

ANNUAL OREGON ALBACORE TUNA (*Thunnus alalunga*) REPORT, 2013

Prepared by:

Taylor N. Frierson

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

December 2013

**ANNUAL PROGRESS REPORT
ALBACORE PORT SAMPLING PROGRAM**

Pacific States Marine Fisheries Commission Contract No. 14-02

Subcontract of NOAA Award AB133F11CQ0032

July 1, 2013 through April 30, 2014

INTRODUCTION

Albacore is a highly migratory tuna 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; also several large freezer boats (>60 ft.) that travel the North and South Pacific, fishing primarily albacore year-round.

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 9.7 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's Southwest Fisheries Science Center and the Pacific States Marine Fisheries Commission. This report documents the progress of the 2013 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 six 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 2000, catches have averaged 21,000 fish (approximately 410,000 pounds) per year.

2013 COMMERCIAL FISHERY

The 2013 Oregon albacore season began with one small landing on June 29th in Charleston. Two large landings of frozen tuna were sold on May 31st; however these vessels were not fishing offshore of Oregon. The number of deliveries made per week increased steadily with five weeks of peak landings occurring from the second week of August through the first week of September (Figure 1). The season ended with a final landing made on October 30th in Charleston.

High winds and hazardous seas occurring in late June and early July delayed many vessels from entering the albacore fishery until favorable conditions prompted peak fishing effort by early August. Several small storms occurred in late August briefly reducing vessel trips but fishing effort generally remained steady through mid-September.

Sea surface temperatures reached highs of 62-63°F by mid-July and early August but stayed in the distant offshore areas of Oregon. This warmer water did not consistently reach inside the 125°W line until mid-August where it remained through late September.

Primary fishing locations for 2013 included the central to north Oregon coast for latitudes 43-46°N and longitudes 124-126°W. Albacore vessels reported fair to above average success with daily catch rates widely varying. Many vessels reported high concentrations of forage fish and speculated this kept albacore dispersed and traveling faster/farther than usually observed. Many smaller vessels opted to primarily participate in the Chinook salmon troll fishery with favorable prices and catch rates.

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 was permitted to extract tuna from the US EEZ from June 15 to September 15, 2013. Seventeen Canadian vessels landed 1.05 million pounds of albacore in Oregon during their three month eligibility.

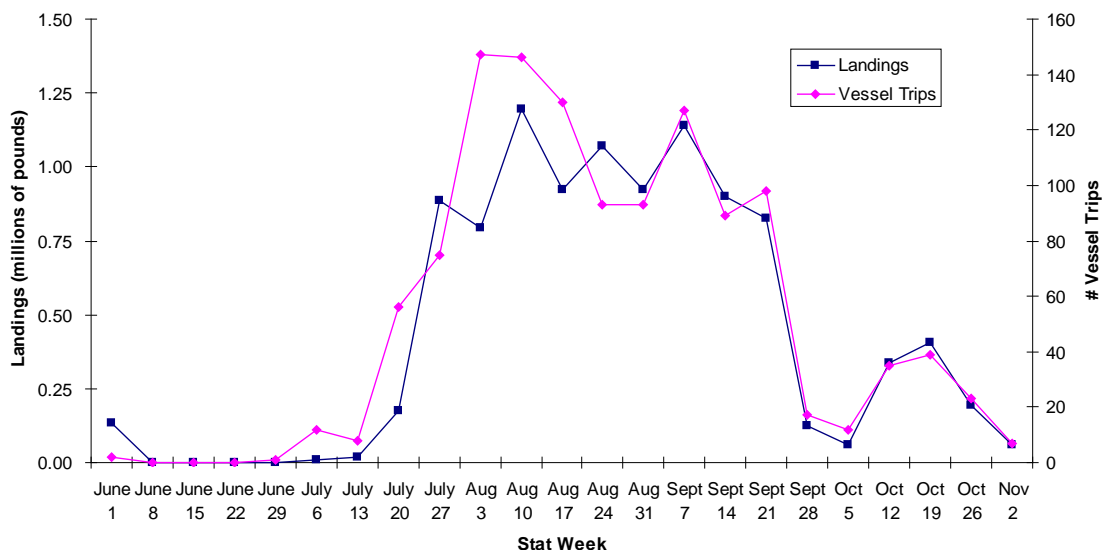


Figure 1 – Total albacore landings and number of vessel trips per week in 2013.

