

**ANNUAL OREGON ALBACORE TUNA (*THUNNUS ALALUNGA*) REPORT, 2011**

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**INTRODUCTION**

Albacore is a highly migratory species found worldwide in temperate seas. Albacore caught off Oregon belong to the North Pacific stock and are generally juvenile and sub-adult fish that have not spawned. During their trans-Pacific migrations, albacore are targeted at different times of the year by fisheries of several nations including the United States, Canada, Taiwan and Japan. The United States West Coast fishery harvests this stock during the summer and fall months.

Albacore has been fished commercially off Oregon since 1929 when the fishery expanded north from the traditional grounds off southern California. For many years, both baitboats and jigboats fished for albacore off Oregon, but in recent years predominantly jig-caught, also termed troll-caught, albacore have been landed. However, bait fishing with live anchovies is growing in popularity, with an increasing number of vessels employing this technique, especially late in the season, the past several years. The current fleet consists primarily of small to medium (20 ft. to 60 ft.) "combination" boats which may fish crab, salmon, or groundfish at other times of the year, and several large freezer boats (mostly longer than 60 ft.) that travel the north and south Pacific, fishing primarily albacore.

Commercial albacore landings in Oregon were first recorded in 1929, and have been highly variable through the years, ranging from a low of 27,600 pounds in 1936 to a high of almost 38 million pounds in 1968. In the last decade, landings in Oregon have averaged 9.1 million pounds per year.

Beginning in 2005 under the Highly Migratory Species Fisheries Management Plan (HMSFMP), the National Marine Fisheries Service (NMFS) required vessels to submit logbook data while fishing for albacore inside the 200 mile Economic Exclusive Zone (EEZ). Prior to this, the logbook program was voluntary and only vessels fishing outside the EEZ were required to submit logbooks under the High Seas Fishing Compliance Act.

Sampling of Oregon's commercial albacore fishery is a cooperative effort between the Oregon Department of Fish and Wildlife (ODFW), the NMFS's Southwest Fisheries Science Center (SWFSC), and the Pacific States Marine Fisheries Commission (PSMFC). This report documents the progress of the 2011 fishery off Oregon and associated sampling activities.

Recreational marine fisheries programs began focusing data collection on the recreational albacore fishery in 2000. Recreational fishing for albacore off Oregon has been growing in popularity during the past decade, and especially in the past five years. Catches have ranged from a low of 2,901 fish (approximately 57,000 pounds) in 2000 to a high of 58,928 fish (approximately 1,175,000 pounds) in 2007. Since 2000, catches have averaged 21,000 fish (approximately 410,000 pounds) per year.

## **2011 COMMERCIAL FISHERY**

The 2011 Oregon albacore season began with two small landings on June 21<sup>st</sup> in Newport. The main fishery began in early July and continued into early November. The peak of landings occurred during the middle of August.

Rough ocean conditions throughout the summer and early fall caused numerous declines in landings (Figure 1) in 2011. Sea surface temperatures were more consistent with normal ranges for the beginning of the albacore season, but were much higher than normal by August. Fishermen report catching significant amounts of albacore in areas where sea surface temperatures were 68° F, with several bubbles of water exceeding 70° F. With the warmer water brought an increase in other subtropical pelagic species. Yellowtail jack, juvenile bluefin tuna, Pacific pomfret and dorado were all reported as being caught by the West Coast albacore fleet.

Overall, most albacore fishers reported fishing in 2011 was slower than in years past. Similarly to 2010, fishers reported seeing schools of albacore on their sonar anywhere from 15 to 60 fathoms below the surface, but often were unwilling to move to the surface to bite troll gear or even live bait. Spotty fishing conditions existed for most of the season, with a productive area lasting only a day or two, forcing vessels to spend much of the season constantly searching for biting albacore.

Fishers who fished late into the season were rewarded with an excellent late season fishery. Catch rates increased in October and ex-vessel prices rose to historic highs, boosting most landings and income significantly for most fishers.

In 2011, most fishing effort was spread out and sporadic, with few areas of consistent production in terms of volume lasting any significant length of time. For most of the fishery, most catches were reported from the 42° N to 47° N latitudes and 124° W to 127° W longitudes. Some good but intermittent fishing was also reported off northern California in late August and through September in 40° N to 41° N latitudes and 126° W to 127° W longitudes. Additionally, conditions offshore were not favorable for albacore, and few vessels ventured more than 300 miles offshore in 2011 to pursue albacore.

- **2011 Albacore Landings**

A total of 442 vessels made at least one landing of albacore into Oregon ports in 2011, a five percent increase from 2010. These vessels made 1,549 landings in 2011, a 19% increase from 1,303 landings in 2010.

Albacore landings (pounds) can be significant into October and often continue into November. In 2011, nearly 2.5 million pounds of albacore were landed in October and early November, the highest amount of albacore landed in this time period since monthly records began in 1987 (Figure 2).

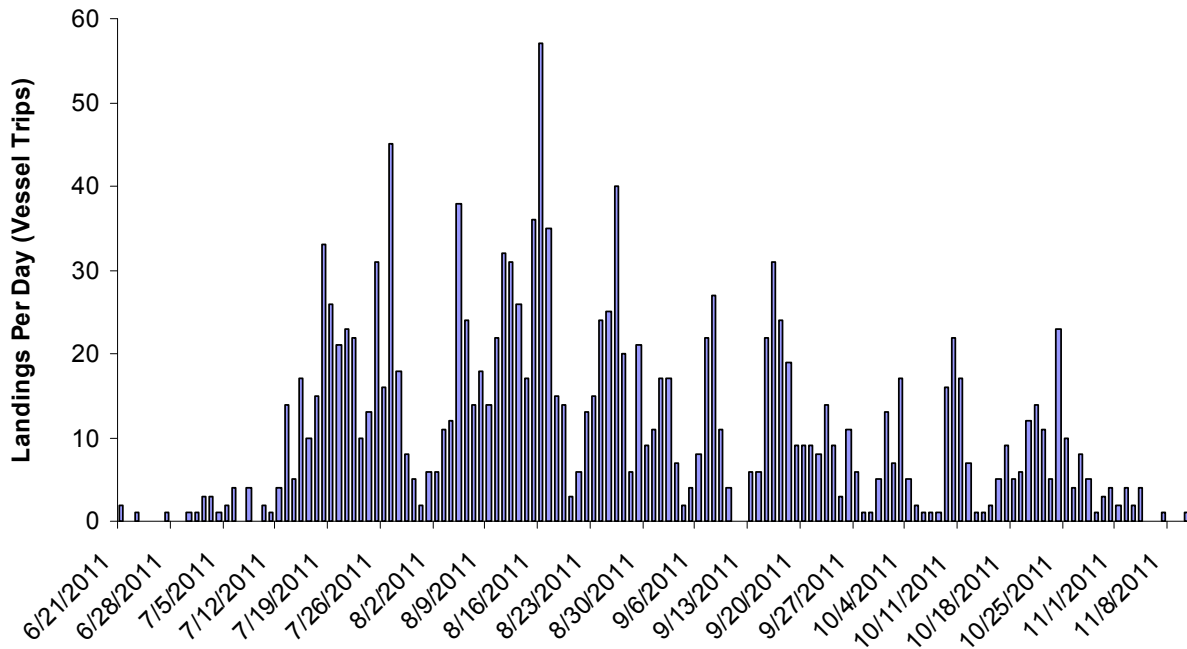


Figure 1. Distribution of daily Oregon commercial albacore landings (vessel trips), 2011.

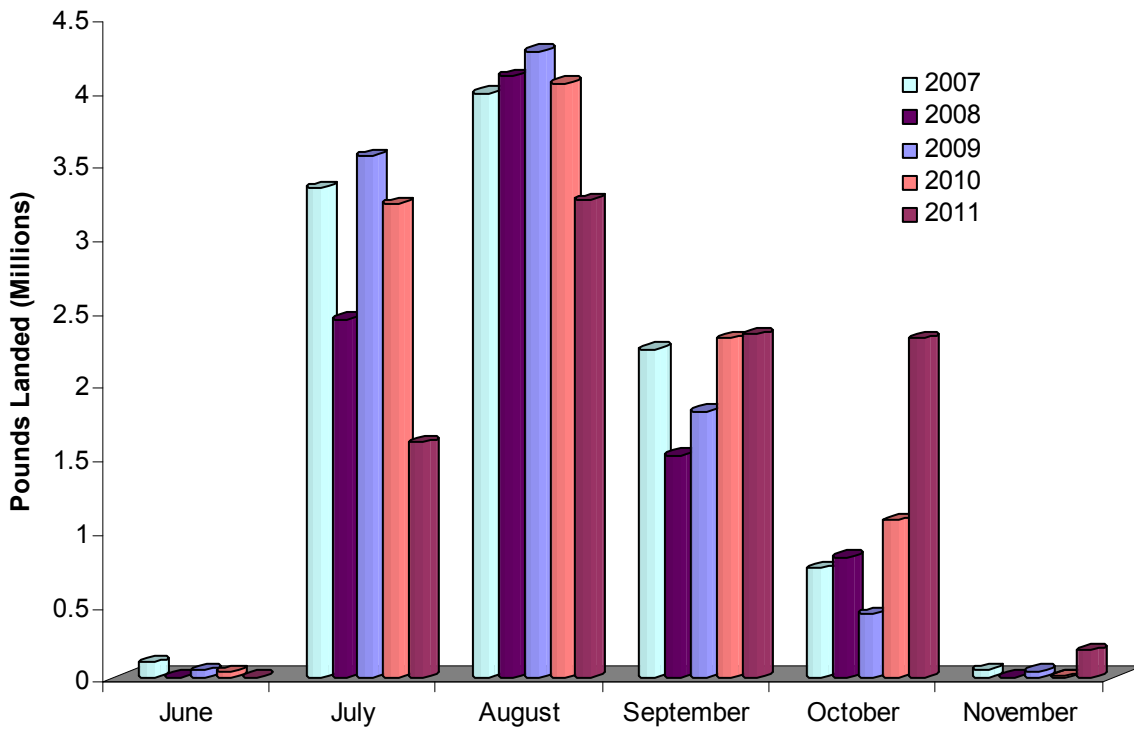


Figure 2. Five-year Oregon albacore landing (by weight) distribution by month.

\*2009 and 2010 data updated since published in the 2010 Annual Oregon Albacore Tuna Report.

The preliminary total for 2011 commercial landings is 9,688,076 pounds. This is a 9% decrease from the 10,703,037 pounds landed in 2010, and is 7% higher than the ten-year average (2002-2011) of 9,073,522 pounds (Table 1 and Figure 3).

