

ANNUAL OREGON ALBACORE TUNA (*Thunnus alalunga*) REPORT, 2015

Prepared by:

Christian Heath
Albacore Tuna Sampling Coordinator

Oregon Department of Fish and Wildlife
Marine Resources Program
2040 SE Marine Science Drive
Newport, OR 97365

December 2015

**ANNUAL PROGRESS REPORT
ALBACORE PORT SAMPLING PROGRAM**

Pacific States Marine Fisheries Commission Contract No. 16-02C
Subcontract of NOAA Award RA133F15SE0663
July 1, 2015 through March 31, 2016

INTRODUCTION

Albacore tuna (*Thunnus alalunga*) 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 bait-boats and jig-boats fished for albacore off Oregon, but in recent years jig-caught (troll-caught) albacore have been predominantly landed. However, bait fishing with live anchovies is growing in popularity with an increasing number of vessels employing this technique with much success, especially late in the season, for the past several years. The west coast fleet consists primarily of 20 to 60 foot 'combination' boats with multiple permits to fish crab, salmon, or groundfish at other times of the year. There are also several large freezer boats (>60 ft.) that travel the North and South Pacific year-round while primarily fishing for 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 9.5 million pounds per year.

Beginning in 2005 under the Highly Migratory Species Fisheries Management Plan, 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 Southwest Fisheries Science Center and the Pacific States Marine Fisheries Commission (PSMFC). This report documents the progress of the 2015 fishery off Oregon and associated sampling activities.

The Oregon Department of Fish and Wildlife's Ocean Recreational Boat Survey (ORBS) made adjustments to sampling protocol beginning in 2000 to better estimate effort and catch in the growing recreational albacore fishery off Oregon. Recreational fishing for albacore off Oregon has grown in popularity since 2000, and especially in the past nine years. Catches have ranged from a low of 2,901 fish (approximately 57,000 pounds) in 2000 to a high of 63,167 fish (approximately 1,105,000 pounds) in 2012. Since 2006, catches have averaged 37,103 fish (approximately 705,000 pounds) per year.

2015 ALBACORE COMMERCIAL FISHERY

Favorable ocean conditions of calm seas and warm surface water (62°F and above) were present for the majority of the 2015 albacore season. Sea surface temperatures reached highs of 61-64°F by mid-July and early-August (Figure 1) with some pockets of 70°F water off the coast and 62°F water well up the British Columbia coast on up to Alaska. The “Blob” (a phenomenon of warmer water pushed up against the Pacific Northwest coastline), coupled with an El Niño year, allowed “tuna water” (62°F) to expand further north and west than observed during a typical tuna season. Tuna fishers spent the season following tuna north and west, well into Washington waters’, resulting in a slight drop of albacore landings for Oregon ports relative to previous years.

Primary fishing grounds for Oregon-landed tuna in 2015 were within a block bound by 45-46°N latitudes and 124-126°W longitudes. Many tuna fishers reported fishing north of the Columbia River, into Washington waters’. Albacore vessels reported fair to below average success during 2015 with daily catch rates widely varying throughout the fishing season and becoming spotty during the later months. Many smaller vessels opted to participate in the Chinook salmon troll fishery instead of chasing the tuna north into Washington and British Columbia.

The “Fishing Regime” under the U.S./Canada Albacore treaty was suspended for the 2012 fishing season. This treaty suspension disallowed any Canadian vessels in the U.S. EEZ, and any U.S. vessels in the Canadian EEZ. The treaty was originally signed in 1981 and expired after 30 years with U.S. officials declining an agreement for a treaty renewal in 2012. For 2013, a temporary allowance of 45 pre-authorized Canadian vessels were permitted to extract tuna from the US EEZ from June 15 to September 15. A new 3-year plan to phase out the “Fishing Regime” began in 2014 and is expected to be suspended in 2017. This agreement again allowed 45 pre-authorized Canadian vessels to harvest tuna from the US EEZ during 2015 from June 15 to September 15. Three Canadian vessels landed 175,578 total pounds of albacore in Oregon during their three month eligibility.

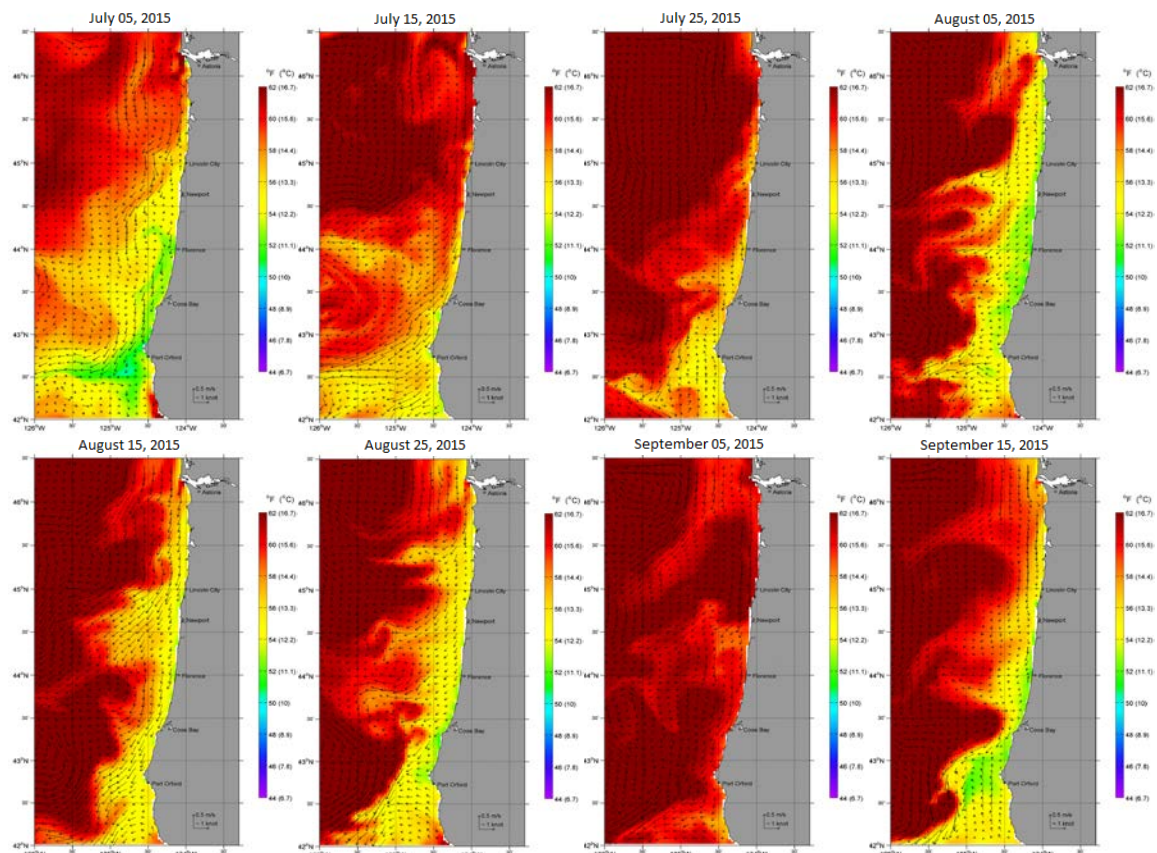


Figure 2: 2015 Oregon Coastal Temperatures during the primary albacore fishing months. July 05 – September 15 (every ten days captured).