- **2013 Albacore Landings**

A total of 397 vessels made at least one landing of albacore in Oregon ports for 2013, down from 447 vessels in 2012 (Figure 2). These vessels made 1,217 total trip landings in 2013, down from 1,608 landings in 2012.

The peak month of August yielded 45% of the total landings for 2013 with 4,581,684 pounds (Figure 3). This amount proved to be the most productive August in Oregon’s albacore history, now ahead of August 2012. Total landings in the month of September were 2,994,862 pounds, the most productive since September 1996. For 2013, the months of August and September produced 74% of Oregon’s albacore landings.

The preliminary total for 2013 commercial landings is 10,171,575 pounds. This is a 2.4% increase from the 9,928,716 total pounds landed in 2012, and is a 4.5% increase from the ten-year average (2004-2013) of 9,735,480 pounds (Table 1). The standard deviation for ten years of total landings is $\pm 932,934$ pounds, or approximately $\pm 9.6\%$.

Newport received the majority of Oregon’s albacore landings in 2013 with 48.4% of total weight landed; followed by Astoria with 25.4%, Charleston with 18.7%, Garibaldi with 2.5%, Brookings with 2.5%, and Winchester Bay with 1.9% (Table 2). The remaining seven smaller ports landed a combined 0.5% of the total weight.

Landing percentages for Oregon’s primary albacore landing ports in 2013 were consistent with ten-year averages (2004-2013), with the exception of Brookings. The port of Brookings landed 252,920 total pounds, which is a 270% increase from their ten-year average of 68,452 pounds. This amount is a record year for albacore landings in Brookings.

The average landing in Oregon for 2013 was 7,978 pounds, a 31% increase from 6,084 pounds in 2012. Table 3 describes the quartile partition of landing size in the 2013 Oregon albacore fishery, which helps to explain the landing characteristics of the fishery. The average weight of a landing was 7,978 pounds, but for 50% of all vessel trips the landings consisted of $\leq 2,875$ pounds.



Figure 2 – Total number of vessels landing albacore in Oregon by year.

