Decreasing Bycatch

Key catch shares components of individual accountability, flexibility for fishers to manage quota, and real-time data all promote minimizing discard and bycatch, and we see them working in the West Coast Groundfish Catch Shares Program.

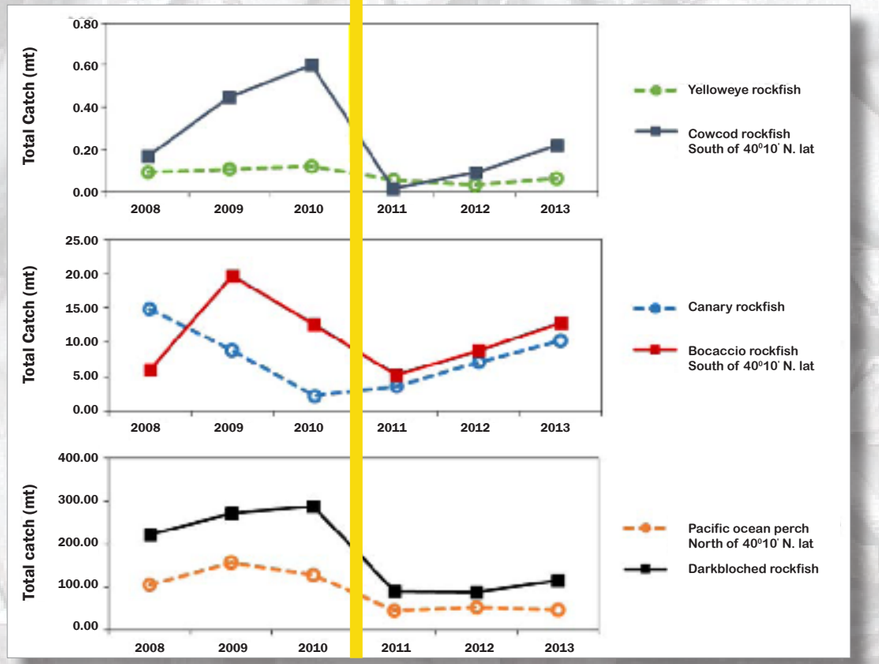
Bycatch and discard have dropped substantially. Total catch of rebuilding stocks was much lower (50 percent) in the first three years of catch shares than the previous three years under trip limits (figure at right), and less than 50 percent of the sector allocations.

Discard on non-whiting trips was only five percent in the first three years of catch shares, a three-fold decrease (from 16 percent). For some species the drop has been dramatic; darkblotched rockfish discard dropped more than 20 fold from 51 to just two percent, bocaccio rockfish (another rebuilding stock) discard dropped from 80 to less than one percent.

Petrale sole (a very productive flatfish stock) has been managed as a target species under a rebuilding plan, and has been highly attained throughout the rebuilding period.

TOTAL ANNUAL CATCH OF REBUILDING SPECIES BEFORE & AFTER CATCH SHARES

2009 - 2010: Before Catch Shares | **2011 - 2013: After Catch Shares**



Above: Total annual catch of rebuilding species from 2008 through 2010 in the limited entry trawl and shoreside whiting fisheries, as well as 2011 through 2013 in the Shorebased Catch Shares Program, in metric tons. The yellow vertical line separates years before and after the Catch Shares Program was established. Source = WCGOP Groundfish Mortality Report (2008-2010) and the Shorebased IFQ Vessel Accounts System (2011-2013).