2015 Albacore Landings

The 2015 Oregon albacore season began with one small landing on the 7th of June from a dory boat in Pacific City. The number of deliveries remained low (less than 10 albacore trips a week) until the last days of June transitioning into July. Albacore fishing efforts increased during July and August with a peak of 161 trips during the second week of August (Figure 2). The season ended with the last recorded landing made on November 4th in Garibaldi.

Tuna fishers collectively made 1,112 trips on 351 commercial vessels and landed just over 7.5 million pounds of albacore in Oregon during 2015. The number of trips and vessels involved in the tuna fishing effort during 2015 present the lowest totals for this fishery off Oregon since 2008. The 2015 landings in Oregon (7.5 million pounds) represent the lowest Albacore landings in Oregon since 2002 (Figures 3 and 4).

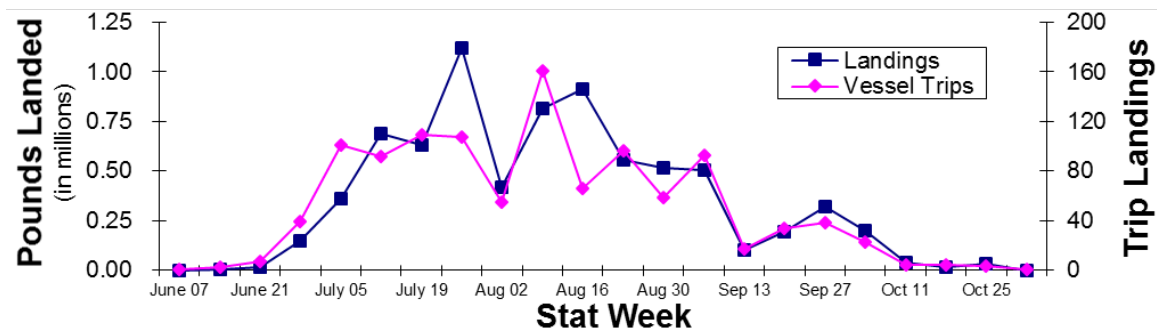


Figure 2: Total albacore landings and number of vessel trips per week in 2015.

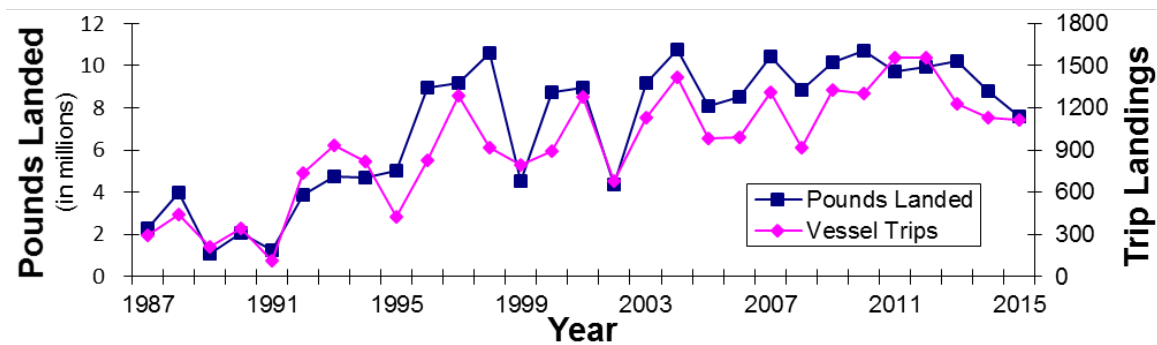


Figure 3: Total pounds of albacore landings and total number of albacore vessel trip landings in Oregon by year.

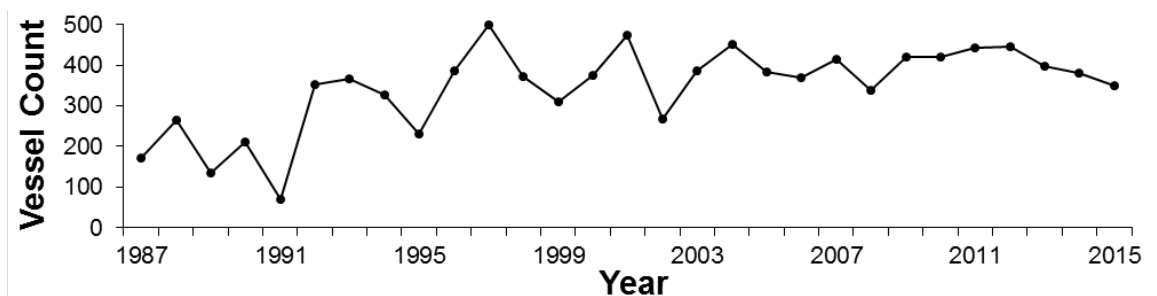


Figure 4: Total number of vessels landing albacore in Oregon by year.

August represented the peak month for total Albacore landings in 2015, yielding 3,082,520 pounds that represented 40% of the total landings for the year (Figure 5). The August, 2015 landings were 6% lower than August, 2014 landings (3,281,585 pounds) and 33% lower than an impressive landing of 4,594,333 pounds in August of 2013. For the 2015 albacore season, the months of July and August produced 80% of Oregon's albacore landings.

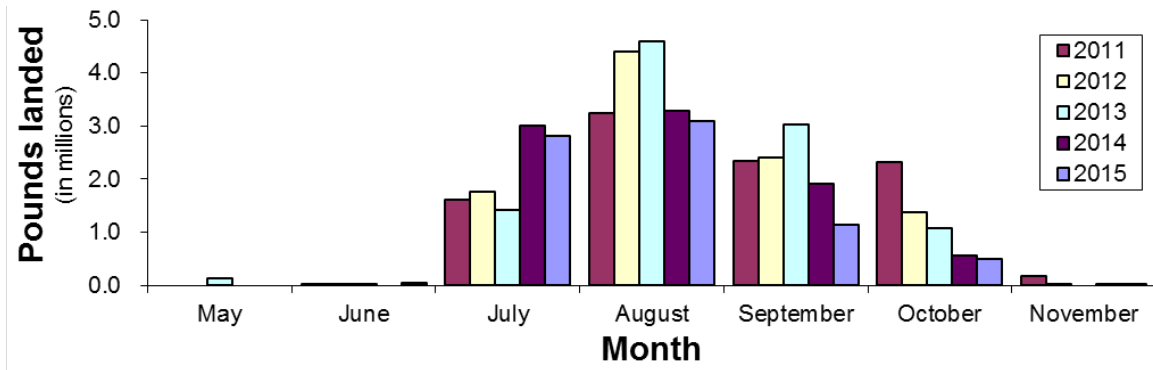


Figure 5: Total pounds of albacore landings by month; 2011 through 2015.