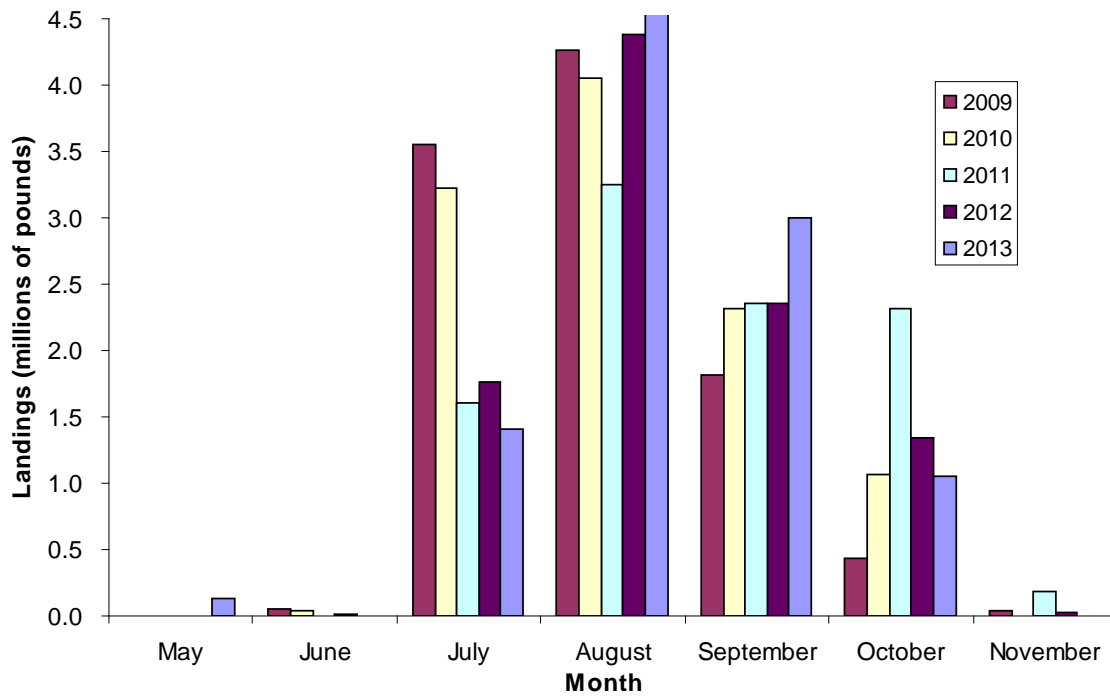


Figure 3 – Total albacore landings by month; 2009 through 2013.

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

Year	Total Landings (lbs)	% Difference from Average
2013	10,171,575	+4.5%
2012	9,928,716	+2.0%
2011	9,699,236	-0.4%
2010	10,712,292	+10.0%
2009	10,156,183	+4.3%
2008	8,876,158	-8.8%
2007	10,447,567	+7.3%
2006	8,521,642	-12.5%
2005	8,087,413	-16.9%
2004	10,754,016	+10.5%
Average	9,735,578	0%
Std Deviation	932,934	±9.6%

Table 2 – Percentage of total landings for 2013 (preliminary) and 10-year (2004-2013) average.

2013			10-Year Average		
Port	Landings (lbs)	Landing %	Port	Landings (lbs)	Landing %
Newport	4,921,648	48.4%	Newport	4,162,919	42.7%
Astoria	2,587,884	25.4%	Astoria	2,917,176	30.0%
Charleston	1,904,310	18.7%	Charleston	2,131,442	21.9%
Garibaldi	257,307	2.5%	Garibaldi	233,488	2.4%
Brookings	252,920	2.5%	Winchester Bay	145,247	1.5%
Winchester Bay	193,704	1.9%	Brookings	68,452	0.70%
Port Orford	21,113	0.21%	Florence	30,817	0.32%
Florence	13,069	0.13%	Port Orford	20,826	0.21%
Bandon**	10,971	0.11%	Pacific City	8,335	0.09%
Gearhart-Seaside**	4,152	0.04%	Depoe Bay	6,287	0.06%
Pacific City	3,917	0.04%			
Depoe Bay & Gold Beach*	580	0.01%			

* For confidentiality these ports are combined

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

Table 3 – Quartile partition of 2013 Oregon albacore landings.

Quartile		Pounds
100%	Max	125,777
75%	Quartile	8,220
50%	Median	2,875
25%	Quartile	838
0%	Min	15

- 2013 Albacore Revenue**

The West Coast's albacore market in 2013 was above average and consistent throughout the season, although not nearly as strong as the all-time record revenues of the 2011 season. Ex-vessel revenue generated from albacore in 2013 totaled at \$16,011,154, a 6% increase from the 2012 total of \$15,147,543 (Figure 4). The average price for 2013 was \$1.57 per pound, up from the average \$1.53 per pound in 2012. The average price for the 2001 to 2010 seasons was \$0.95 per pound. This phenomenon of sudden increased values began in 2011 after the tsunami in Japan destroyed their tuna fleet and the largest fish freezer in the world which contained millions of pounds of albacore. Other world market factors may have also influenced the value spike.