Rebuilding Overfished Species

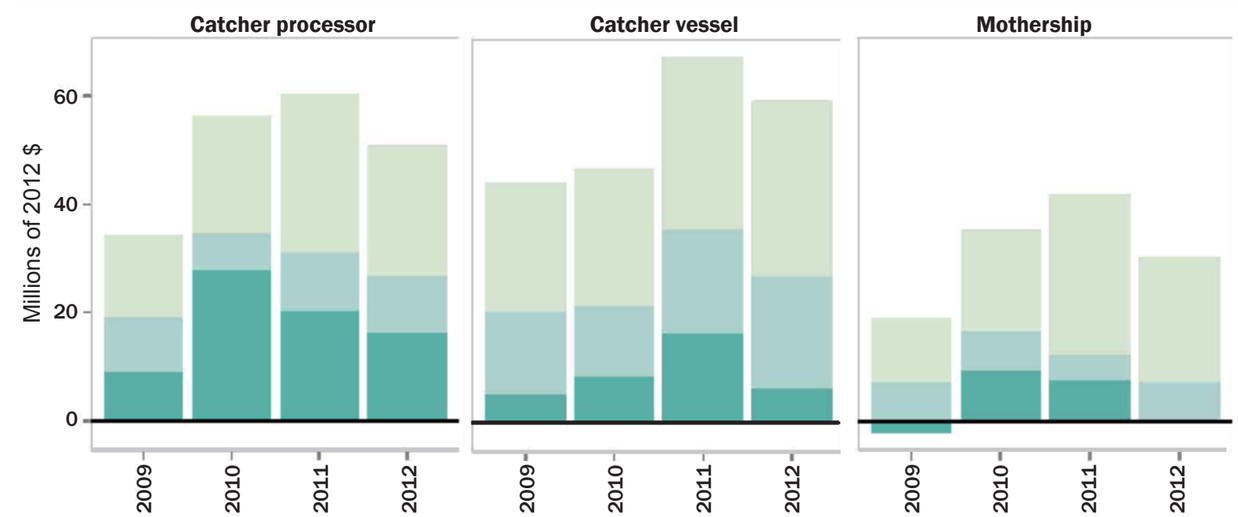
The biological benefits of the shift to catch shares have become increasingly evident over the first three years of the program. The catch of overfished species dropped starkly in the first two years of the program as fishermen exercised caution to avoid hitting very limited quotas for those species; hitting one would require them to stop fishing until they obtained more quota pounds through purchase or trade. In 2014, that trend began to change as expanding populations of some of the species allowed for higher quotas and vessels began to catch more of them.

Fishermen are exercising their flexibility under catch shares to increasingly target some underutilized species. For instance, more fishermen are turning to quota trading and risk pools to provide an additional margin in case they catch more than their quotas. Before catch shares, large proportions of the catch of many non-target species were discarded as bycatch; now, whether in a fishing net or in the ocean, they are treated as the valuable resource they are. That is a sign of success for both fish and fishermen. Vessels are retaining 95 percent of their catch of non-whiting species. NOAA Fisheries is discussing options with the fleet to make more complete use of quotas.

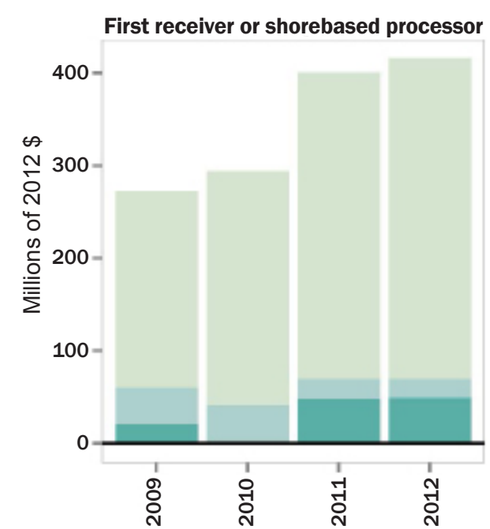
Economic Data Collection Program

When the West Coast Groundfish Trawl Catch Share Program was put in place in 2011, the Pacific Fishery Management Council required the collection of economic data to monitor the changes and distribution of economic benefits. Using data collected from industry members, the Economic Data Collection (EDC) program provides information on whether the goals of the Catch Share Program have been met and helps meet requirements of the Magnuson-Stevens Act for catch share program evaluation.