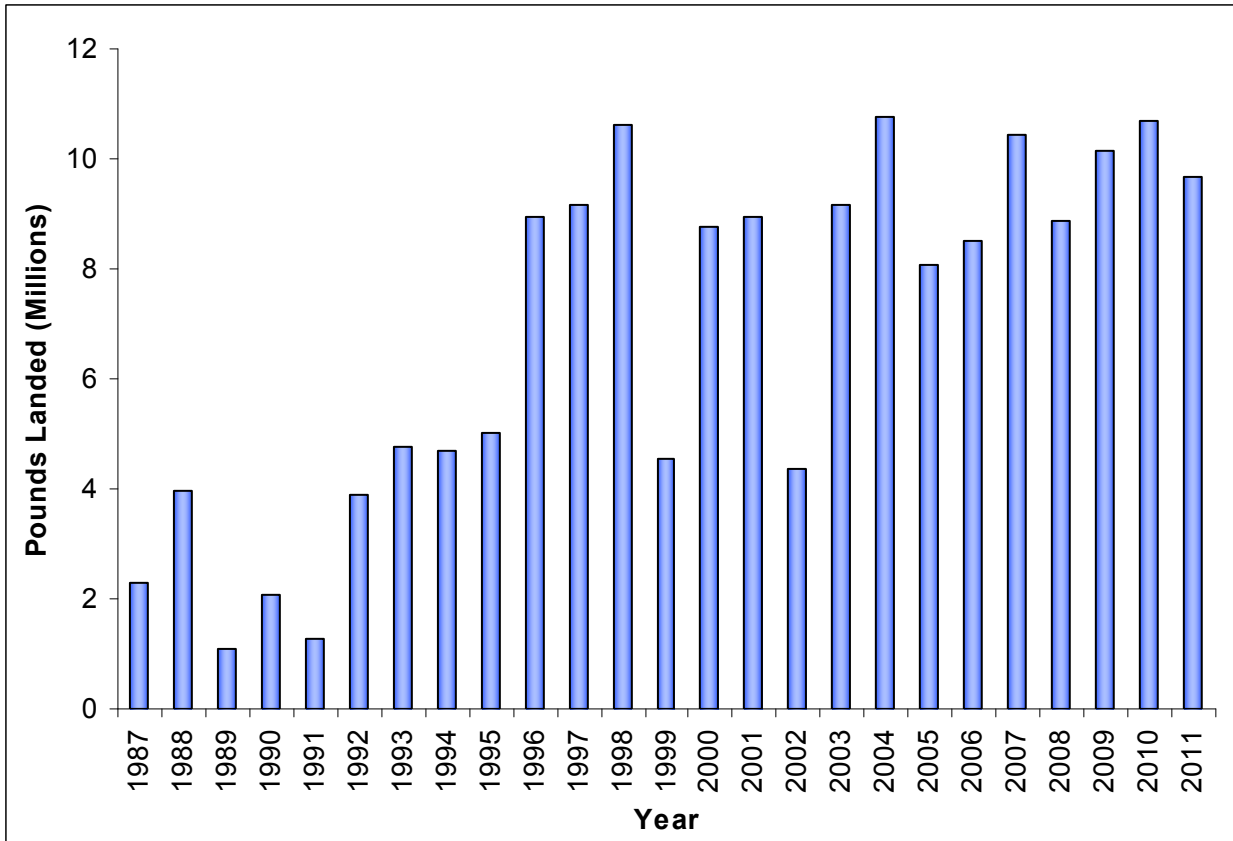
Although the total pounds of albacore landed in 2011 were down from 2010, the number of vessel trips increased significantly. One factor directly influencing this was the ex-vessel price of albacore in 2011. Incredibly strong markets and record prices for all conditions of fresh and frozen albacore kept many fishermen challenging fishing conditions to continue making landings later into the 2011 season in comparison to recent previous seasons.

Newport received the majority of Oregon's albacore landings in 2011 with 38% of the albacore poundage landed; followed by Astoria with 33%, and Charleston with 24%. Eight other ports also received deliveries in 2011, accounting for about 5% of the total albacore landed in Oregon (Figure 4 and Table 2). Landings in Florence, Winchester Bay, Charleston, Port Orford and Brookings increased in 2011 from 2010 totals.

**Table 1. Total Oregon commercial albacore landings 1987 – 2011.**

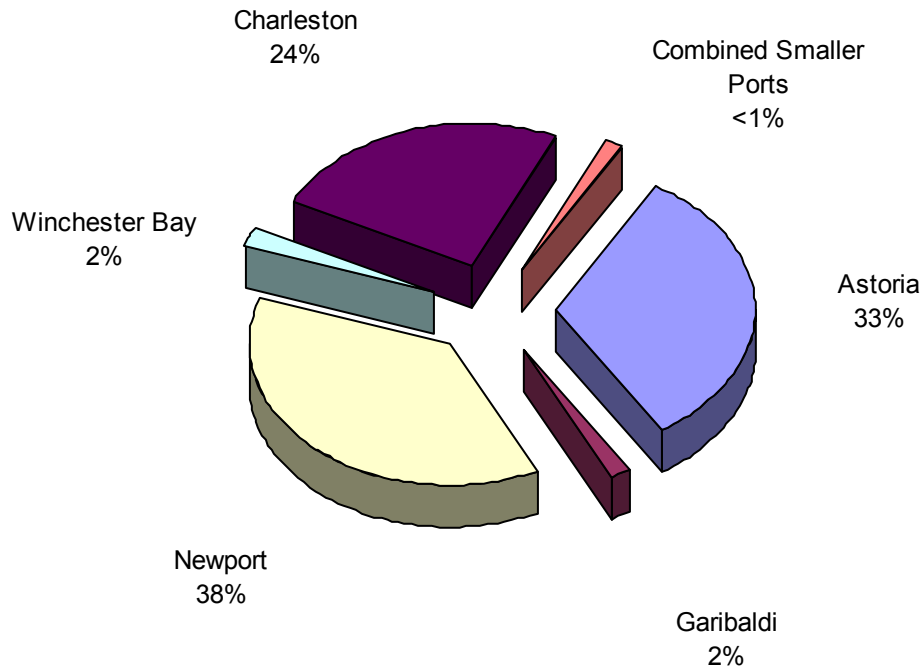
<b>Year</b>	<b>Pounds Landed</b>	<b>Year</b>	<b>Pounds Landed</b>
1987	2,288,045	2000	8,756,755
1988	3,967,120	2001	8,958,529
1989	1,079,657	2002	4,361,742
1990	2,079,312	2003	9,165,362
1991	1,258,818	2004	10,754,016
1992	3,895,618	2005	8,087,413
1993	4,754,450	2006	8,521,642
1994	4,698,223	2007	10,447,567
1995	5,033,810	2008	8,876,158
1996	8,948,355	2009	10,156,183
1997	9,167,738	2010	10,703,037
1998	10,603,155	2011	9,688,076
1999	4,552,878		
<b>10-Year Average (2002-2011): 9,075,345</b>			

\*2009 and 2010 data updated since published in the 2010 Annual Oregon Albacore Tuna Report.



**Figure 3. Oregon commercial albacore landings (total weight), 1987 – 2011.**

\*2009 and 2010 data updated since published in the 2010 Annual Oregon Albacore Tuna Report.



**Figure 4. Percentage of 2011 Oregon commercial albacore landings (by weight) by port.**

**Table 2. Oregon commercial albacore landings (total pounds) by port, 2011 season and 10-year average.**

Port	2011		10-Year Average	
	Pounds Landed	Percent of Pounds Landed	Pounds Landed	Percent of Pounds Landed
Newport	3,648,134	38%	3,861,678	43%
Astoria	3,158,858	33%	2,767,895	31%
Charleston	2,359,915	24%	1,954,182	22%
Garibaldi	168,390	2%	223,085	2%
Winchester Bay	211,956	2%	137,463	1%
Brookings	61,764	<1%	48,276	<1%
Florence	28,377	<1%	43,886	<1%
Port Orford	38,709	<1%	19,753	<1%
Depoe Bay	5,813	<1%	7,322	<1%
Pacific City	3,081	<1%	4,950	<1%
Gold Beach	3,079	<1%	4,190	<1%
Smaller Ports*	0	<1%	3,441	<1%

† For confidentiality, Smaller Ports include Seaside, Cannon Beach and Bandon.

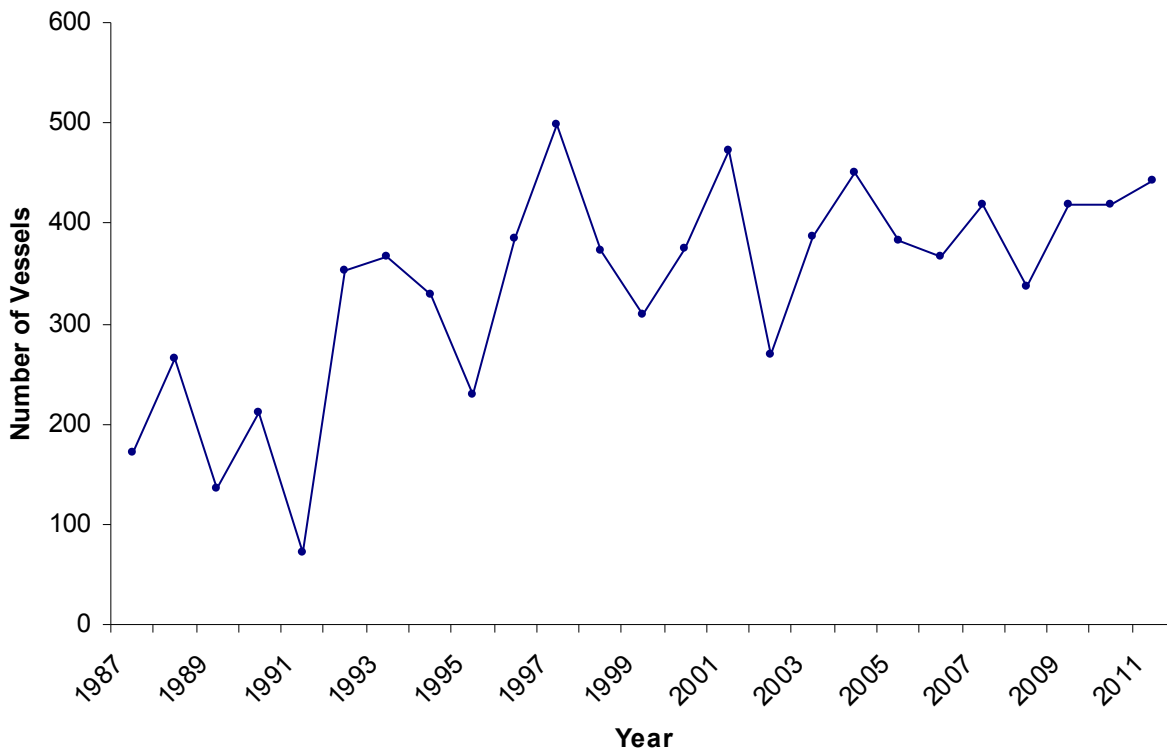
\*2009 and 2010 data updated since published in the 2010 Annual Oregon Albacore Tuna Report.

The average landing in 2011 was 6,253 pounds, a 24% decrease from 8,218 pounds in 2010. Table 3 describes the quartile partition of landing size in the 2011 Oregon albacore fishery, which more thoroughly explains the landing characteristics of the fishery. For example, although the average weight of a landing was 6,253 pounds, for 50% of the vessel trips, landings consisted of 2,239 or fewer pounds.