For the 2013 season, fresh-iced tuna prices averaged \$1.40 ± \$0.30 per pound; brine-frozen tuna prices averaged \$1.26 ± \$0.17 per pound; blast-frozen tuna prices averaged \$1.87 ± \$0.24 per pound; public sales of tuna averaged \$2.53 ± \$0.31 per pound. These average prices remained fairly consistent throughout the season and did not decline much as cumulative supply peaked in late September (Figure 5). Blast-frozen tuna deliveries accounted for 47% of total sales in Oregon, primarily sold in Astoria (Table 4). Brine-frozen tuna deliveries accounted for 35% of total sales, primarily sold in Newport. Fresh-iced tuna deliveries accounted for 18% of total sales, primarily sold in all other Oregon ports.

During the primary tuna sampling season July 1 through October 31 of 2013, albacore accounted for 21% of Oregon's marine fish revenue (Table 5). Albacore typically ranks 3rd for total revenues generated in Oregon marine fisheries for an entire year, behind Dungeness crab and Pink shrimp.

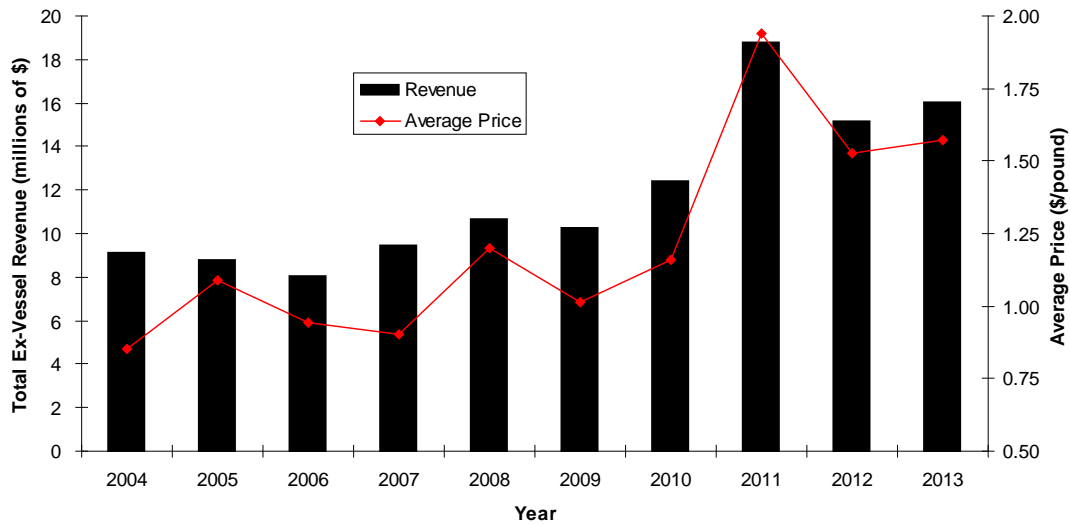


Figure 4 – Total revenue (ex-vessel) and average price by year for Oregon commercial albacore.