In early 2015, NOAA released reports summarizing economic information collected from 2009 to 2012 in each of the four catch share sectors. The program collected 2009 and 2010 data to provide a baseline of pre-catch share information and 2011 and 2012 data following its implementation. The following pages provide graphical and written summaries of the findings. The full reports are available online at www.nwfsc.noaa.gov/edc

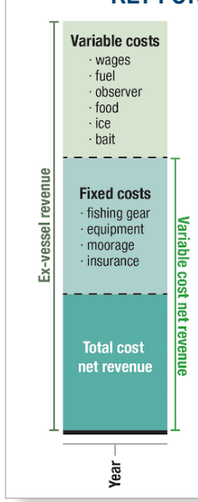


The graphs above show fleet-wide catch share revenue for catcher processors, catcher vessels, and motherships was highest in 2011. However, total cost net revenue (see Key for Economic Terms, below) was only highest for catcher vessels in 2011. The highest total cost net revenue for catcher processors and motherships occurred in 2010, before implementation of the Catch Share Program.



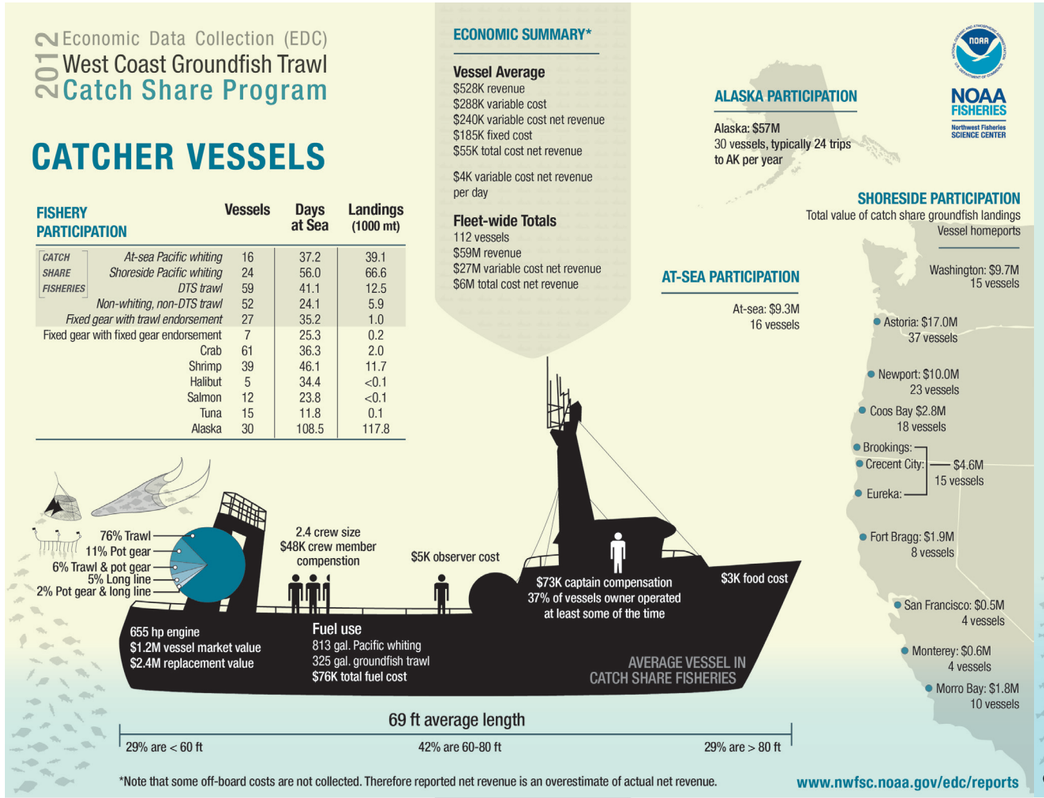
Left: The revenue displayed in the first receiver and shorebased processor graph includes all sources of revenue (catch share fisheries as well as non-catch share fisheries and non-production revenue such as offload fees and custom processing).