Vessel participation in the Oregon albacore fishery has been sporadic over the last two decades, following availability and proximity of albacore, as well as ex-vessel prices and fuel costs. It appears to have peaked in the late 1990's or early 2000's, after the Eastern Pacific albacore population had recovered from overfishing, most likely due to a substantial decrease in the high seas drift net fishery. However, 2011 ranks fourth in the number of albacore vessels landing into Oregon since 1987. Record ex-vessel prices likely influenced more fishers to target albacore during the 2011 fishery (Figure 5) (Kohin et al, 2005).

**Table 3. Quartile partition of 2011 Oregon albacore landings.**

Quartile		Pounds
100%	Maximum	123,701
75%	Quartile	5,711
50%	Median	2,239
25%	Quartile	860
0%	Minimum	20



**Figure 5. Number of vessels participating in the Oregon albacore fishery, 1987 - 2011.**



- **2011 Albacore Revenue**

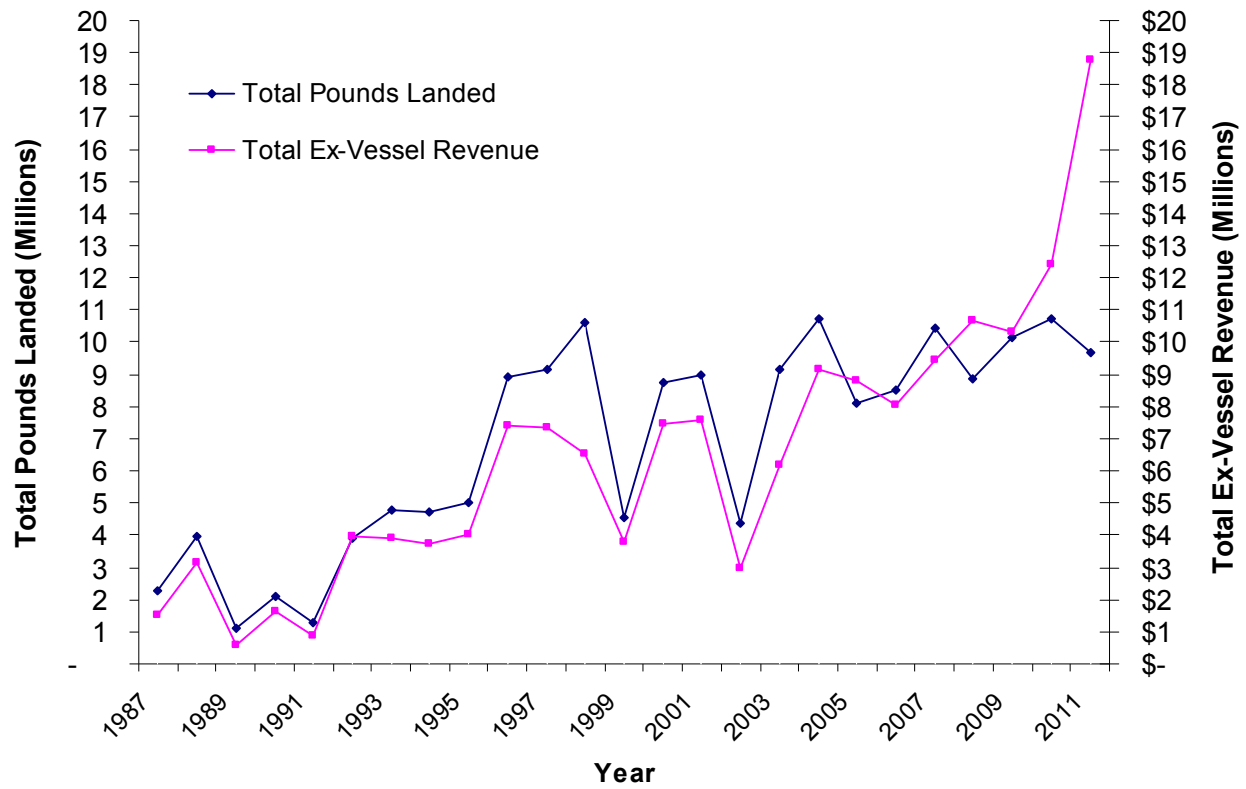
All markets for the West Coast's albacore were much stronger in 2011 than ever before in the history of the fishery. Foreign demand, mostly from Japan, and to a lesser extent France, Spain as well as some increases in domestic markets, drove the 2011 Oregon albacore season to an all-time record ex-vessel revenue of more than \$18.78 million (Figure 6). Markets for blast frozen albacore started off extremely strong, with buyers paying up to \$1.80 per pound for top quality, super-cold fish. Prices increased rapidly throughout the summer and fall, finishing the season between \$2.50 and \$2.75 per pound. Brine markets also started off strong with prices in July ranging from \$1.35 to \$1.60 per pound. Continued foreign demand pushed prices up several times from August through October to finish the season between \$1.70 and \$2.00 per pound. Fresh, iced prices at the beginning of the season ranged from \$1.35 to \$1.75 per pound, increasing throughout the season to \$2.00 per pound. Demand and prices for fresh fish at alternative, smaller markets were strong throughout the 2011 season in all Oregon ports, with prices ranging from \$1.75 to \$3.00 per pound. A strategy developed by local commercial fishers to improve the value of their albacore is selling their catches directly off their vessel to the public, using Oregon's Limited Fish Seller's License. Limited Fish Sellers received between \$1.75 and \$3.00 per pound.

Ex-vessel revenue generated from albacore in 2011 totaled \$18,783,421, a 51% increase from 2010's ex-vessel value of \$12,425,462 (Figure 6). The average, weighted, price per pound for albacore in Oregon for 2011 was \$1.94 per pound, the highest per pound value ever recorded. This is up \$0.78 per pound from 2010 and \$1.00 per pound higher than the 25-year average of \$0.94 per pound (1987-2011).

Several factors played key roles in boosting ex-vessel prices for West Coast albacore in 2011, including:

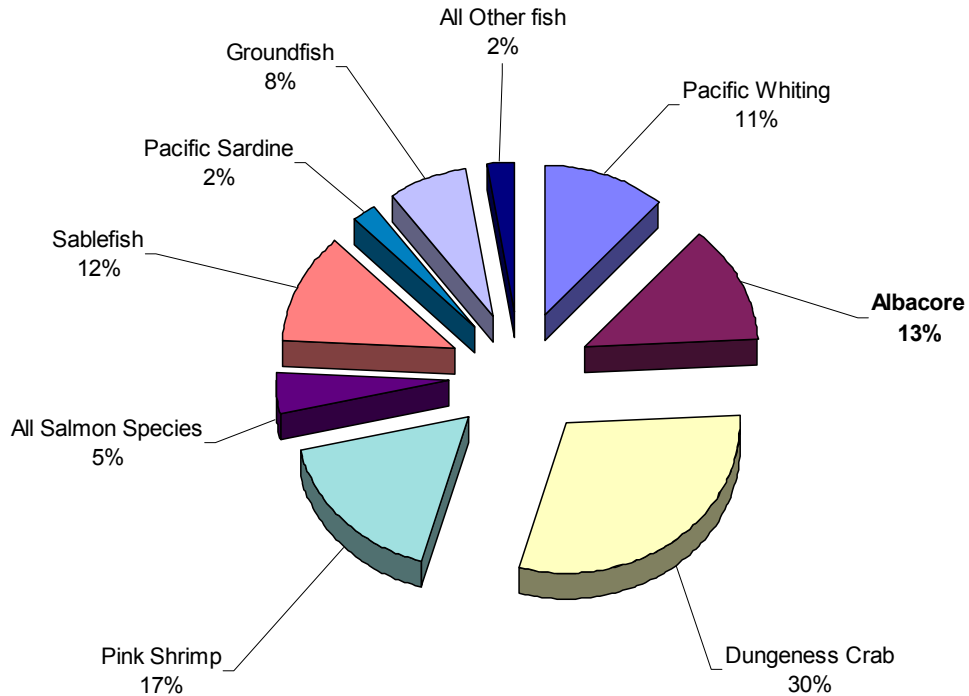
- The tsunami in Japan destroyed the largest cold storage facility in the world, which contained tens of millions of pounds of fish, including millions of pounds of albacore.
- The tsunami also destroyed a large portion of Japan's albacore fishing fleet;
- Catches in other albacore fisheries (Mediterranean Sea, Indian Ocean) were down from previous years;
- Catches off U.S. West Coast were down from previous years; and
- A weak U.S. dollar made importing albacore from the U.S. more cost effective for foreign countries.

Albacore accounted for 13% of Oregon's marine fish revenue in 2011. Ex-vessel revenue generated from albacore landings in 2011 ranked 3<sup>rd</sup> among all marine fishery landings behind Dungeness crab at 30% and pink shrimp at 17% (Figure 7).



**Figure 6. Total albacore ex-vessel revenue in relation to total albacore landings, 1987 – 2011.**

\*2008, 2009 and 2010 data updated since published in the 2010 Annual Oregon Albacore Tuna Report.



**Figure 7. Oregon Marine Fish Revenue (ex-vessel), 2011.**

## 2011 COMMERCIAL SAMPLING RESULTS

In 2011, the dedicated albacore sampling season began later compared to past years as a result of a longer budgeting process than normal. Since landings continued later into the year while dedicated sampling staff were still employed, sampling rates were able to be maintained above the 50% minimum sampling rate goal for Oregon. Albacore sampling was conducted by albacore tuna sampling staff on a full-time basis starting July 28<sup>th</sup> in Newport for four and a half months, August 11<sup>th</sup> in Astoria for three months, and August 1<sup>st</sup> in Charleston for 3 months. Additional sampling was conducted by ODFW commercial groundfish port samplers prior to and after the start of the dedicated albacore sampling period. Sampling activities included distribution of logbooks to vessels with valid Highly Migratory Species Permits, logbook envelopes for completed logbooks, providing information to fishers, and measuring albacore for length-frequencies. The 2011 Oregon Albacore Season Summary (Appendix A) presents data requested in Oregon's contractual agreement with NMFS and PSMFC for albacore sampling funding. Organized by port and Oregon totals overall, these are:

- a. Number of logbooks issued to commercial albacore vessels
- b. Estimated landings (pounds) sampled for length-frequency
- c. Total number of fish measured for length-frequency
- d. Number of landings (vessel trips) sampled for length-frequency
- e. Estimated number of commercial trips
- f. Estimated number of total commercial vessels with at least one trip into an Oregon port
- g. Estimated number of total pounds landed by jig/troll vessels
- h. Estimated number of total pounds landed by bait vessels
- i. Estimated number of total pounds landed by jig & bait vessels
- j. Estimated sport landings (pounds)

In 2011, 21 logbooks were distributed to albacore fishermen holding valid HMS permits. Logbooks were distributed at local ODFW offices and by staff in the field to vessels with valid Highly Migratory Species Permits.

## 2011 Length-Frequency Analysis

During 2011, albacore from 220 vessels were sampled from a total of 457 separate vessel trips for length-frequency measurements. A total of 45,051 fish were measured for an average of 99 fish per length-frequency sample (Table 4). Sampled albacore delivered to Oregon buyers ranged in fork length from 50 cm to 98 cm. This length range of albacore converts to weights of 5.7 and 42.4 pounds, respectively.