The preliminary total for 2015 commercial landings is 7,566,950 pounds. This is a 13.7% decrease from the 8,769,154 total pounds landed in 2014, and 20.3% lower than the ten-year average (2006-2015) of 9,494,335 pounds (Table 1). The standard deviation for ten years of total landings is $\pm 1,011,295$ pounds, or approximately $\pm 10.7\%$.

Astoria replaced Newport as the primary Oregon port for albacore landings in 2015 with 46.4% of the total weight (Table 2). Newport landed 32.8% of the total weight, followed by Charleston with 15.2%, Garibaldi with 2.9%, Brookings with 1.3%, and Winchester Bay with 0.7%. The remaining seven smaller ports landed a combined 0.6% of the total weight.

Table 1: Ten years of total landings with ten-year average, percent difference from average, and standard deviation.

<u>Year</u>	<u>Total Landings (lbs)</u>	<u>% Difference from Average</u>
2015	7,566,950	-20.3%
2014	8,769,154	-7.6%
2013	10,227,699	7.7%
2012	9,964,238	4.9%
2011	9,699,236	2.2%
2010	10,713,209	12.8%
2009	10,156,183	7.0%
2008	8,876,158	-6.5%
2007	10,448,885	10.1%
2006	8,521,642	-10.2%
Average	9,494,335	
Std Deviation	1,011,295	$\pm 10.7\%$

Table 2: Percentage of total landings for 2015 (preliminary) and 10-year (2006-2015) average.

<u>2015</u>			<u>10-Year Average</u>		
<u>Port</u>	<u>Landings (lbs)</u>	<u>Landing %</u>	<u>Port</u>	<u>Landings (lbs)</u>	<u>Landing %</u>
Astoria	3,509,700	46.4%	Newport	3,928,513	41.4%
Newport	2,481,349	32.8%	Astoria	3,049,279	32.1%
Charleston	1,153,362	15.2%	Charleston	1,977,923	20.8%
Garibaldi	221,341	2.9%	Garibaldi	238,727	2.5%
Brookings	100,667	1.3%	Winchester Bay	135,703	1.4%
Winchester Bay	56,171	0.7%	Brookings	88,236	0.9%
Florence	17,628	0.2%	Florence	28,072	0.3%
Port Orford	10,891	0.1%	Port Orford	22,144	0.2%
Pacific City	5,834	0.1%	Pacific City	9,131	0.1%
Gold Beach*	4,201	0.1%	Depoe Bay	5,709	0.1%
Depoe Bay	3,989	0.1%			
Bandon*	1,752	0.0%			
Gearhart-Seaside*	65	0.0%			

* Gold Beach, Bandon and Gearhart-Seaside do not have landings every year.

The average landing in Oregon for 2015 was 6,805 pounds, a decrease of only 46 pounds (0.7%) from 2014 (Table 3). The quartile partition of landing size in the 2015 Oregon albacore fishery provides landing characteristics of the fishery. Fifty percent of all vessel trips landed less than or equal to 2,534 pounds (Table 3).

Table 3: Quartile partition of 2015 Oregon albacore landings.

All Landings		
Quartile		Pounds
100%	Max	141,237
75%	Quartile	7,153
50%	Median	2,534
25%	Quartile	769
0%	Min	22
	Average	6,805

2015 Albacore Revenue

The west coast's albacore market demand in 2015 was below average, causing prices to drop. For the season, fresh-iced tuna prices averaged $\$1.29 \pm \0.48 per pound, blast-frozen tuna prices averaged $\$1.25 \pm \0.65 per pound, brine-frozen tuna prices averaged $\$1.12 \pm \0.16 per pound, and public sales of tuna averaged $\$2.50 - \3.00 per pound. The most dramatic decrease in price was observed for the fresh-iced tuna market, where price dropped eleven cents per pound relative to 2014. The market value of blast-frozen and brine-frozen prices remained similar in market value during 2015, even though the quality of Albacore is not similar between the two producers. Blast-frozen vessel operators continue to express frustration of the low prices for their premium grade tuna. In 2013, higher quality blast-frozen tuna sold for an average of $\$1.87$ a pound.

The 2015 average prices remained fairly consistent throughout the season. There was an initial decrease in the average price per pound once tuna became readily available, and a small spike at the end of the season when tuna became scarce (Figure 6). Blast-frozen tuna deliveries accounted for 45.6% of total sales in Oregon and were primarily sold in Astoria (Table 4). Brine-frozen tuna deliveries accounted for 29.7% of total sales, primarily in Newport. The fresh-iced tuna deliveries accounted for 24.6% of total sales that were distributed among many of Oregon's ports.

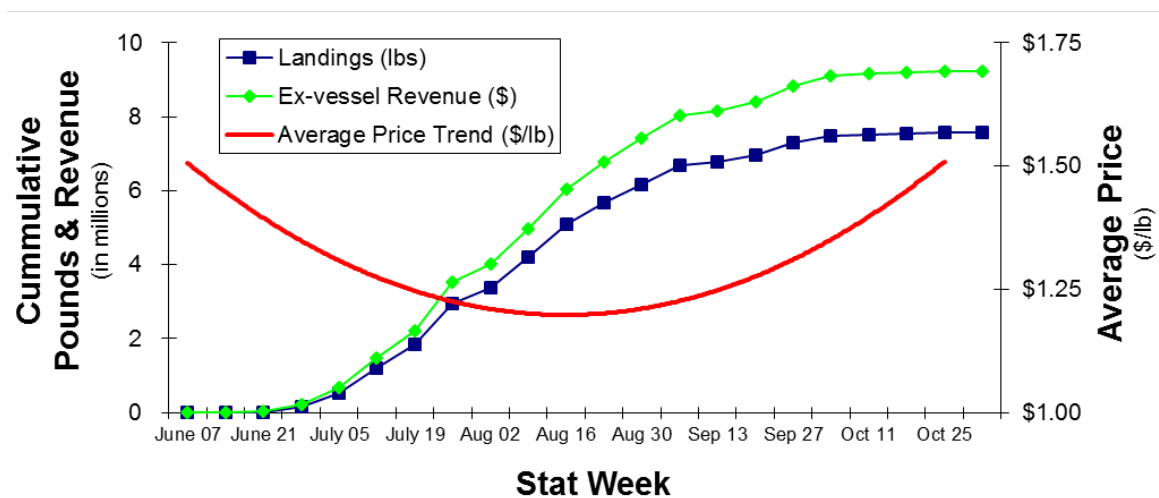
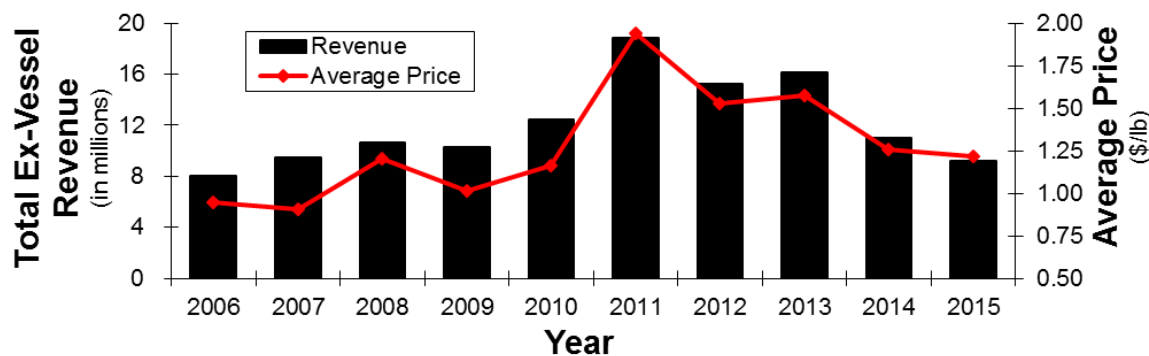


Figure 6: Cumulative landings, cumulative ex-vessel revenue, and average price by week in 2015.