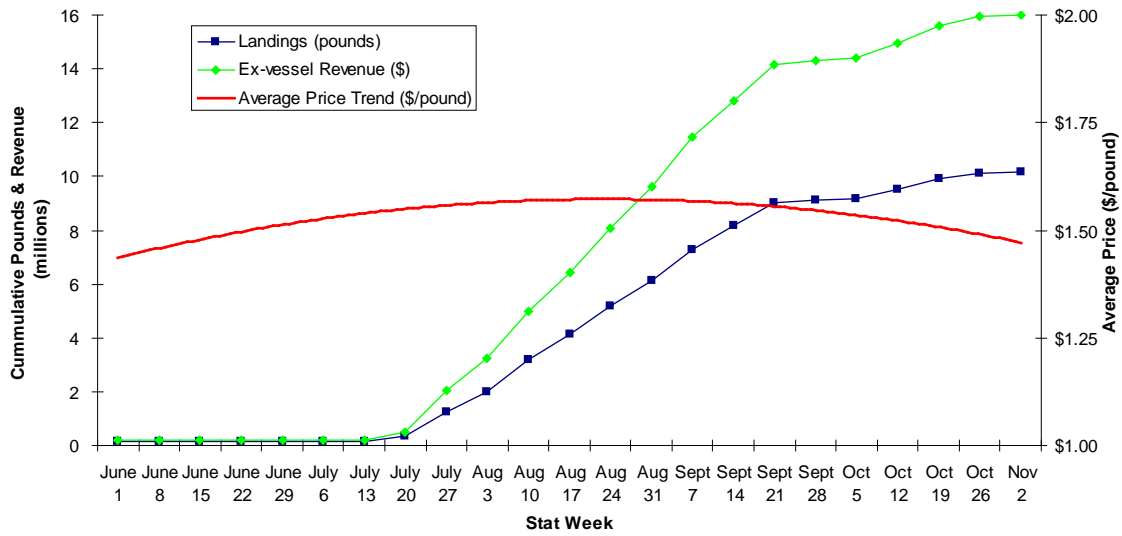


Figure 5 – Cumulative landings, cumulative ex-vessel revenue, and average price by week in 2013.

Table 4 – Treatment type by landings (pounds), port, and 2013 preliminary total percentage.

Port	Blast frozen	Blast%	Brine frozen	Brine%	Iced	Iced%	TOTAL landings
Astoria	1,754,586	67.8%	537,030	20.8%	296,268	11.4%	2,587,884
Newport	1,912,744	38.9%	2,418,551	49.1%	590,353	12.0%	4,921,648
Charleston	838,019	44.0%	482,240	25.3%	584,051	30.7%	1,904,310
Other Ports	253,165	33.4%	169,258	22.3%	335,310	44.3%	757,733
TOTAL	4,758,514	46.8%	3,607,079	35.5%	1,805,982	17.8%	10,171,575

**Table 5 – Oregon marine fish revenue (ex-vessel) for tuna sampling season:
July 1 - October 31, 2013.**

Fishery Species	Revenue %
Pacific Whiting	25%
Albacore tuna	21%
Pink shrimp	18%
Salmon (all species)	13%
Pacific Sardine	8%
All other groundfish	8%
Sablefish	6%

2013 COMMERCIAL SAMPLING RESULTS

In 2013, the albacore sampling season began July 1st, soon after the start of the fishing season. Dedicated samplers in Astoria, Newport (4 months each), and Charleston (2.25 months) were well prepared before the peak landings occurred in early August, allowing for an overall sampling rate of 64.3%. Additional sampling was conducted by ODFW commercial groundfish port samplers throughout the albacore season when available, as well as before and after the dedicated sampling season. Sampling activities included measuring albacore for length-frequencies, distribution of logbooks to vessels with valid Highly Migratory Species Permits, logbook envelopes for completed logbooks, and providing information to fishers. Table 6 presents a summary of commercial sampling rate information for the 2013 season. Additional summaries required by the contractual agreement with NMFS and PSMFC for albacore sampling funding are presented in Appendix A.

Table 6 – 2013 preliminary Oregon commercial albacore sampling season summary.
LF = Length frequency.

Port	2013 Landings	Pounds Sampled	Sampled Rate (sampled pounds/ landed pounds)	# LF	# Fish	Fish/LF
Astoria	2,587,884	2,113,879	81.7%	105	6,599	63
Gearhart-Seaside	4,152	-	-	-	-	-
Garibaldi	257,307	-	-	-	-	-
Pacific City	3,917	-	-	-	-	-
Newport	4,921,648	3,195,274	64.9%	172	15,028	87
Florence	13,069	-	-	-	-	-
Winchester Bay	193,704	-	-	-	-	-
Charleston	1,904,310	1,122,705	59.0%	73	5,256	72
Bandon	10,971	-	-	-	-	-
Port Orford	21,113	5,145	24.4%	1	50	50
Depoe Bay & Gold Beach*	580	-	-	-	-	-
Brookings	252,920	98,777	39.1%	7	351	50
TOTAL	10,171,575	6,535,780	64.3%	358	27,284	76