Figures 8 and 9 show length-frequency histograms of non-sorted, randomly sampled albacore during the 2011 and 2010 seasons. The 2011 histogram shows a fairly bimodal distribution of age classes representing approximately 3.5 and 4.5 year-old albacore, but with less overlap between the two age classes than shown in the 2010 histogram. Additionally, the 2011 histogram shows a higher percentage of the younger age-class of albacore than the 2010 histogram, possibly indicating stronger recruitment of older age-class of albacore entering the 2012 fishery. The 2010 histogram also shows a bimodal population distribution, consisting of the same age classes representing approximately 3.5 and 4.5 year-old fish, but with a higher percentage of older age-class albacore than 2011. This shows the prediction of fewer older age-class albacore entering the 2011 fishery based on the 2010 histogram, to be fairly accurate. Based on this age-class prediction and the 2011 histogram showing a more balanced distribution between 3.5 and 4.5 year-old albacore but stronger component of 3.5 year-old albacore than 2010, the 2012 fishery may be stronger than in 2011.

The average length for the entire 2011 commercially exploited population delivered to Oregon was 71.2 cm. Fish of this size are approximately four years old and weigh 16.3 pounds (Suda 1966; Clemons 1961).

**Table 4. Length-Frequencies, number of fish measured, and number of fish per length-frequency by port, 2011.**

Port	Length-Frequencies Taken	Number of Fish Measured	Average Fish Per L-F Sample
Astoria	82	7,121	87
Newport	299	31,937	107
Charleston	72	5,892	82
Brookings	2	101	51
Oregon	455	45,051	99

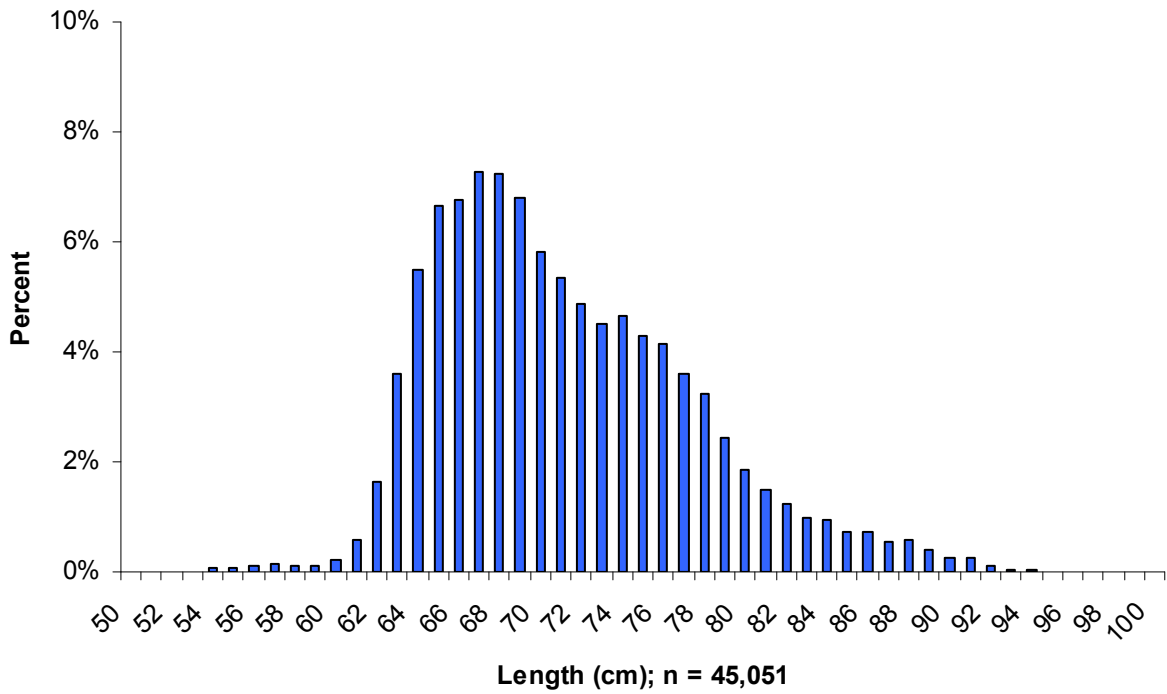


Figure 8. Length-frequencies of commercially landed albacore sampled in Oregon, 2011.

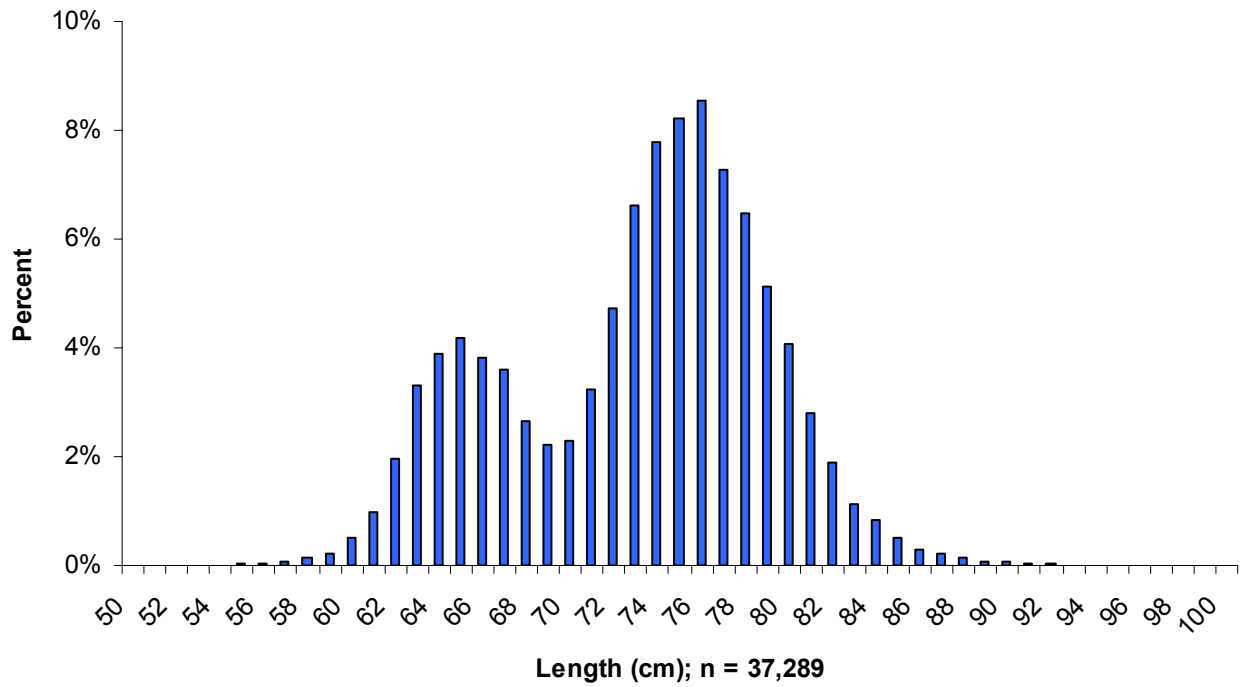


Figure 9. Length-frequencies of commercially landed albacore sampled in Oregon, 2010.

- **2011 Length-Frequency Analysis by Port**

In addition to the significant differences in length-frequency analysis between 2010 and 2011, length-frequency data for 2011 appears somewhat variable on a port-by-port basis. While all ports show a bimodal population distribution, Astoria shows heavier distribution towards younger age-class albacore; Newport also shows a nearly even bimodal distribution, with a slightly higher percentage of younger age-class albacore; Charleston also has a bimodal distribution, and appears to encompass both Astoria and Newport's trends; and the distribution of sampled albacore in Brookings shows mostly the younger age-class of albacore represented. This could be due to the small sample size (n = 101) of fish measured, or the fish represented in these samples may have been from a group of albacore off northern California, which was reported by fishermen to contain much smaller albacore than those caught off Oregon and Washington (Figures 10, 11, 12 and 13) (Suda, 1966).

Average length and weight statistics based on Clemons (1961) also vary between the four areas:

- Astoria average length: 70.3 cm; average weight: 15.7 pounds
- Newport average length: 71.4 cm; average weight: 16.5 pounds
- Charleston average length: 70.7 cm; average weight: 16.0 pounds
- Brookings average length: 67.4 cm; average weight: 13.8 pounds

The number of sampled fish does dramatically vary between the four ports where length-frequencies were taken on commercially landed albacore, and may partially account for the differences in length-frequency histograms and analysis.

There does not appear to be a significant regional trend among landings in Oregon's ports in 2011, aside from possibly in Brookings. Most fishing effort in 2011 occurred inside of the 128° W longitude area off the coasts of Oregon and Washington, and mostly in large, general areas between the 42° N and 46° N latitudes. Because of a lack of influence from a strong offshore fishery or specific areas of high production in addition to the majority of the albacore fleet fishing over relatively large areas, albacore age-classes landed into Oregon's ports in 2011 would not be expected to differ considerably. However, Astoria's distribution, which consists of a higher percentage of younger age-class albacore than Newport and Charleston, may be partly explained by the higher prices offered to fishers for blast frozen albacore than in other ports. Because of Astoria's closer proximity to international export avenues in the Columbia River and Puget Sound, dealers offer higher prices as an incentive for vessels to land there as transportation costs are lower than in other Oregon ports. This influence seems apparent in landing trends among Oregon's top three ports, as shown in Table 5. This table shows the total pounds of each condition type, and the percentage of each in reference to the total amount of albacore landed in that port. Astoria's amount and proportion of blast frozen albacore was much higher than Newport or Charleston. As vessels with blast freezers often operate much differently than those with brine systems or ice, the significantly higher amount of blast frozen albacore landed into Astoria may account for its differing distribution of age-classes in comparison to Newport and Charleston. Newport and Charleston share fairly similar landing characteristics based on condition types, and length-frequency histograms between these two ports are also fairly similar.