Table 4: Treatment type by landings (pounds), port, and 2015 preliminary total percentage.

Port	Blast frozen (lbs)	Blast%	Brine frozen (lbs)	Brine%	Iced/Fresh (lbs)	Iced%	Total landings
Astoria	2,416,456	68.9%	552,987	15.8%	540,257	15.4%	3,509,700
Newport	473,043	19.1%	1,366,723	55.1%	641,583	25.9%	2,481,349
Charleston	483,108	41.9%	202,662	17.6%	467,592	40.5%	1,153,362
Remaining Ports	83,870	19.8%	124,830	29.5%	213,839	50.6%	422,539
Total by treatment	3,456,477	45.7%	2,247,202	29.7%	1,863,271	24.6%	7,566,950

**Figure 7:** Total revenue (ex-vessel) and average price by year for Oregon commercial albacore.

Ex-vessel revenue generated from albacore in 2015 totaled \$9,228,204 (Figure 7), a 16% decrease from the 2014 total of \$11,022,543. The average price for 2015 was \$1.22 per pound, slightly lower than the ten-year average (\$1.28). The ten-year average is boosted significantly from an average price of \$1.94 per pound during the 2011 albacore season. The price spike of 2011 was strongly influenced by the tsunami in Japan that devastated Japan in March of 2011. The tsunami destroyed the Japanese tuna fleet and the largest fish freezer in the world, which may be the primary reason for the higher demand for Oregon albacore along with the associated increase in its' value. Other world market factors may have also influenced this price increase. Note that prices for tuna have decreased steadily during the past four years, and now closely resemble the prices of tuna prior to 2011.

During the primary tuna sampling season (July 1 through October 31 of 2015), albacore accounted for 18% of Oregon's marine fish revenue (Table 5). For a full calendar year, Albacore typically ranks 4th or 5th for total annual revenues generated in Oregon marine fisheries. Albacore tuna revenue ranked 6th relative to other Oregon fisheries during 2015 representing 7% of the total annual revenue. Oregon fisheries that exceeded albacore revenue (in percent of total pounds landed) were pink shrimp (30%), dungeness crab (25%), groundfish (11%), sablefish (9%) and chinook salmon (8%) (Table 6).

Table 5: Oregon marine fish revenue (ex-vessel) during the tuna sampling season: July 1 - October 31, 2015.

Fishery Species	Pounds Landed	Percentage of Pounds Landed	Revenue	Percentage of Revenue
Pink Shrimp	20,766,848	16.6%	\$16,967,850	32.8%
Albacore Tuna	7,526,608	6.0%	\$9,165,018	17.7%
Pacific Whiting	81,028,097	64.7%	\$6,113,490	11.8%
Sablefish	1,911,040	1.5%	\$5,517,358	10.7%
Chinook Salmon	1,817,550	1.5%	\$5,338,701	10.3%
Groundfish ^x	9,195,999	7.3%	\$5,370,803	10.4%
All Other Marine Species	2,728,717	2.2%	\$2,082,124	4.0%
Dungeness Crab ^o	327,857	0.3%	\$1,238,738	2.4%
Total	125,302,716		\$51,794,082	

^x Groundfish excluding Pacific Whiting and Sablefish

^o Includes Bay and Ocean Dungeness fisheries

Table 6: Oregon annual marine fish revenue (ex-vessel) for January 1 – December 31:*

Fishery Species	Pounds Landed	Percentage of Pounds Landed	Revenue	Percentage of Revenue
Pink Shrimp	53,419,533	25.7%	\$40,347,951	29.8%
Dungeness Crab ^o	8,245,004	4.0%	\$33,818,458	25.0%
Groundfish ^x	26,842,098	12.9%	\$15,241,443	11.3%
Sablefish	4,783,745	2.3%	\$12,715,256	9.4%
Chinook Salmon	2,758,060	1.3%	\$11,506,974	8.5%
Albacore Tuna	7,566,950	3.6%	\$9,228,204	6.8%
Pacific Whiting	94,903,895	45.6%	\$7,146,481	5.3%
All Other Marine Species	9,704,100	4.7%	\$5,452,754	4.0%
Total	208,223,385		\$135,457,521	

* Results preliminary (12/14/15)

^x Groundfish excluding Pacific Whiting and Sablefish^o Includes Bay and Ocean Dungeness fisheries for calendar year December 2014 – November 2015

2015 Sampling & Coverage Rate Analysis

During the 2015 albacore sampling season, sampling goals were updated to reflect a trip coverage rate, instead of a sampling rate determined by total weight landed. The tuna sampling rate will continue to be defined as the percentage of length-frequency sampled landing weights to total landing weights by port and state. Coverage rate will now be defined by the percentage of length-frequency sampled trips, to the total albacore trips landed by port and state. To ensure a higher coverage rate, sampling methods were modified to streamline the sampling process. A minimum of 20 albacore lengths are now required per length frequency sample. The previous minimum was set at 50 lengths.

In 2015, commercial albacore sampling began on July 1st and continued through October 31st. Dedicated samplers in Astoria (4 months), Newport (4 months), and Charleston (4 months at half time) were trained, prepared, and stationed on site, resulting in a season sampling rate of 63.8% (sampled pounds per pounds landed) and a coverage rate of 32.5% (sampled trips per trips landed). Additional sampling was conducted by ODFW commercial groundfish port samplers throughout the albacore season, when available. Sampling activities included measuring albacore for length-frequencies, distributing logbooks to vessels with valid Highly Migratory Species Permits, distributing addressed envelopes for completed logbooks, and providing information to fishers. Table 7 presents a summary of commercial sampling rates and coverage rates for the 2015 season. Additional summaries required by the contractual agreement with NMFS and PSMFC for albacore sampling funding are presented in Appendix A.

Table 7: 2015 preliminary Oregon commercial albacore sampling season summary.