*These ports are combined for confidentiality

- **2013 Sampling Rate Analysis**

Overall sampling rates for landings were well above the 50% minimum, and the average number of fish per length-frequency was above the 50 fish minimum for the 2013 Oregon commercial albacore season. The three primary tuna sampling ports are Astoria, Newport, and Charleston; smaller ports' tuna landings were occasionally sampled by ODFW commercial groundfish samplers and port biologists when available. Little priority is given to sampling Oregon's smaller ports because of lack of

staff to sample at those ports; the overall sampling rate is not typically influenced due to their insignificant landing weights. The tuna sampling rate is determined by the percentage of length-frequency sampled landing weights to total landing weights by port and state. Considerations for sampling biases have been measured in the past and found to be insignificant.

In addition to calculating sampling rates for minimum sampling percentages, analyzing the difference between the sampled trip landing weights and all individual trip landing weights is important to understand what the sample data is describing (Table 7). Large landings will be defined as total trip landing weights greater than 75% of all individual albacore trip landing weights, while small landings will be defined as total trip landing weights less than the top 25% of all individual albacore trip landing weights. For 2013 the 75% quartile landing weight cutoff is 8,220 pounds; therefore considering large landings as greater than 8,220 pounds, and small landings as less than 8,220 pounds. Sampled landings in 2013 consisted of 61% sampled trips greater than 8,220 pounds and 39% sampled trips less than 8,220 pounds.

Table 7 – Quartile partition for all landings and sampled landings in 2013.

All Landings			Sampled Landings		
Quartile		Pounds	Quartile		Pounds
100%	Max	125,777	100%	Max	125,777
75%	Quartile	8,220	75%	Quartile	23,953
50%	Median	2,875	50%	Median	11,698
25%	Quartile	838	25%	Quartile	5,651
0%	Min	15	0%	Min	415

- **2013 Length Frequency Analysis**

A total of 27,284 albacore tuna were measured for length frequencies in the ports of Astoria, Garibaldi, Newport, Charleston, Port Orford, and Brookings (Figure 6). All the sampled ports' length data suggest a similar bimodal distribution; where the primary mode represents a younger age-class of approximately 3.7 years old, and the secondary mode represents an older age-class of approximately 4.7 years old (Suda 1966). Although the number of fish sampled in each port widely varies, the distribution and trend appear to be very similar for each port with all sampled months combined (Figure 7). Average lengths for sampled fish showed an increase of 3.3 cm for small (younger) grade fish through the season, and a 5.5 cm increase for large (older) grade fish (Figure 8). The proportion of small to large grade fish varied each month with an increasing trend of small grade fish through the season, while large grade fish showed a decreasing trend (Figure 9). Modal analysis using a mixed distribution model calculated the average length for the small grade fish at 66.8 ± 3.3 cm for 55% of all sampled fish, and the large grade fish at 77.8 ± 3.8 cm for 45% of all sampled fish. There is a very small representation of approximately 2.8 year old fish at 56.8 ± 2.7 cm for <1% of all sampled fish. Based on length to weight approximations the average weight for small grade fish is 13.5 pounds, and 21 pounds for large grade fish (Clemens 1961). Individual figures for Port Orford and Brookings length data are not provided here due to small sample size.

In addition to fish length analysis by port or month, comparing length data of fish sampled from small and large landings may indicate the stocks of fish targeted by vessels of different capacities. Fish sampled from small landings were represented by 46% small grade fish and 54% large grade fish; while fish sampled from large landings were represented by 60% small grade fish and 40% large grade fish (Figure 10). Results from a two sample Kolmogorov–Smirnov test show that the length data from large and small landings are significantly different with a $p\text{-value} < 2E-16$.