**Table 5. Landings of albacore by condition type for Astoria, Newport and Charleston in 2011.**

Condition Type	Astoria		Newport		Charleston	
	Pounds Landed	Landing Percentage	Pounds Landed	Landing Percentage	Pounds Landed	Landing Percentage
Blast Frozen	2,590,505	82%	1,072,083	29%	680,028	29%
Brine Frozen	401,550	13%	1,976,074	54%	959,323	41%
Iced	166,803	5%	599,977	17%	720,564	30%

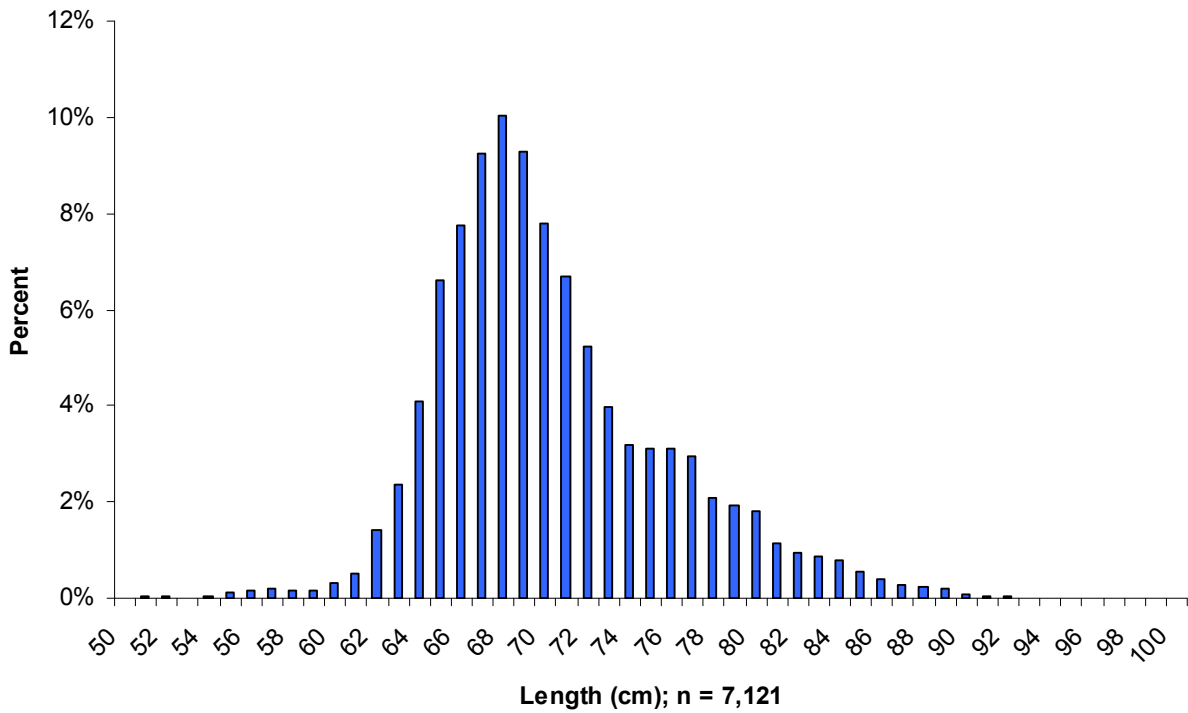


Figure 10. Length-frequencies of commercially landed albacore sampled in Astoria, 2011.

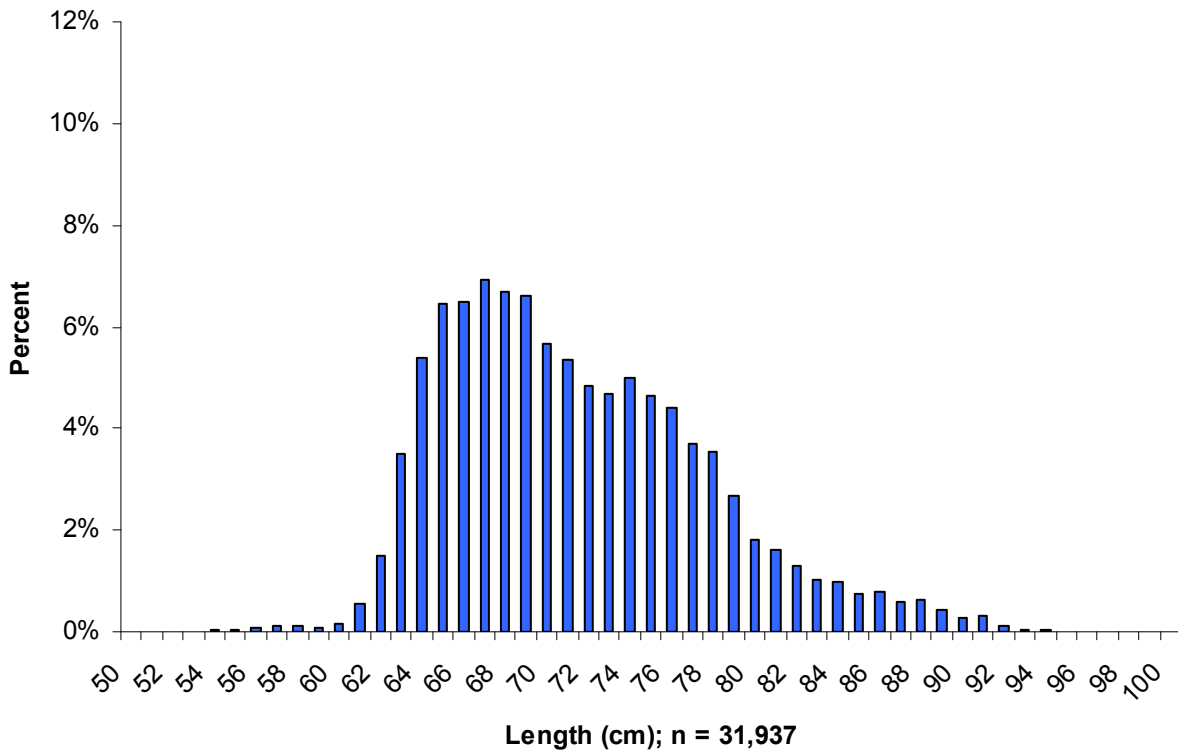


Figure 11. Length-frequencies of commercially landed albacore sampled in Newport, 2011.

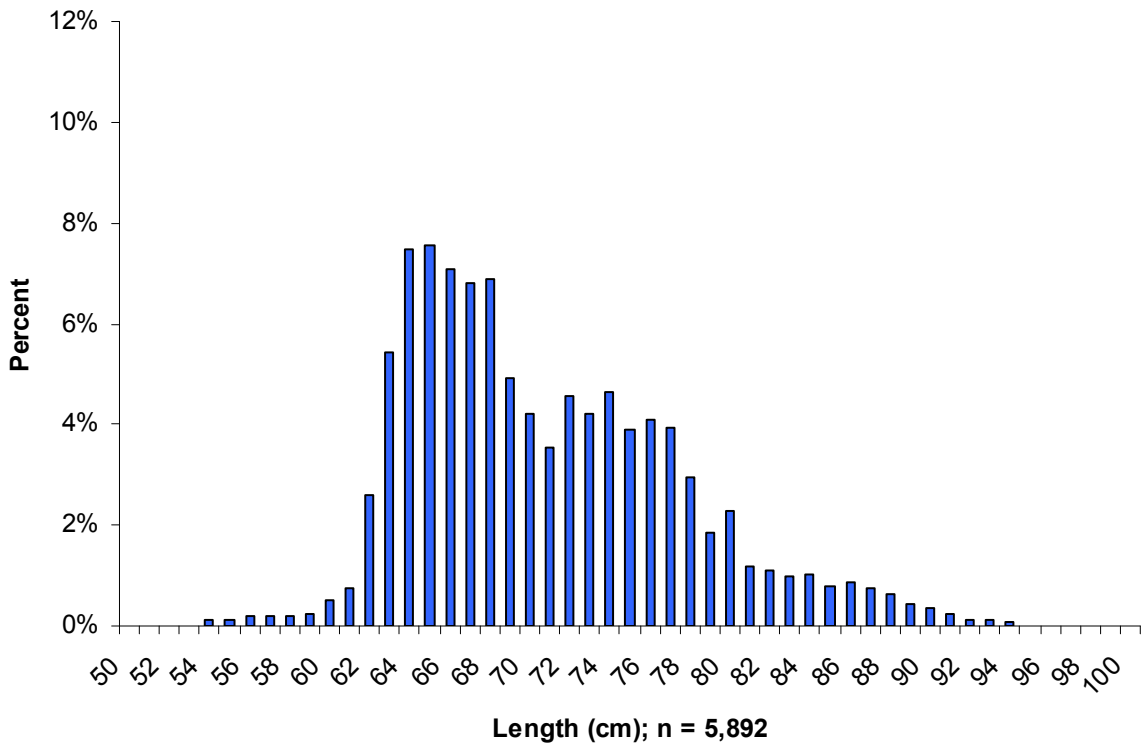


Figure 12. Length-frequencies of commercially landed albacore sampled in Charleston, 2011.

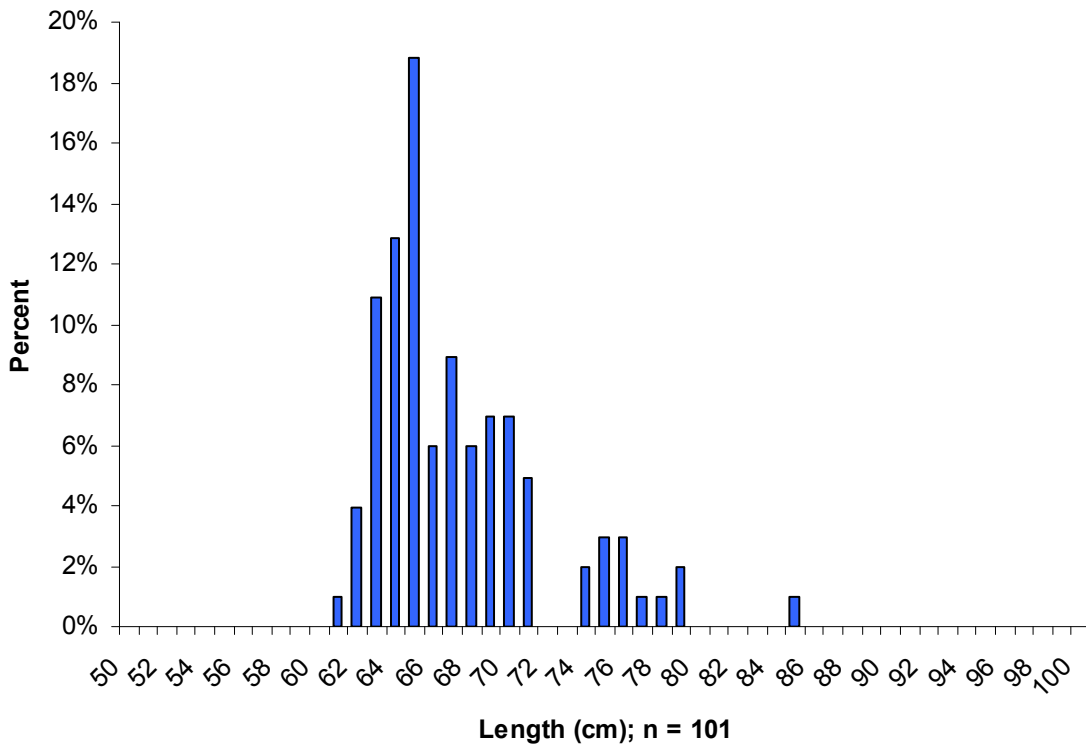


Figure 13. Length-frequencies of commercially landed albacore sampled in Brookings, 2011.