Port	Total Pounds Landed	Pounds Sampled ^y	Sample Rate (sampled pounds/ landed pounds)	Number of Length Frequency	Number of Fish Sampled	Average Fish per Length Frequency	Commercial Albacore Trips	Albacore Trips Sampled	Coverage Rate (sampled trips/ trips landed)
Astoria	3,509,700	2,382,918	67.9%	144	3,821	26.5	280	144	51.4%
Gearhart-Seaside	65	-	-	-	-	-	1	-	-
Garibaldi	221,341	-	-	-	-	-	126	-	-
Pacific City	5,834	-	-	-	-	-	24	-	-
Depoe Bay	3,989	-	-	-	-	-	13	-	-
Newport	2,481,349	1,712,670	69.0%	158	6,160	39.0	390	158	40.5%
Florence	17,628	-	-	-	-	-	11	-	-
Winchester Bay	56,171	-	-	-	-	-	19	-	-
Charleston	1,153,362	706,199	61.2%	57	2,006	35.2	200	57	28.5%
Bandon	1,752	-	-	-	-	-	1	-	-
Port Orford	10,891	-	-	-	-	-	18	-	-
Gold Beach	4201	-	-	-	-	-	6	-	-
Brookings	100,667	29,575	29.4%	2	100	50.0	23	2	8.7%
TOTAL	7,566,950	4,831,362	63.8%	361	12,087	33.5	1,112	361	32.5%

^y Pounds Sampled are total pounds landed for every offload that is sub-sampled

Coverage rates shown in Table 7 were well above the 2015 stated goals of 20% minimum for Astoria and Newport and 10% minimum rate for Charleston. Sampling rates for pounds landed also exceeded past goals of 50% minimum for Astoria and Newport and 25% for Charleston. The average number of fish per length-frequency were significantly above the 20 fish minimum for the 2015 season.

In addition to calculating the coverage rate and the sampling rate for sampling percentages, analyzing the difference between the sampled trip landing weights and all individual trip landing weights is important to understand what the sampled data describe (Table 8). Large landings are defined as total trip landing weights greater than 75% of all individual albacore trip landing weights, while small landings are defined as total trip landing weights less than 25% of all individual albacore trip landing weights. For 2015, the 75% quartile landing weight for all landings is 7,153 pounds. Sampled “large” landings in 2015 consisted of 51% sampled trips greater than 7,153 pounds, suggesting that the distribution of sampled trips were skewed “large” relative to the distribution of all landings

Table 8: Quartile partition for all Oregon albacore landings and sampled landings in 2015.

All Landings			Sampled Landings		
Quartile		Pounds	Quartile		Pounds
100%	Max	141,237	100%	Max	141,237
75%	Quartile	7,153	75%	Quartile	15,985
50%	Median	2,534	50%	Median	7,450
25%	Quartile	769	25%	Quartile	3,600
0%	Min	22	0%	Min	90
	Average	6,805		Average	13,383

2015 Length Frequency Analysis

Length frequency measurements were collected from random, non-sorted, ocean run commercially harvested albacore during fish buying offloads by port samplers from July through October of 2015. A total of 12,087 albacore tuna were measured for length frequencies in the ports of Astoria, Newport, Charleston, and Brookings (Figure 8). Collectively, the length data from the sampled ports suggest a tri-modal distribution. The primary mode represents an age-class of approximately three and a half to four year-old tuna, the secondary mode represents an older age-class of approximately five year-old tuna, and the tertiary mode represents the youngest age-class of approximately three year-old tuna (Suda 1966). Although the number of fish sampled in each port widely varies, the distribution and trend appear to be very similar among the three primary sampled ports for all months combined (Figure 9).

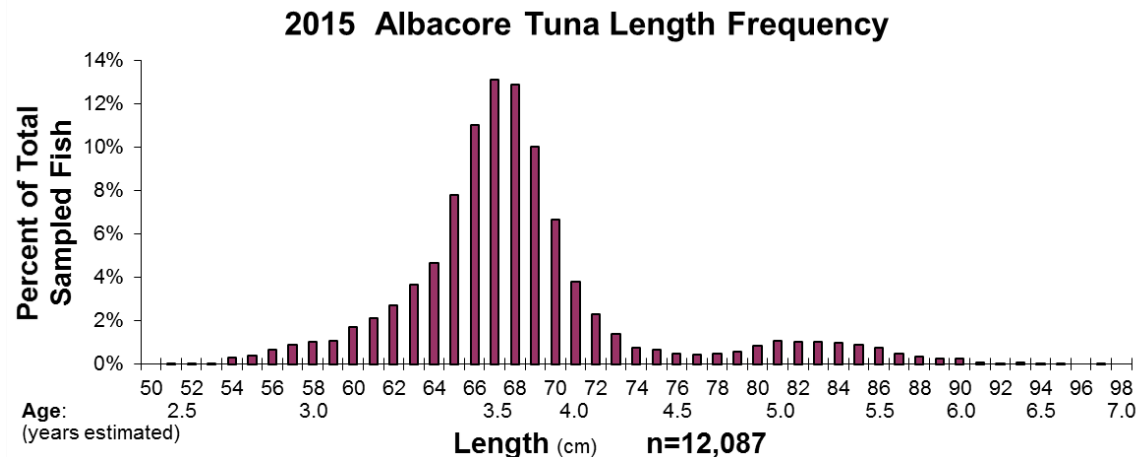


Figure 8: Length frequency data for all sampled ports, all months combined in 2015. Average length = 68.2cm, n = 12,087.

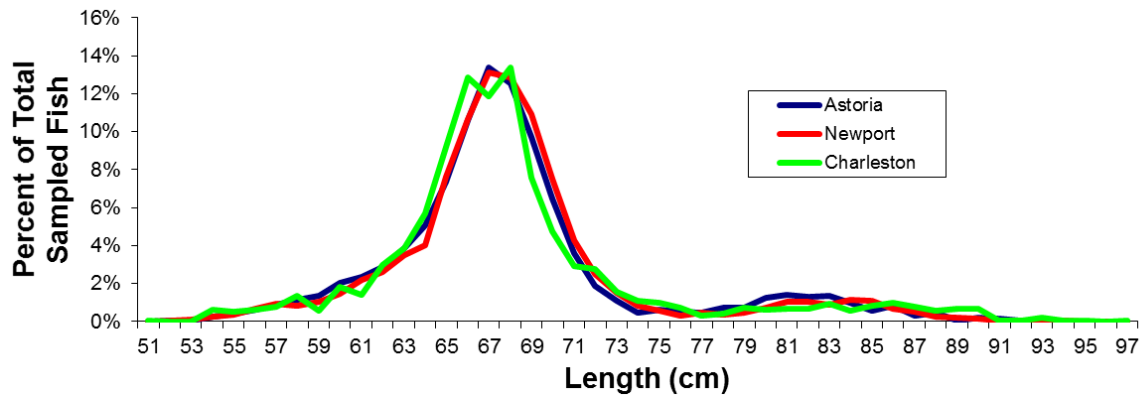


Figure 9: Length frequency data for all sampled months by port in 2015. Astoria n = 3,821. Newport n = 6,160. Charleston n = 2,006.

Average lengths for sampled fish throughout the 2015 season showed a decrease of 2.4 cm for large grade fish, a 1.2 cm decrease for medium grade fish, and a 0.5 cm increase for the smallest grade fish (Figure 10). Grades are set as follows; small grade (known as peanuts) are tuna that measure 58 cm or less (nine pounds and under), medium grade (common tuna) are tuna that measure 59 cm to 72 cm, and large grade (known as hogs) are tuna that measure 73 cm and over (18 pounds and over). Grades are determined by individual dealers, and occasionally the buyer will set the larger grade fish at 15 pounds. For 2015, however, the common break was marked at the 17 to 18 pound fish. The proportion of small to large grade fish was dominated by the medium grade fish this year. There was a small increasing trend of the largest grade of fish during September and October, however this may have more to do with the tuna growing throughout the season rather than finding larger (older) albacore (Figure 10).