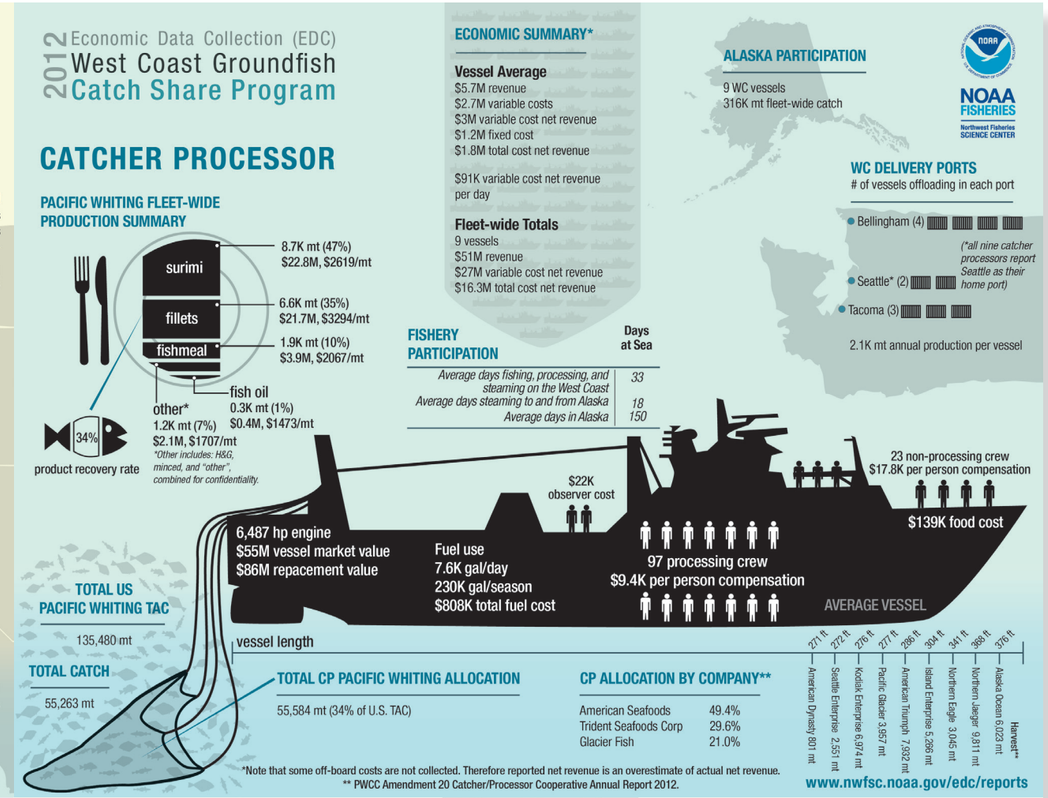
KEY FOR ECONOMIC TERMS

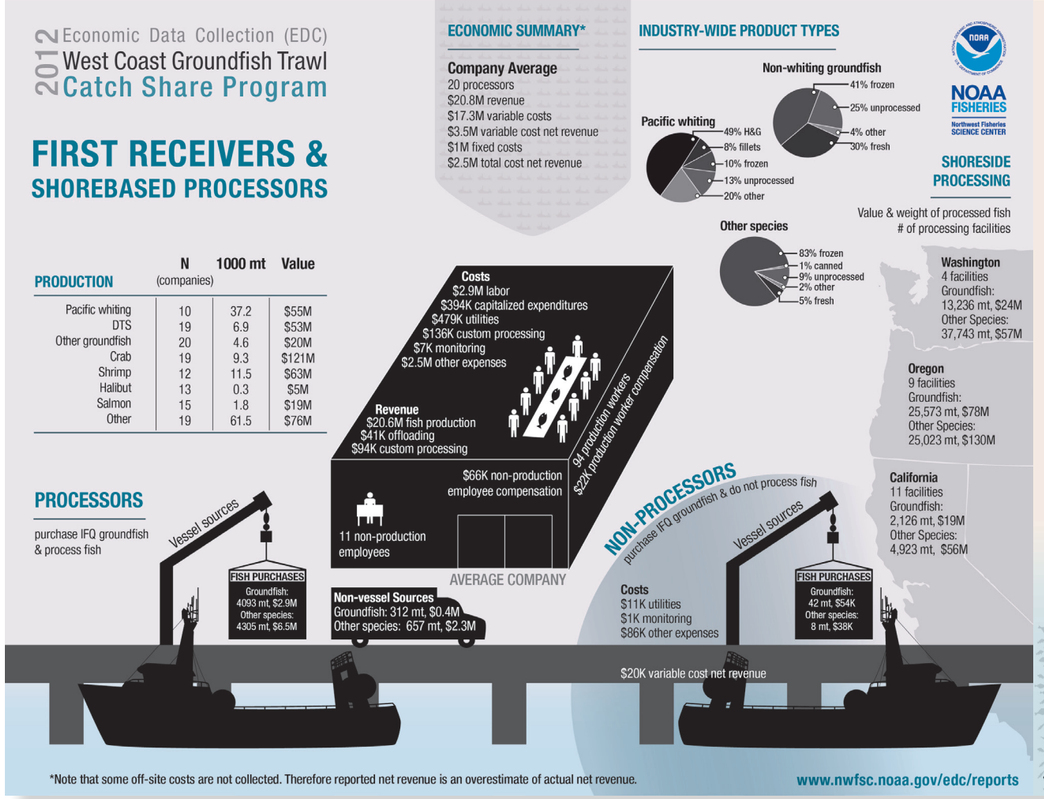


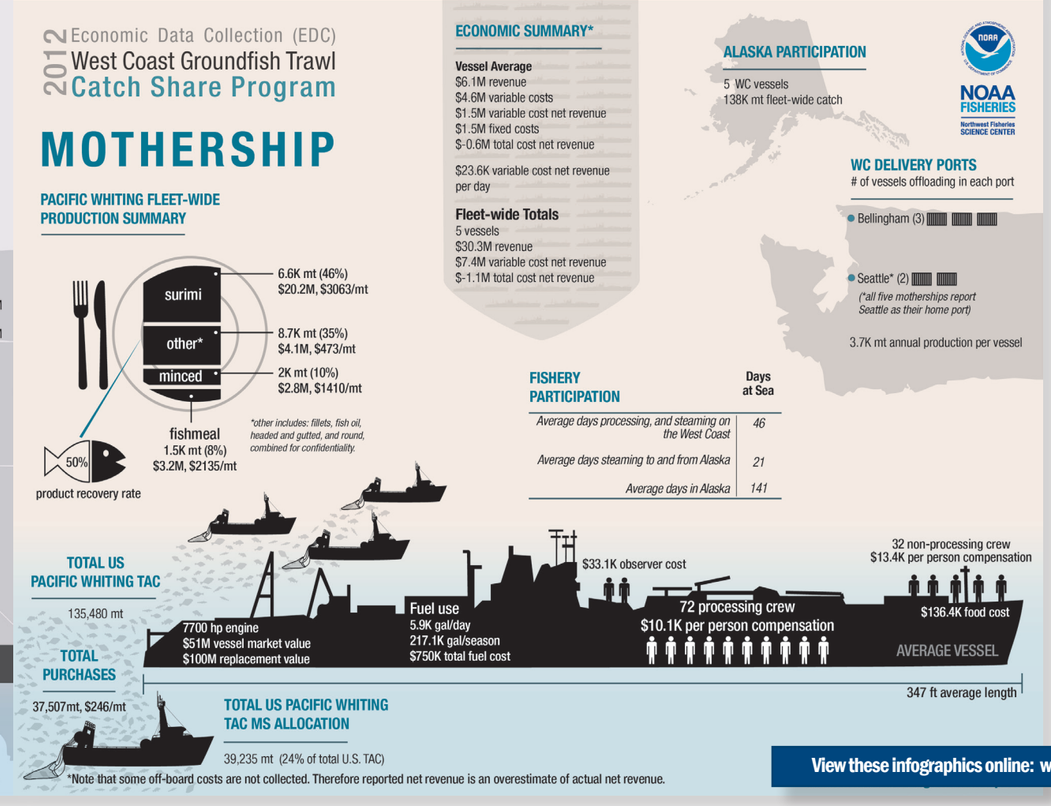
These graphs use several economic terms including variable cost net revenue and total cost net revenue. Variable cost net revenue is revenue minus variable costs (e.g., (wages and fuel). Total cost net revenue is revenue minus variable and fixed costs (e.g., gear and equipment). implementation. The next two pages provide graphical and written summaries of the findings.