- **2011 Sampling Rate Analysis**

Sampling rates in 2011 were above the 50% minimum for the state as a whole, with variation between ports with dedicated albacore samplers (Table 6). An additional dedicated albacore sampler located in Charleston for the third year in 2011 provided expanded coverage in Oregon's second busiest port (in terms of albacore vessel trips). Sampling rates by port and year are presented in Table 6. Only Astoria and Newport have had dedicated albacore port samplers since 2005. Charleston had limited sampling coverage in 2005 and 2006, and did not have a dedicated albacore port sampler in 2007 or 2008. In 2011, Astoria's sampler was not hired until mid-August, and Charleston's sampler was not hired until early August. In smaller ports, samples are taken by ODFW Port Biologists and groundfish sampling staff. The sample rates in smaller ports are typically much lower than 50% because few or no length-frequency samples are able to be taken in these ports. Additionally, the total pounds of albacore landed in these ports is considerably small compared to higher volume ports, and length-frequencies taken associated with those smaller landings usually do not influence Oregon's overall sample rate significantly.

In addition to the current analysis of sampling rates (percentage of total weight landed by commercial vessels represented with length-frequencies) for minimum sampling percentages, analyzing the difference between the percentage of total weight sampled and the percentage of total vessels sample is important to determine if any sampling bias has occurred on a port and/or state-wide level. In Table 7, these differences are calculated as the percent of Weight Sampled minus ( - ) the percent of Landings Sampled.

With seven years of data available for these calculations, sample rate patterns are emerging in ports where dedicated albacore samplers have been located and for Oregon overall. Although Astoria has only had a dedicated albacore sampler since 2006 and Charleston since 2009, general sampling rate statistics can be derived from all ports where albacore sampling has occurred. Among these patterns and statistics, identifying any sampling biases is important in maintaining a randomly sampled, well-represented commercial albacore fishery. Additionally, as more annual data becomes available for this analysis, previous determinations of bias may change.

Two possible types of bias can exist in sampling the commercial albacore fleet, and for the purposes of this report will be called Type A and Type B. Type A bias (denoted by the † symbol in Table 7) may indicate samplers focused efforts on vessels with larger amounts of albacore, either because sampling larger offloads were needed to maintain a 50% minimum sampling rate, or simply because the offloads they were present for were larger. Type B bias (denoted by the ◇ symbol in Table 7) may indicate samplers focused efforts on obtaining as many length-frequency samples as possible, regardless of the size of offload or specifically targeting smaller offloads, either because larger offloads were missed and more samples were needed to maintain a 50% minimum sample rate, or simply because the offloads they were present for were smaller or randomly sized.

Approximate average (2005-2011) differences in percent weight sampled minus percent landings sampled are as follows:

Astoria:	22%
Newport:	31%
Charleston:	20%
Oregon:	28%

Using a guideline of a 5% or greater difference from the averages above as potential sampling bias, it appears Type A sampling bias possibly occurred in Newport in 2007, Charleston in 2010 and Oregon overall in 2010. Additionally, Type B sampling bias possibly occurred in Astoria during 2005 and in Charleston during 2006 and 2007. This guideline and analysis shows that no bias occurred in any Oregon ports or in Oregon overall as a result of 2011 sampling efforts.

Without analyzing average weight per landing data and comparing it to the difference between the two sampling percentage types for every port and year, it is difficult to determine if these potential biases are real or anomalies. Additionally, other variables, such as the lack of a dedicated albacore sampler in Charleston in 2006 and 2007 may be factors in this analysis.

With the current strategy of sampling vessels with larger amounts of albacore, it may not be possible to reduce these biases. Many commercial fishers sell their catch off their vessels directly to the public, or to smaller dealers in which offloads are small, may only take several minutes and are often out of view of albacore samplers. These types of deliveries often take place simultaneously to other, larger deliveries at major fish plants and buyers, forcing albacore samplers to choose which sample to take, possibly lowering their overall sampling percentage should they choose to sample smaller deliveries. However, whenever possible, albacore samplers attempt to take advantage of opportunities to sample smaller vessels, deliveries or vessels selling their catch directly to the public.

Although it appears no significant biases in sampling are occurring in Oregon, monitoring this analysis in the future will be important to ensure no biases begin to occur.

**Table 6. Albacore sampling rates by port and year, 2005-2011.**

<b>Port</b>	<b>2005 % Weight Sampled</b>	<b>2006 % Weight Sampled</b>	<b>2007 % Weight Sampled</b>	<b>2008 % Weight Sampled</b>	<b>2009 % Weight Sampled</b>	<b>2010 % Weight Sampled</b>	<b>2011 % Weight Sampled</b>
Astoria	26%	40%	57%	53%	73%	71%	57%
Garibaldi	6%	3%	3%	18%	0%	0%	0%
Pacific City	0%	0%	12%	0%	0%	0%	0%
Newport	61%	71%	77%	75%	75%	71%	75%
Winchester Bay	0%	4%	0%	5%	0%	32%	0%
Charleston	32%	33%	4%	26%	45%	56%	45%
Port Orford	0%	16%	0%	0%	0%	0%	0%
Gold Beach	0%	90%	0%	0%	0%	0%	0%
Brookings	12%	9%	0%	0%	0%	0%	41%
<b>Oregon</b>	<b>39%</b>	<b>48%</b>	<b>52%</b>	<b>51%</b>	<b>65%</b>	<b>66%</b>	<b>58%</b>

\*Sampling rates are defined as the percentage of total weight landed in a port of which a length-frequency was taken from offloading vessels.

\*\*2009 and 2010 data updated since published in the 2010 Annual Oregon Albacore Tuna Report.

**Table 7. Comparison of albacore length-frequency sampling rates, in both percent of landings sampled and percent of total weight landed, 2005-2011.**

Year	Port	% Weight Sampled	% Landings Sampled	Difference between % Weight Sampled - % Landings Sampled
2005	Astoria ◊	25.7%	9.5%	16.1%
2006	Astoria	40.4%	19.5%	20.9%
2007	Astoria	56.8%	36.6%	20.2%
2008	Astoria	53.2%	32.1%	21.2%
2009	Astoria	72.9%	48.1%	24.8%
2010	Astoria	70.7%	44.0%	26.7%
2011	Astoria	57.3%	32.9%	24.4%
2005	Newport	61.2%	27.4%	33.8%
2006	Newport	71.4%	42.3%	29.1%
2007	Newport †	76.6%	40.3%	36.3%
2008	Newport	74.7%	42.6%	32.1%
2009	Newport	74.7%	46.7%	28.0%
2010	Newport	70.7%	41.8%	28.9%
2011	Newport	75.1%	48.1%	27.0%
2005	Charleston	31.8%	10.9%	20.9%
2006	Charleston ◊	32.9%	16.9%	16.0%
2007	Charleston ◊	4.4%	0.7%	3.6%
2008	Charleston	26.3%	7.8%	18.4%
2009	Charleston	44.7%	23.9%	20.8%
2010	Charleston †	56.4%	22.8%	33.6%
2011	Charleston	44.6%	17.4%	27.2%
2005	Oregon	39.2%	16.3%	22.9%
2006	Oregon	47.7%	24.9%	22.9%
2007	Oregon	51.6%	22.8%	28.8%
2008	Oregon	51.3%	26.4%	24.9%
2009	Oregon	65.1%	32.7%	32.4%
2010	Oregon †	65.9%	30.8%	35.1%
2011	Oregon	58.1%	29.4%	28.7%

† Denotes possible Type A sampling bias

◊ Denotes possible Type B sampling bias

\*2005-2007; 2009 and 2010 data updated since published in the 2010 Annual Oregon Albacore Tuna Report.

- **2011 Recreational Fishery**

The 2011 recreational Oregon albacore fishery was slower in catch and effort and was more sporadic and spread out (spatially and over the course of the season) than the 2010 recreational fishery. Overall, 2011 saw the fourth highest number of albacore landed in history. The first sampled recreational albacore were landed in late June in Depoe Bay, Newport and Charleston. Recreational albacore fishing continued into late October, with small catches landed in Depoe Bay, Newport and Bandon. An estimated 29,400 albacore weighing approximately 538,000 pounds were landed for the year. These values are down 29% from 2010, and are also below the five-year average (2007-2011) of 38,000 albacore weighing approximately 751,000 pounds. Access to albacore for recreational vessels off Oregon is highly variable due to distances to the fish and weather conditions. The 2011 season experienced fairly typical Northeast Pacific weather conditions consisting of strong northerly winds limiting recreational access to albacore early in the season. Weather improved in the later summer and allowed recreational access to albacore through late October in several ports. Additionally, recreational boats caught eight yellowtail jack and 38 juvenile bluefin tuna. Overall, the 2011 recreational albacore season saw a shift of effort and catch from the north and central coast to the south coast. Astoria, Garibaldi and Pacific City all saw significant declines in catch and effort, while Winchester Bay, Charleston, Port Orford, Gold Beach and Brookings all saw significant increases (Tables 8 & 9).

Directed charter fishing effort for albacore totaled 2,450 angler trips in 2011, a 1% decrease from 2,500 angler trips in 2010. Directed private albacore trips totaled 8,300 angler trips, a 6% increase from 8,900 angler trips in 2010. Winchester Bay, Port Orford and Gold Beach set records for the number of private angler trips for albacore in 2011 (Tables 8 & 9, Figure 14).

Directed charter catch for albacore totaled 5,200 fish in 2011, a 24% decrease from 6,800 fish landed in 2010. Directed private albacore catch totaled 24,200 fish in 2011, a 22% decrease from 31,000 fish landed in 2010. The Port Orford and Gold Beach private recreational fleet set records for the number of albacore landed in 2011 with 424 and 967 fish, respectively (Tables 10 & 11, Figure 15).

Most of the recreational effort and catch (charter and private vessels combined) of albacore came from the ports of Depoe Bay, Newport and Charleston (Figure 16).