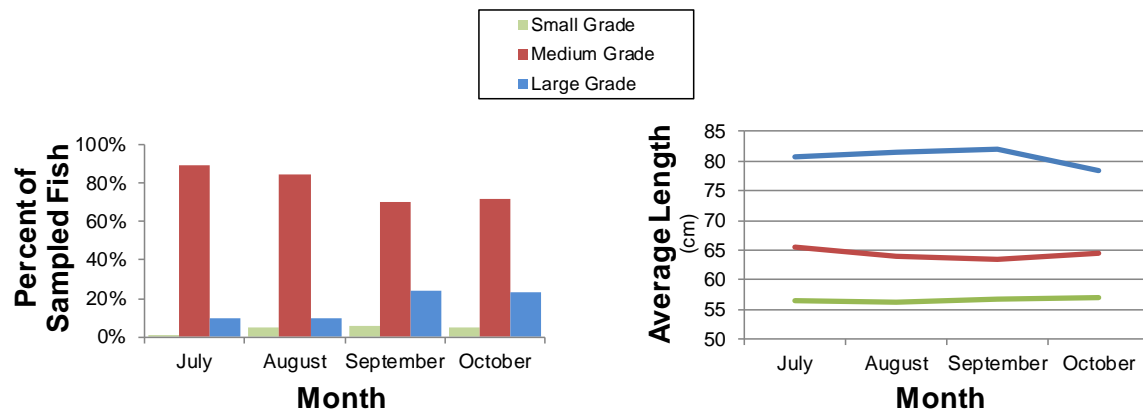


Figure 10: 2015 proportion (left) & average length (right) of small, medium & large grade fish sampled each month. July n = 5,348. August n = 3,910. September n = 1,649. October n = 1,180.

Modal analysis using a mixed distribution model calculated the average length for the large grade fish at 80.9 ± 5.0 cm representing 13.0% of all sampled tuna, the medium grade fish at 66.7 ± 2.8 cm representing 83.6% of all sampled tuna, and the small grade fish at 56.5 ± 1.4 cm representing 3.4% of all sampled tuna. Based on length to weight approximations the average weight for small grade fish is 8.4 pounds, medium grade fish is 13.7 pounds, and 24.4 pounds for large grade fish (Clemens 1961). The 2015 commercial albacore season was influenced heavily by the three and a half to four year old albacore tuna age class, according to both the length frequency data collected by tuna samplers, and the reports from many albacore fishers during the 2015 albacore fishing season.

2015 ALBACORE RECREATIONAL FISHERY

Access to albacore for recreational vessels off Oregon can be highly variable, depending on weather conditions and distance to the fish. This year, tuna arrived off the Oregon coast during the last two weeks of June with a few spotty landings. After a mild storm that ended on the 4th of July, calm ocean conditions allowed for two months of solid effort from recreational fishers targeting tuna. Both charter and private vessels ventured 20 miles (or more) offshore in search of tuna before efforts slowed in early-September. Peak effort and landings occurred on the 3rd full week of July, with an estimate of 10,347 albacore tuna landed. The last recorded tuna landing for 2015 was on October 2nd.

An estimate of 34,878 albacore tuna were landed during the three and a half months of fishing for tuna this year. Tuna-specific trips caught 34,156 albacore, while 722 albacore were caught on either a combo trip (salmon & other fish), bottomfish trip, halibut trip or a salmon trip. The graphs and tables that follow reference albacore harvested on tuna-specific trips from the recreational fishery. For 2015, the recreational albacore season fell short of the five-year average for landings, but very comparable to the five-year average for effort (Figure 11).

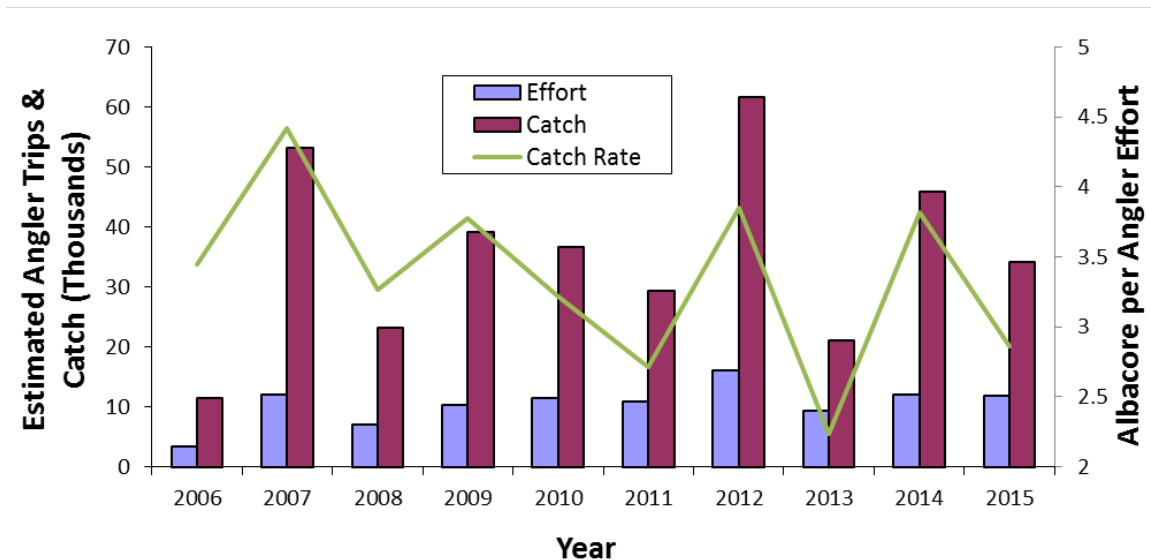


Figure 11: Oregon recreational albacore fishing effort (number of anglers), catch (number of tuna landed) and catch rate (albacore per angler effort) from tuna-specific fishing trips.

Recreational fishing effort for albacore totaled 11,934 angler trips in 2015, less than 1% lower than the five-year average of 12,043 angler trips (Table 9). The number of albacore tuna landed from these tuna-specific trips totaled 34,156 fish, 11% fewer than the five-year average of 38,445 angler trips (Table 10).

Combined charter and private albacore-specific landings for 2015 indicate that Newport was the top port with 37% of the total recreational catch, and the four ports of Newport, Charleston, Depoe Bay and Garibaldi accounted for 90% of the tuna landings for the state (Table 11). Of the four main ports, Charleston had the most significant drop in tuna landings from 2014 to 2015, landing only 42% (7,519 albacore) of last year's total of 17,913 albacore (Table 10).