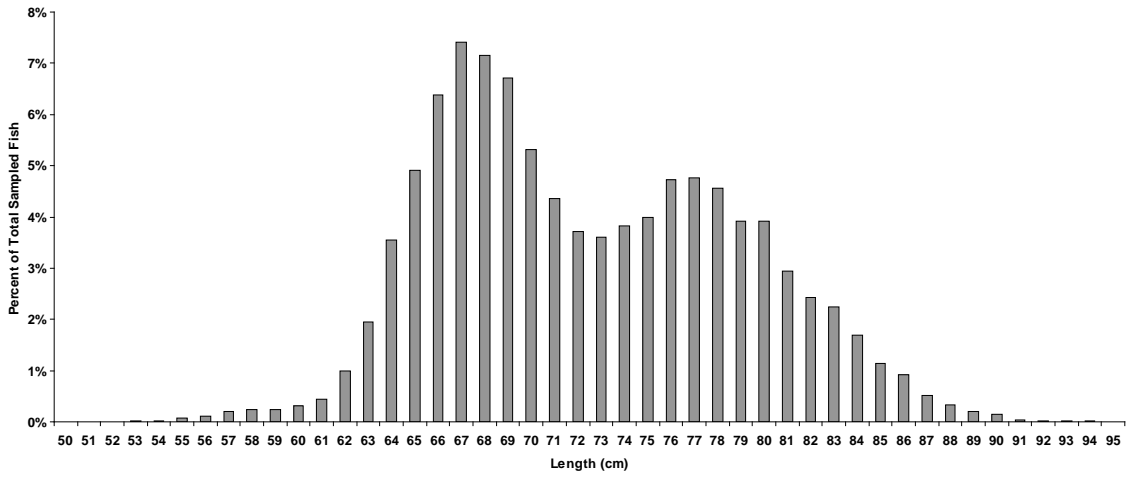


Figure 6 – Length frequency data for all sampled ports, all months combined in 2013.
 n = 27,284.

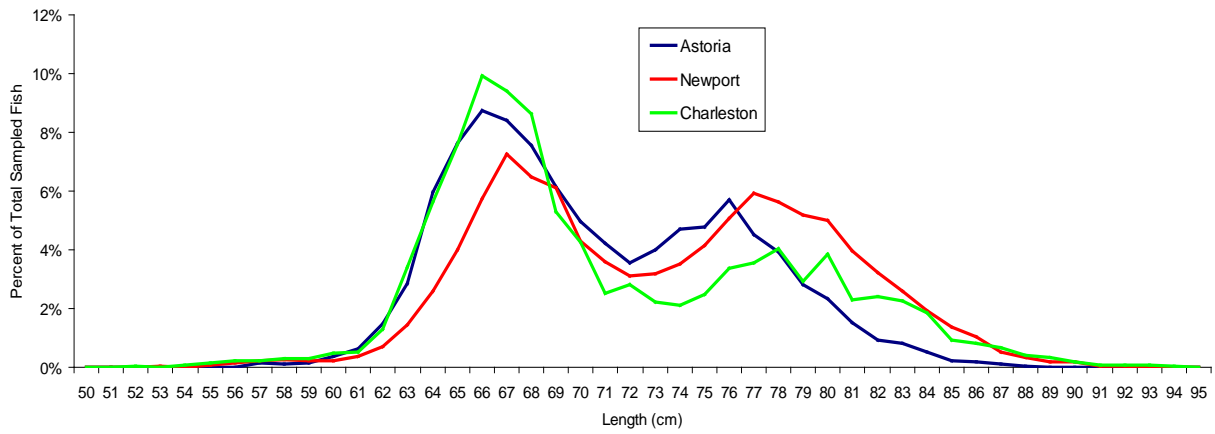


Figure 7 – Length frequency data for all sampled months by port in 2013.
 Astoria n = 6,599. Newport n = 15,028. Charleston n = 5,256.