West Coast Groundfish IFQ Fishery Economic Data Collection overview and reports online: www.nwfsc.noaa.gov/research/divisions/fram/economic/economic_data_reports.cfm









CATCHER VESSELS *(top left)*

In 2012, there were 112 catcher vessels that participated in the West Coast Groundfish Trawl Catch Share program.

- Catcher vessels generated $92.4 million in West Coast income and 1,082 jobs from deliveries of fish caught in the catch share program.
- Catcher vessels spent an average of 60 days fishing in the catch share program.
- Catcher vessels spent an average of 74 additional days fishing in non-catch share fisheries.
- 37 percent of vessels are owner-operated at least some of the time.
- Average variable cost net-revenue per vessel was $240,000 from participation in the catch share program, which was a decrease from $310,000 in 2011, but an increase from both 2009 ($162,000) and 2010 ($177,000).

CATCHER PROCESSOR *(top right)*

In 2012, the West Coast at-sea catcher-processor fleet consisted of nine catcher-processors, owned by three companies that harvest Pacific whiting on the West Coast.

- The catcher-processor sector generated $75 million in West Coast income and 1,431 jobs from Pacific whiting caught in the catch share program.
- The majority of the fleet's time (80%) is spent fishing Alaska Pollock in the Bering Sea and Aleutian Islands off Alaska.
- The average first-wholesale revenue per vessel was close to $5.7 million. Fillet and surimi production made up 87% of the total production value.
- Average variable cost net revenue was $3.0 million in 2012, which was a decrease from $3.5 million in 2011 and $3.8 million in 2009.

FIRST RECEIVERS & SHOREBASED PROCESSORS *(bottom left)*

In 2012, there were twenty Processor and six Non-Processor companies that received IFQ qroundfish.

- The first receivers and shorebased processors generated $72 million in West Coast income and 1,460 jobs from purchases of fish caught in the trawl catch share program.
- Processors and Non-Processors received about 44% of all fish caught commercially on the West Coast in 2012, which was 33% of the total dollar value of all fish purchased.
- Processors employed the most production workers in the month of August, with an average of 124 production workers per company. The fewest production workers were employed in March, with an average of 65 per company. Processors on average had 11 non-production employees per company.
- Average variable cost net revenue (revenue minus variable costs) was $3.5 million in 2011 and 2012, which was an increase from $3.17 million in 2009.

MOTHERSHIP *(bottom right)*

In 2012, five motherships, owned by four companies, processed Pacific whiting on the West Coast.

- The mothership fleet generated $34 million in West Coast income and 755 jobs from purchases of Pacific whiting caught in the catch share program
- The fleet spends a majority of its time (70%) processing Alaska Pollock in the Bering Sea and Aleutian Islands.
- West Coast motherships deliver to two ports: Blaine/ Bellingham and Seattle.
- The fleet's annual price paid to catcher vessels has increased from $177 per metric ton in 2009 to $246 in 2012.
- Surimi generally makes up the largest share of revenue, with an average first-wholesale price of $3,100 per metric ton in 2012.
- Average variable cost net revenue fell to $1.5 million in 2012 from $2.4 million in 2011, but still represented an increase over the $1.1 million in 2009.

View these infographics online: www.nwfsc.noaa.gov/news/features/infographics/index.