Charter vessel catch-per-unit of effort (CPUE) in 2015 was 2.4 albacore per angler trip, while the private vessel CPUE was 3.0 albacore per angler trip (Table 12). The combined CPUE for Oregon's recreational albacore season for charter and private was 2.9 albacore per angler trip, almost one albacore less per angler relative to 2014 (3.8 albacore per angler) and well below the ten-year average of 3.4 albacore per angler trip.

Table 9: Oregon recreational albacore fishing effort (angler trips) by port, 2006-2015.

Port	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	5-Year* Average
Astoria	296	651	815	389	641	290	563	404	561	284	420
Garibaldi	680	1,375	1,126	1,177	2,747	729	2,385	2,213	1,845	1,663	1,767
P. City	80	218	40	93	254	80	337	132	266	248	213
D. Bay	479	2,328	989	1,125	1,662	1,433	2,929	2,487	1,760	2,116	2,145
Newport	1,292	3,877	2,567	3,251	3,929	3,736	5,200	3,370	2,826	4,081	3,843
Florence	NS	30	67	15	16	24	28	NS	20	17	22
W. Bay	12	379	231	382	177	475	403	302	547	158	377
Charleston	155	1,780	1,067	3,203	1,668	3,077	3,743	428	4,050	2,651	2,790
Bandon	159	364	107	461	168	207	399	7	173	152	188
Port Orford	NS	NS	NS	NS	NS	53	0	NS	NS	NS	27
G. Beach	6	42	0	76	0	108	0	6	0	51	33
Brookings	179	990	99	183	115	578	21	85	0	513	239
Total	3,338	12,034	7,108	10,355	11,377	10,790	16,008	9,434	12,048	11,934	12,043

* 5-year average includes 2011-2015.

NS indicates no port samplers present that year.

Table 10: Oregon recreational albacore catch* (number of fish) by port, 2006-2015.

Port	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	5-Year* Average
Astoria	1,035	2,415	2,914	1,176	1,598	556	2,272	1,060	2,092	660	1,328
Garibaldi	3,333	5,046	4,291	4,203	10,734	683	6,841	6,373	6,597	4,800	5,059
P. City	92	1,814	397	771	1,476	383	1,712	163	872	637	753
D. Bay	1,512	10,222	3,301	4,011	5,001	3,114	10,336	5,271	6,401	5,523	6,129
Newport	3,484	16,700	8,605	12,298	11,536	8,043	21,512	7,026	9,143	12,746	11,694
Florence	NS	64	287	27	22	11	36	NS	56	39	36
W. Bay	0	1,280	449	983	516	1,275	1,229	169	2,006	212	978
Charleston	866	8,475	2,422	12,733	5,016	11,166	15,558	817	17,913	7,519	10,595
Bandon	875	2,179	333	2,508	496	1,149	2,194	30	888	365	925
Port Orford	NS	NS	NS	NS	NS	424	0	NS	NS	NS	212
G. Beach	0	466	0	182	0	967	0	0	0	65	206
Brookings	303	4,481	205	225	187	1,546	9	176	0	1,590	664
Total	11,500	53,142	23,204	39,117	36,582	29,317	61,699	21,085	45,968	34,156	38,445
CPUE	3.4	4.4	3.3	3.8	3.2	2.7	3.9	2.2	3.8	2.9	3.1

* Albacore caught from tuna-specific fishing trips.

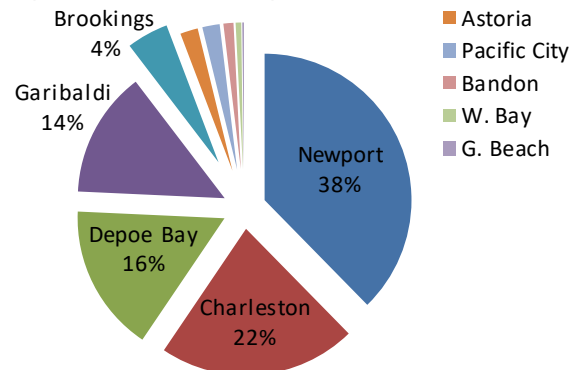
* 5-year average includes 2011-2015.

NS indicates no port samplers present that year.

CPUE indicates catch-per-unit of effort (albacore per angler effort)

Table 11: Preliminary percentage of Oregon's recreational albacore catch* by port in 2015.

Port	Landing %
Newport	37.6%
Charleston	21.7%
Depoe Bay	16.3%
Garibaldi	13.9%
Brookings	4.6%
Astoria	1.9%
Pacific City	1.9%
Bandon	1.1%
W. Bay	0.6%
G. Beach	0.2%
Florence	0.1%



* Albacore caught from tuna-specific fishing trips.

Table 12: Oregon’s preliminary 2015 recreational catch, effort, and CPUE (catch/effort) by vessel type, port total, and statewide total.

Port	Catch (No. of Albacore)			Effort (Angler Trips)			Catch per Unit of Effort		
	Private ^o	Charter	Total	Private ^o	Charter	Total	Private ^o	Charter	Total
Astoria	271	389	660	87	197	284	3.1	2.0	2.3
Garibaldi	3,699	1,101	4,800	1,281	382	1,663	2.9	2.9	2.9
Pacific City	637	0	637	248	0	248	2.6	NA	2.6
Depoe Bay	3,252	2,271	5,523	1,235	881	2,116	2.6	2.6	2.6
New port	9,664	3,082	12,746	2,800	1,281	4,081	3.5	2.4	3.1
Florence	39	0	39	17	0	17	2.3	NA	2.3
W. Bay	212	0	212	158	0	158	1.3	NA	1.3
Charleston	7,229	290	7,519	2,450	201	2,651	3.0	1.4	2.8
Bandon	291	74	365	90	62	152	3.2	1.2	2.4
G. Beach	63	2	65	46	5	51	1.4	0.4	1.3
Brookings	1,575	15	1,590	508	5	513	3.1	3.0	3.1
Total	26,932	7,224	34,156	8,920	3,014	11,934	3.0	2.4	2.9

^o Less than 2% of private effort and catch reflects “guides”, or charters without a fixed station. In 2015, an estimated additional 722 albacore were caught on non-tuna-specific fishing trips. NA indicates not applicable.

Recreational Length Frequency Analysis

Length frequency information was collected on 1,446 recreationally caught albacore by Ocean Recreational Boat Survey (ORBS) port samplers in 2015. Figure 12 shows the length frequency histogram of non-sorted, randomly sampled albacore during the 2015 recreational season. The length data suggests a tri-modal distribution, where the primary mode represents the age-class of approximately three and a half to four year-old tuna (Suda 1966).

For a direct comparison to the commercially harvested albacore of 2015, we set the size for the small fish at 50 to 58 cm (small grade), the medium fish at 59 to 72 cm (medium grade), and the large fish at 73 to 97 cm (large grade). Modal analysis using a mixed distribution model calculated the average length for small fish at 56.0 ±1.6 cm representing 2% of all sampled tuna, medium fish at 67.2 ±2.6 cm representing 63% of all sampled tuna, and large fish at 81.5 ±4.1 cm representing 35% of all sampled tuna. Using length to weight approximations from Clemens (1961), the average weight in 2015 for small fish is 8.1 pounds, 14.0 pounds for medium fish, and 25.0 pounds for large fish.

