
\$0	\$300	\$45,775	\$139,090	\$31,465
\$0	\$450	\$40,762	\$134,564	\$26,545
\$0	\$600	\$35,748	\$130,038	\$21,626
\$0	\$750	\$30,735	\$125,512	\$16,706
\$2,000	\$0	\$53,803	\$146,142	\$39,304
\$2,000	\$150	\$48,789	\$141,616	\$34,384
\$2,000	\$300	\$43,775	\$137,090	\$29,465
\$2,000	\$450	\$38,762	\$132,564	\$24,545
\$2,000	\$600	\$33,748	\$128,038	\$19,626
\$2,000	\$750	\$28,735	\$123,512	\$14,706
\$4,000	\$0	\$51,803	\$144,142	\$37,304
\$4,000	\$150	\$46,789	\$139,616	\$32,384
\$4,000	\$300	\$41,775	\$135,090	\$27,465
\$4,000	\$450	\$36,762	\$130,564	\$22,545
\$4,000	\$600	\$31,748	\$126,038	\$17,626
\$4,000	\$750	\$26,735	\$121,512	\$12,706
\$6,000	\$0	\$49,803	\$142,142	\$35,304
\$6,000	\$150	\$44,789	\$137,616	\$30,384
\$6,000	\$300	\$39,775	\$133,090	\$25,465
\$6,000	\$450	\$34,762	\$128,564	\$20,545
\$6,000	\$600	\$29,748	\$124,038	\$15,626
\$6,000	\$750	\$24,735	\$119,512	\$10,706

**Table 44: Total cost net revenue in the Groundfish fixed gear with trawl endorsement fishery by whether the vessel fished in Alaska.** Average total cost net revenue for Groundfish fixed gear with trawl endorsement vessels group by whether the fished in Alaska and on the West Coast or the West Coast only. The EM variable costs represent the per day cost to the vessel, the EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. Vessels are grouped in vessel length classes and also by whether the vessel also fished in Alaska. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Fished in AK and West Coast	Only West Coast
\$0	\$0	\$186,083	\$60,883
\$0	\$150	\$179,732	\$56,369
\$0	\$300	\$173,381	\$51,856
\$0	\$450	\$167,029	\$47,343
\$0	\$600	\$160,678	\$42,829
\$0	\$750	\$154,327	\$38,316
\$2,000	\$0	\$184,083	\$58,883
\$2,000	\$150	\$177,732	\$54,369
\$2,000	\$300	\$171,381	\$49,856
\$2,000	\$450	\$165,029	\$45,343
\$2,000	\$600	\$158,678	\$40,829
\$2,000	\$750	\$152,327	\$36,316
\$4,000	\$0	\$182,083	\$56,883
\$4,000	\$150	\$175,732	\$52,369
\$4,000	\$300	\$169,381	\$47,856
\$4,000	\$450	\$163,029	\$43,343
\$4,000	\$600	\$156,678	\$38,829
\$4,000	\$750	\$150,327	\$34,316
\$6,000	\$0	\$180,083	\$54,883
\$6,000	\$150	\$173,732	\$50,369
\$6,000	\$300	\$167,381	\$45,856
\$6,000	\$450	\$161,029	\$41,343
\$6,000	\$600	\$154,678	\$36,829
\$6,000	\$750	\$148,327	\$32,316



**Table 45: Total cost net revenue in the Groundfish fixed gear with trawl endorsement fishery by home port region.** Average total cost net revenue for Groundfish fixed gear with trawl endorsement, the EM variable costs represent the per day cost to the vessel, the EM fixed costs represent an annual cost for leasing or purchasing the EM equipment. Vessels are grouped by home port. Some ports were grouped together to protect confidential data. The costs related to observer coverage were not included, however, the daily EM variable costs can be used as a proxy for observer coverage.

EM fixed costs per year	EM variable costs per day	Washington	Northern Oregon	Southern Oregon	Northern California	Southern California
\$0	\$0	\$102,577	\$-21,150	\$175,104	\$91,880	\$34,177
\$0	\$150	\$97,889	\$-26,937	\$171,031	\$88,148	\$28,196
\$0	\$300	\$93,201	\$-32,724	\$166,957	\$84,415	\$22,214
\$0	\$450	\$88,514	\$-38,512	\$162,884	\$80,683	\$16,232
\$0	\$600	\$83,826	\$-44,299	\$158,810	\$76,950	\$10,251
\$0	\$750	\$79,138	\$-50,086	\$154,737	\$73,217	\$4,269
\$2,000	\$0	\$100,577	\$-23,150	\$173,104	\$89,880	\$32,177
\$2,000	\$150	\$95,889	\$-28,937	\$169,031	\$86,148	\$26,196
\$2,000	\$300	\$91,201	\$-34,724	\$164,957	\$82,415	\$20,214
\$2,000	\$450	\$86,514	\$-40,512	\$160,884	\$78,683	\$14,232
\$2,000	\$600	\$81,826	\$-46,299	\$156,810	\$74,950	\$8,251
\$2,000	\$750	\$77,138	\$-52,086	\$152,737	\$71,217	\$2,269
\$4,000	\$0	\$98,577	\$-25,150	\$171,104	\$87,880	\$30,177
\$4,000	\$150	\$93,889	\$-30,937	\$167,031	\$84,148	\$24,196
\$4,000	\$300	\$89,201	\$-36,724	\$162,957	\$80,415	\$18,214
\$4,000	\$450	\$84,514	\$-42,512	\$158,884	\$76,683	\$12,232
\$4,000	\$600	\$79,826	\$-48,299	\$154,810	\$72,950	\$6,251
\$4,000	\$750	\$75,138	\$-54,086	\$150,737	\$69,217	\$269
\$6,000	\$0	\$96,577	\$-27,150	\$169,104	\$85,880	\$28,177
\$6,000	\$150	\$91,889	\$-32,937	\$165,031	\$82,148	\$22,196
\$6,000	\$300	\$87,201	\$-38,724	\$160,957	\$78,415	\$16,214
\$6,000	\$450	\$82,514	\$-44,512	\$156,884	\$74,683	\$10,232
\$6,000	\$600	\$77,826	\$-50,299	\$152,810	\$70,950	\$4,251
\$6,000	\$750	\$73,138	\$-56,086	\$148,737	\$67,217	\$-1,731