**Table 8. Oregon private vessel albacore fishing effort (angler trips) by port, 2002 - 2011.**

Port	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011 ◊	5-Year Average ¥
Astoria	19	77	95	186	187	338	422	59	242	97	232
Garibaldi	49	94	88	120	641	1,263	960	1,059	2,535	579	1,279
P. City	12	134	132	58	80	209	35	92	246	80	132
D. Bay	100	227	419	406	385	1,644	743	694	1,067	930	1,016
Newport	132	224	697	586	644	2,415	1,475	1,991	2,959	2,519	2,272
Florence	0	NS	0	0	NS	30	67	15	16	24	30
W. Bay	0	44	98	20	12	367	231	370	177	475	324
Charleston	103	528	561	19	144	1,712	960	2,962	1,526	2,871	2,006
Bandon	0	4	53	0	76	132	0	239	19	41	86
P. Orford	NS	10	NS	NS	NS	NS	NS	NS	NS	53	53
G. Beach	NS	55	NS	0	6	12	0	28	0	108	30
Brookings	51	610	505	39	179	932	85	166	115	564	372
<b>Total</b>	<b>466</b>	<b>2,007</b>	<b>2,648</b>	<b>1,434</b>	<b>2,354</b>	<b>9,054</b>	<b>4,978</b>	<b>7,675</b>	<b>8,902</b>	<b>8,341</b>	<b>7,790</b>

◊ 2011 Preliminary Totals

¥ 5-year average includes 2007-2011

NS Indicates no port samplers present that year

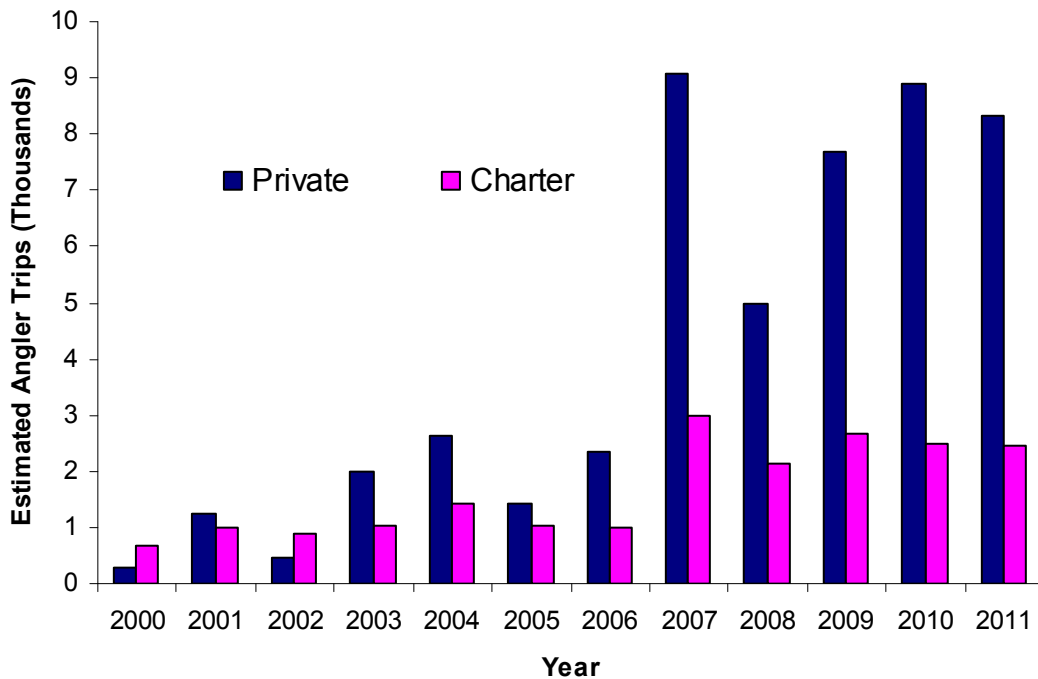
**Table 9. Oregon charter vessel albacore fishing effort (angler trips) by port, 2002 - 2011.**

Port	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011 $\diamond$	5-Year Average $\yen$
Astoria	0	28	46	72	108	311	390	330	399	193	325
Garibaldi	50	31	64	80	38	111	164	117	212	150	151
P. City	0	0	12	5	0	9	5	1	8	0	5
D. Bay	221	110	256	151	94	683	245	432	595	503	492
Newport	587	583	722	611	646	1,463	1,089	1,260	970	1,217	1,200
W. Bay	25	109	160	77	0	12	0	12	0	0	5
Charleston	0	55	68	0	10	69	109	240	142	206	153
Bandon	0	36	48	14	83	231	107	222	149	166	175
G. Beach	NS	14	NS	0	0	30	0	48	0	0	16
Brookings	0	51	46	12	0	57	14	20	0	14	21
<b>Total</b>	<b>883</b>	<b>1,017</b>	<b>1,422</b>	<b>1,022</b>	<b>979</b>	<b>2,976</b>	<b>2,123</b>	<b>2,682</b>	<b>2,475</b>	<b>2,449</b>	<b>2,541</b>

$\diamond$  2011 Preliminary Totals

$\yen$  5-year average includes 2007-2011

NS Indicates no port samplers present that year



**Figure 14. Oregon recreational albacore fishing effort (angler trips), 2000-2011.**

**Table 10. Oregon private vessel albacore catch (number of fish) by port, 2002 - 2011.**

Port	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011 ◇	5-Year Average ¥
Astoria	16	496	499	317	804	1,832	1,809	247	344	208	888
Garibaldi	60	498	819	155	3,160	4,943	3,993	4,119	10,309	539	4,781
P. City	7	369	1,932	53	92	1,910	314	767	1,468	387	1,347
D. Bay	490	1,230	2,259	943	1,413	9,100	2,666	3,458	3,477	2,277	4,909
Newport	562	762	2,894	1,472	1,875	14,825	6,267	10,887	9,911	5,843	9,547
Florence	0	NS	0	0	NS	65	287	41	32	13	88
W. Bay	0	191	624	8	0	1,571	460	969	547	1,281	966
Charleston	72	811	2,258	12	816	8,370	2,153	12,036	4,617	10,629	7,561
Bandon	0	2	167	0	517	624	0	813	28	115	316
P. Orford	NS	46	NS	NS	NS	NS	NS	NS	NS	424	424
G. Beach	NS	109	NS	0	0	210	0	21	0	967	240
Brookings	208	1,962	812	2	303	4,289	136	184	187	1,539	1,267
<b>Total</b>	<b>1,415</b>	<b>6,476</b>	<b>12,264</b>	<b>2,962</b>	<b>8,980</b>	<b>47,739</b>	<b>18,085</b>	<b>33,542</b>	<b>30,920</b>	<b>24,222</b>	<b>31,993</b>

◇ 2011 Preliminary Totals

¥ 5-year average includes 2007-2011

NS Indicates no port samplers present that year

**Table 11. Oregon charter vessel albacore catch (number of fish) by port, 2002 - 2011.**

Port	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011 ◇	5-Year Average ¥
Astoria	0	106	172	275	231	907	1,167	1,016	1,294	366	950
Garibaldi	144	119	186	170	204	628	440	322	651	149	438
P. City	0	0	62	3	0	70	98	4	20	0	38
D. Bay	390	254	572	186	113	2,139	670	942	1,552	858	1,232
Newport	1,612	1,978	2,934	1,043	1,653	4,920	3,126	3,419	2,364	2,231	3,212
W. Bay	15	555	782	327	0	36	0	31	0	0	13
Charleston	0	281	192	0	50	301	269	850	410	537	473
Bandon	0	243	216	46	398	1,607	333	1,727	510	1,034	1,042
G. Beach	NS	147	NS	0	0	256	0	161	0	0	83
Brookings	0	91	327	3	0	319	81	41	0	25	93
<b>Total</b>	<b>2,161</b>	<b>3,774</b>	<b>5,443</b>	<b>2,053</b>	<b>2,649</b>	<b>11,183</b>	<b>6,184</b>	<b>8,513</b>	<b>6,801</b>	<b>5,200</b>	<b>7,576</b>

◇ 2011 Preliminary Totals

¥ 5-year average includes 2007-2011

NS Indicates no port samplers present that year

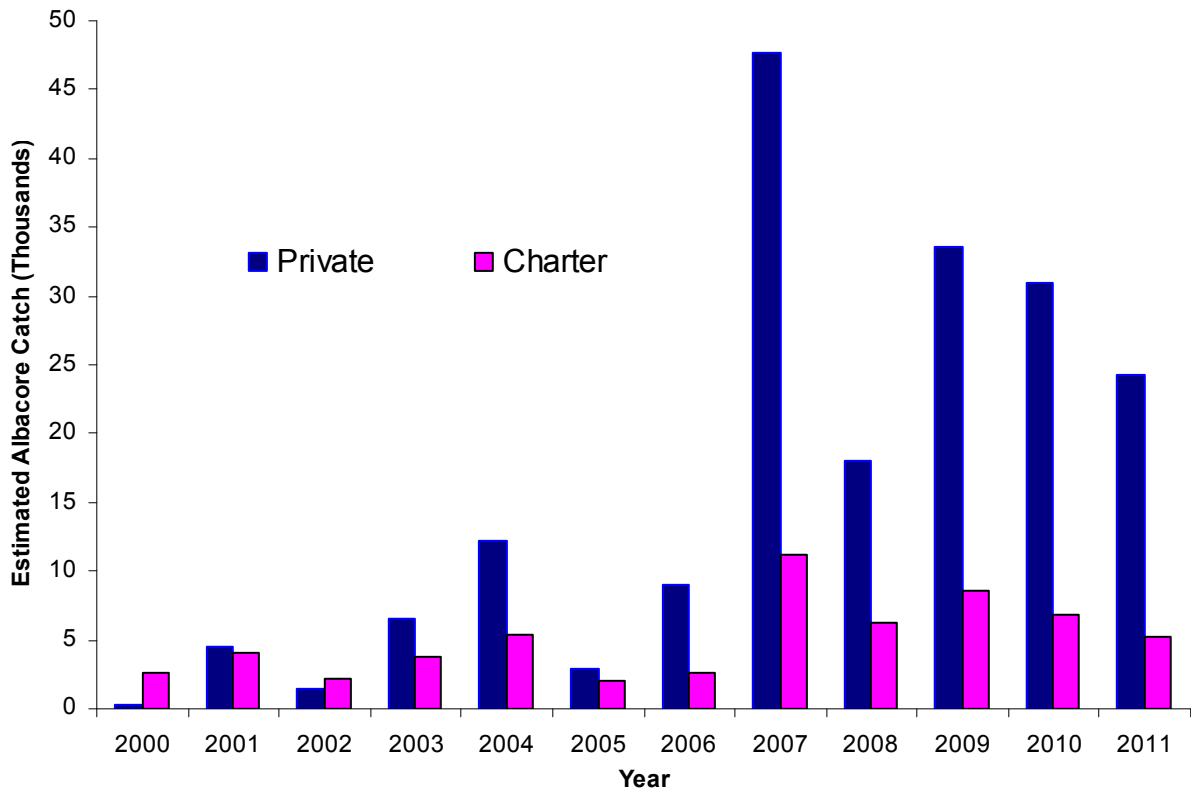


Figure 15. Oregon recreational albacore catch (number of fish) by vessel type 2000-2011.