Albacore harvested from commercial and recreational vessels show little difference regarding average lengths per grade designation. Small grade is 56.5 cm for commercial tuna and 56.0 cm for recreational tuna, medium grade is 66.7 cm for commercial tuna and 67.2 cm for recreational tuna and the large grade is 80.9 cm for commercial tuna and 81.5 cm for recreational tuna. The difference between the fisheries is the higher percentage of large grade tuna in the recreational fishery. Only 13% of the commercial tuna sampled were larger than 72 cm, but 35% (more than a third) of the recreational tuna sampled were larger than 72 cm.

2015 Recreational Albacore Tuna Length Frequency

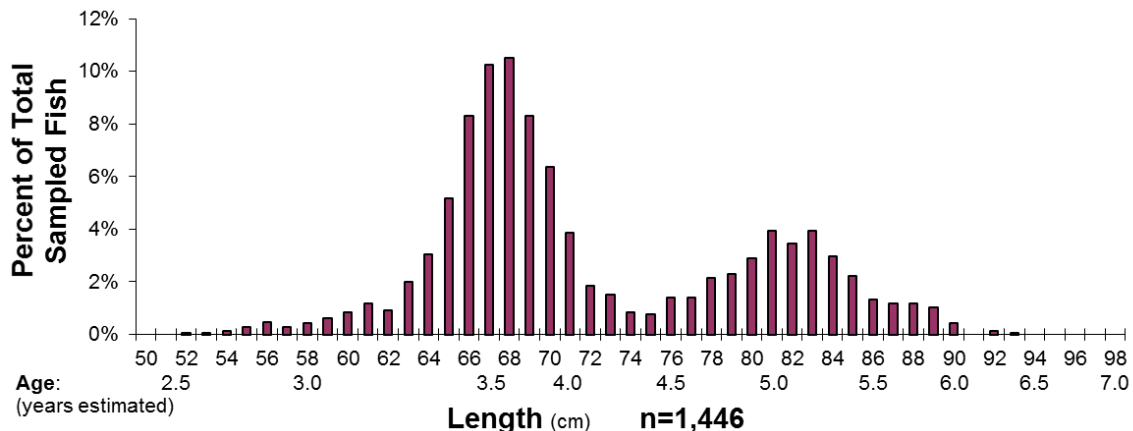


Figure 12: Length frequency data for all ports sampled for tuna by ORBS in 2015. Average Length = 72.0cm, n = 1,446.

SUMMARY

Oregon's preliminary commercial albacore landings in 2015 totaled 7,564,698 pounds, a 14% decrease from the 2014 landings, and 21% lower than the ten-year average (2006-2015). Ex-vessel revenues from albacore totaled \$9,223,159, a significant decrease of 20% from the 2014 season, and 24% lower than the ten-year average (2005-2014). Sampling exceeded the goals for the three primary ports, and Oregon overall.

Three Canadian vessels landed 175,578 total pounds of albacore in Oregon on three total landings in Astoria during the 2015 tuna season, an increase of 37% from 2014. Nonetheless, the 2015 landings by Canadian vessels represent a significant drop relative to 2013, when they landed more than 1 million pounds. Canadian albacore landed in Oregon consisted of high quality blast frozen fish which totaled to \$238,294.

Recreational tuna fishers had a sub-par fishing season, landing a total of 34,878 estimated tuna (from all types of recreational effort and vessels) weighing approximately 601,646 pounds. This is 11% below the five-year average of tuna harvested recreationally from 2011 to 2015.

ACKNOWLEDGEMENTS

Thank you to all the albacore fishing vessel operators and crew who cooperatively provided fishing information during the 2015 sampling project, as well as fish plant staff and buyers who supported an efficient sampling platform on their property. Many thanks go to Dean Headlee and Alex Benecke as primary albacore samplers. Thanks also to ODFW port biologists, assistant port biologist and port samplers for collecting many length frequencies and distributing logbooks and envelopes: Sheryl Flores, Scott Malvitch, Nick Wilsman, Craig Good, Kelsey Lawson, Laura Green, Meghan Gahm, Jonathan LaTour, Erica Gorey, Crystal Pitcher, Robin Koeller, Brandon Cook and Ellen Giddens. Thank you to Mark Freeman, Ted Calavan and Nadine Hurtado for their support with ticket data and databases. Thanks to Ellen Veile-Smuts and Julie Novy for their assistance in the office setting. Thank you to Eric Schindler, Jason Edwards and Jessica Moll for providing the recreational data component for monthly and annual reports. Also, many thanks to John Childers, Abbie Sloan, Jenny Suter, Joanna Miles and Yuhong Gu of the NMFS Southwest Fisheries Science Center for technical and data support. A special thanks to Caren Braby, Daniel Erickson, Maggie Sommer, Carla Sowell and Cyreis Schmitt of ODFW for their professional assistance and support.

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.

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

2015 Summary Statistics for Oregon's Albacore Port Sampling Program

PORT NAME	Astoria	Garibaldi	Newport	W. Bay	Charleston	Brookings	All Other Oregon Ports	TOTAL
NO. OF LOGBOOKS ISSUED	13	0	12	0	2	0	0	27
LBS LANDED BY COMMERCIAL SAMPLED VESSELS	2,382,918	0	1,712,670	0	706,199	29,575	0	4,831,362
NO. FISH MEASURED	3,821	0	6,160	0	2,006	100	0	12,087
NO. COMMERCIAL TRIPS SAMPLED FOR LENGTH-FREQUENCY	144	0	158	0	57	2	0	361
TOTAL NO. OF COMMERCIAL TRIPS/LANDINGS	280	126	390	19	200	23	74	1,112
TOTAL NO. OF COMMERCIAL VESSELS*	109	40	138	9	87	14	30	351
LBS LANDED BY COMMERCIAL JIG/TROLL VESSELS	3,506,405	221,341	2,281,333	56,171	1,011,935	100,667	44,360	7,222,212
LBS LANDED BY COMMERCIAL BAIT VESSELS	3,295	0	90,878	0	0	0	0	94,173
LBS LANDED BY COMMERCIAL JIG&BAIT VESSELS	0	0	109,138	0	141,427	0	0	250,565
LBS LANDED BY COMMERCIAL GILLNET VESSELS	0	0	0	0	0	0	0	0
TOTAL LBS LANDED BY COMMERCIAL VESSELS	3,509,700	221,341	2,481,349	56,171	1,153,362	100,667	44,360	7,566,950
LBS LANDED BY SPORT VESSELS**	11,730	83,594	226,441	3,692	130,790	27,167	118,232	601,646
LBS LANDED BY OTHER VESSELS	0	0	0	0	0	0	0	0
PERCENT COMMERCIAL SAMPLING COVERAGE (weight)	67.9%	0.0%	69.0%	0.0%	61.2%	29.4%	0.0%	63.9%
PERCENT COMMERCIAL SAMPLING COVERAGE (trips)	51.4%	0.0%	40.5%	0.0%	28.5%	8.7%	0.0%	32.5%

* 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 Clemens, 1961.