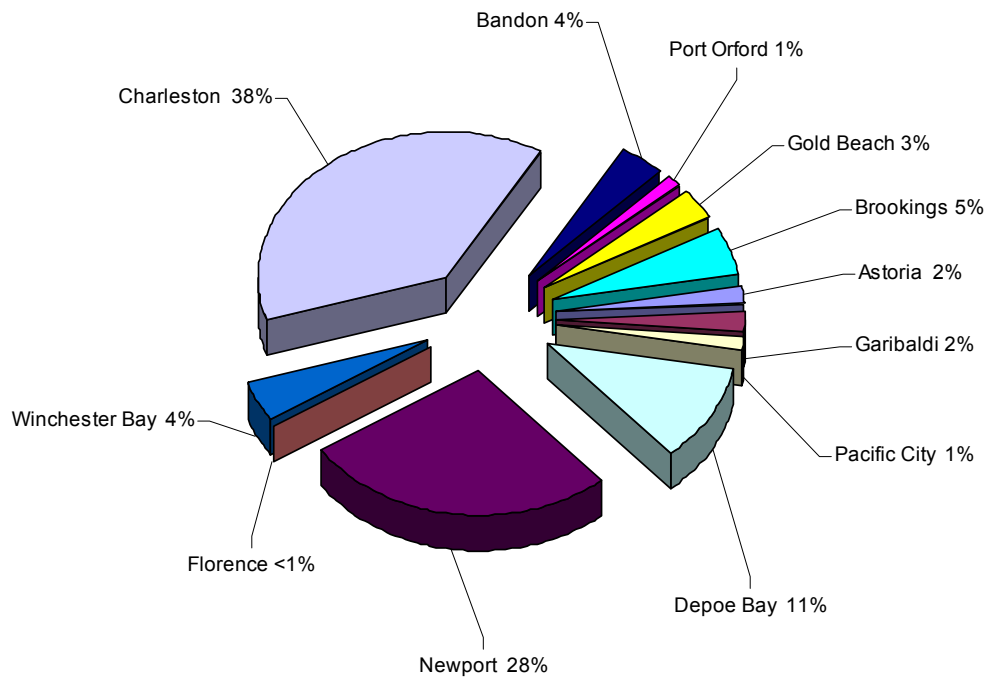


Figure 16. Percentage of Oregon's recreational albacore catch by port, 2011

Private vessel catch-per-unit of effort (CPUE) in 2011 (2.9 albacore per angler) was down more than 16% from 2010 (3.3 albacore per angler). Charter vessel CPUE declined in 2011 (2.1 albacore per angler) nearly 34% from 2010 (3.2 albacore per angler) (Table 12). The recreational (private and charter) CPUE values range significantly among Oregon's ports, and are indicative of variable weather and ocean conditions along with a wide range in the distance to productive fishing areas from each port. Additionally, catch rates for both private and charter vessels were highest in July, and dropped off later in the summer as albacore "jumpers" increased. This jumping behavior is usually accompanied by a sharp drop in catch rates as albacore become more boat shy and are less likely to be caught on typical troll gear.

**Table 12. Oregon private, charter, and total Oregon albacore recreational catch, effort, and Catch-Per-Unit of Effort (CPUE defined as the estimated number of albacore caught divided by the estimated number of albacore angler trips), 2011.**

<b>Port</b>	<b>Catch (No. of Albacore)</b>			<b>Effort (Angler Trips)</b>			<b>Catch per Unit of Effort</b>		
	<b>Private</b>	<b>Charter</b>	<b>Total</b>	<b>Private</b>	<b>Charter</b>	<b>Total</b>	<b>Private</b>	<b>Charter</b>	<b>Total</b>
Astoria	208	366	574	97	193	290	2.1	1.9	2.0
Garibaldi	539	149	688	579	150	729	0.9	1.0	0.9
Pacific City	387	0	387	80	0	80	4.8	-	4.8
Depoe Bay	2,277	858	3,135	930	503	1,433	2.4	1.7	2.2
Newport	5,843	2,231	8,074	2,519	1,217	3,736	2.3	1.8	2.2
Florence	13	0	13	24	0	24	0.5	-	0.5
W. Bay	1,281	0	1,281	475	0	475	2.7	-	2.7
Charleston	10,629	537	11,166	2,871	206	3,077	3.7	2.6	3.6
Bandon	115	1,034	1,149	41	166	207	2.8	6.2	5.6
P. Orford	424	0	424	53	0	53	8.0	-	8.0
G. Beach	967	0	967	108	0	108	9.0	-	9.0
Brookings	1,539	25	1,564	564	14	578	2.7	1.8	2.7
<b>Total</b>	<b>24,222</b>	<b>5,200</b>	<b>29,422</b>	<b>8,341</b>	<b>2,449</b>	<b>10,790</b>	<b>2.9</b>	<b>2.1</b>	<b>2.7</b>

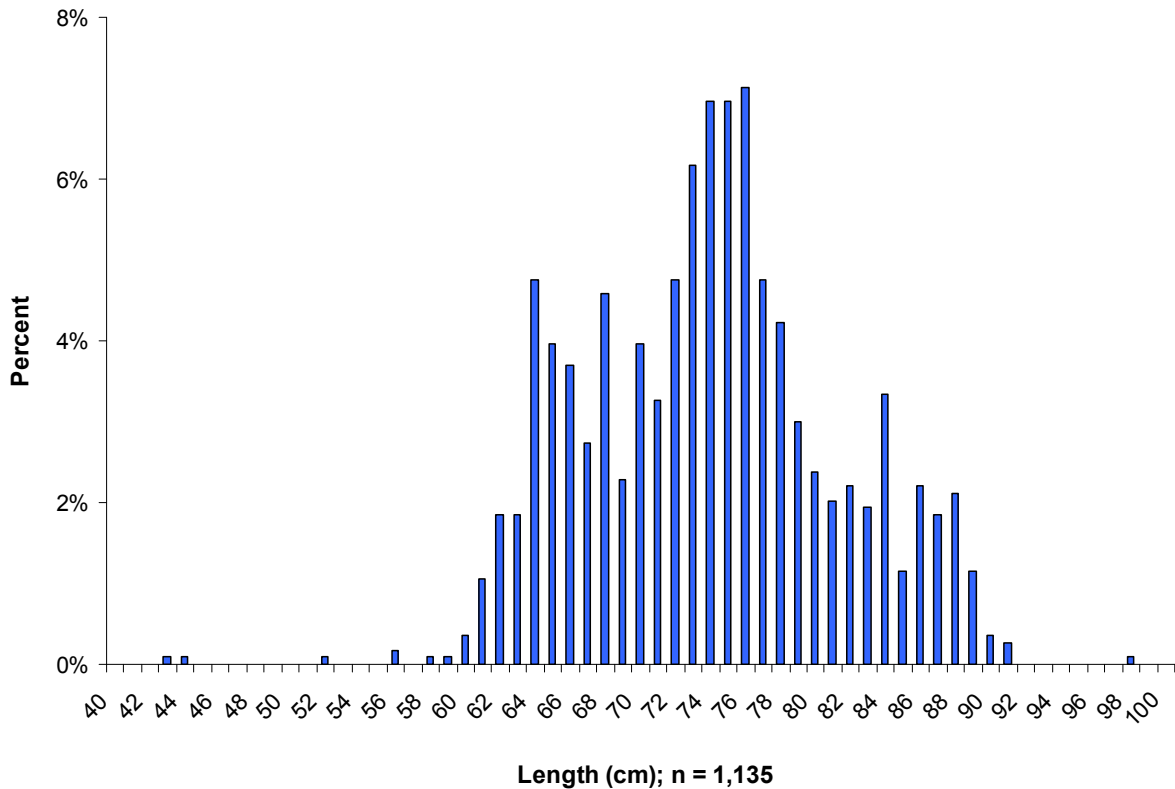
### 2011 Recreational Length-Frequency Analysis

Length-frequency information was collected on recreationally caught albacore from most of Oregon's ports by ORBS (Ocean Recreational Boat Survey) port samplers in 2011. A total of 1,135 fish were measured, and ranged in fork length from 43 to 98 cm. This length range of albacore converts to weights of 3.6 and 42.4 pounds, respectively.

Figure 17 shows the length-frequency histogram of non-sorted, randomly sampled albacore during the 2011 season. The 2011 recreational histogram shows a more multimodal distribution than commercially sampled albacore of the same year. The older age-class of albacore (approximately 5 year-old fish) is much more apparent in the recreationally exploited population than the commercially exploited population (Figure 8).

The average length for the entire 2011 recreationally exploited population landed in Oregon was 73.9 cm. Fish of this size are approximately four years old and weigh 18.4 pounds (Suda 1966; Clemons 1961).





**Figure 17. Length-frequencies of recreationally landed albacore sampled in Oregon, 2011.**

**SUMMARY**

Oregon’s commercial albacore landings in 2011 totaled 9,668,076 pounds, a 9% decrease from 2010, but a 7% increase from the 10 year average (2002-2011). Additionally, albacore ex-vessel revenue was the highest on record in 2011, with a total ex-vessel value of \$18,583,317, a 51% increase from 2010. Recreational fishers landed an estimated 29,400 albacore weighing approximately 538,000 pounds. Sampling activities were successful throughout the season, with a record number of length/frequency samples taken in 2011.

**ACKNOWLEDGMENTS**

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## REFERENCES

- Clemens, H.B. 1961. The migration, age, and growth of Pacific albacore (*Thunnus germon*) 1951–1958. Fish Bull. Calif. Dep. Fish Game (115):128 p.
- Kohin, S., Childers, J., and Sakagawa, G. Archival Tagging of North Pacific Albacore: The Latest Success in Over 30 Years of Cooperation with the U.S. Albacore Fishery. Poster Presented At: 135th Annual Meeting American Fisheries Society Meeting. 2005 September 11-15; Anchorage, AK.
- Suda, Akira. 1966. Catch variations in the North Pacific albacore-VI. The speculations about the influences of fisheries on the catch and abundance of the albacore in the North Pacific by use of some simplified mathematical models. Nankai Reg. Fish. Res. Lab., Rep. 24: 1-14.

## Appendix A

### 2011 Summary Statistics for Oregon's Albacore Port Sampling Program

<b>PORT NAME</b>	<b>Astoria</b>	<b>Garibaldi</b>	<b>Newport</b>	<b>Winchester Bay</b>	<b>Charleston</b>	<b>Brookings</b>	<b>All Other Oregon Ports</b>	<b>TOTAL</b>
NO. OF LOGBOOKS ISSUED	4	0	6	0	11	0	0	21
LBS LANDED BY COMMERCIAL SAMPLED VESSELS	1,810,204	0	2,739,097	0	1,053,153	25,191	0	5,627,645
NO. FISH MEASURED	7,121	0	31,937	0	5,892	101	0	45,051
NO. COMMERCIAL TRIPS SAMPLED FOR LENGTH-FREQUENCY	82	0	299	0	72	2	0	455
TOTAL NO. OF COMMERCIAL TRIPS/LANDINGS	249	141	622	38	413	18	68	1,549
TOTAL NO. OF COMMERCIAL VESSELS $\Omega$	102	40	200	17	137	13	25	442
LBS LANDED BY COMMERCIAL JIG/TROLL VESSELS	3,066,760	126,393	3,356,536	211,956	2,201,833	61,764	79,059	9,104,301
LBS LANDED BY COMMERCIAL BAIT VESSELS	16,310	33,586	148,946	0	0	0	0	198,842
LBS LANDED BY COMMERCIAL JIG&BAIT VESSELS	75,788	8,411	142,652	0	158,082	0	0	384,933
LBS LANDED BY COMMERCIAL GILLNET VESSELS	0	0	0	0	0	0	0	0
LBS LANDED BY SPORT VESSELS**	11,105	13,301	149,744	21,071	204,811	23,350	114,176	537,558
LBS LANDED BY OTHER VESSELS	0	0	0	0	0	0	0	0
PERCENT COMMERCIAL COVERAGE (weight)	57%	0%	75%	0%	45%	41%	0%	58%
PERCENT COMMERCIAL COVERAGE (trips)	33%	0%	48%	0%	17%	11%	0%	29%

$\Omega$  Several vessels made trips into multiple ports, so total numbers of vessels at each port will add up to more than Oregon's total.

\*\* Sport-caught albacore weight estimated using Clemons, 1961.