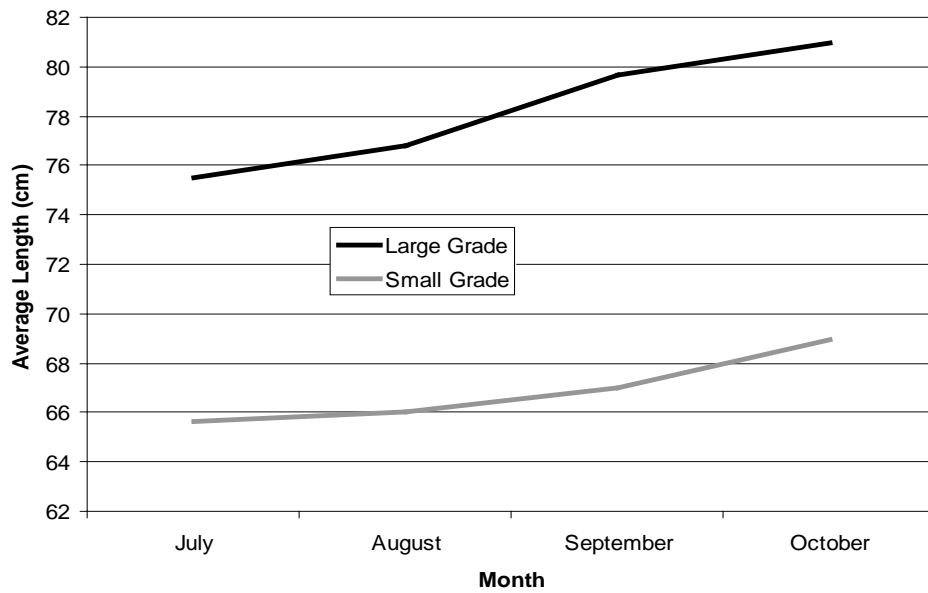


Figure 8 – Average length for small (young) and large (older) grade fish sampled each month. July n = 4,430. August n = 12,069. September n = 7,584. October n = 3,201.

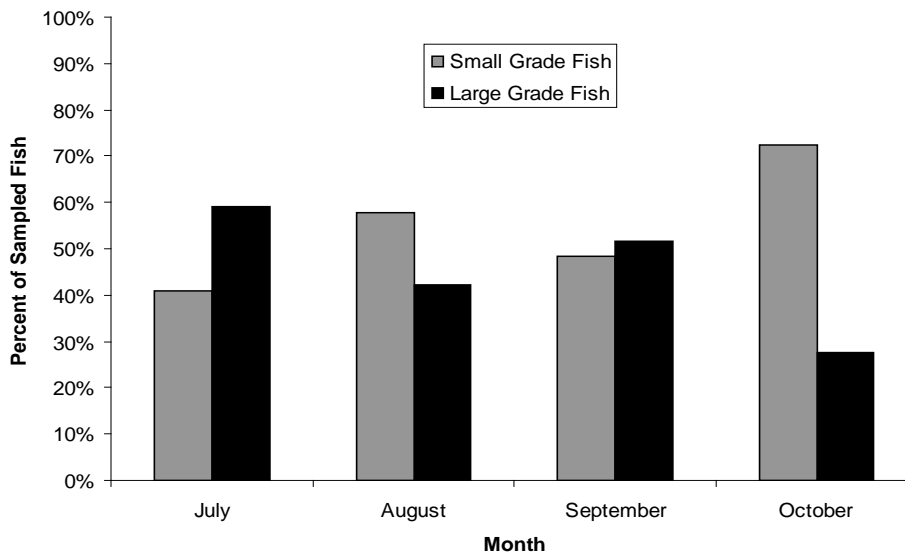


Figure 9 – Proportion of small (young) and large (older) grade fish sampled each month.

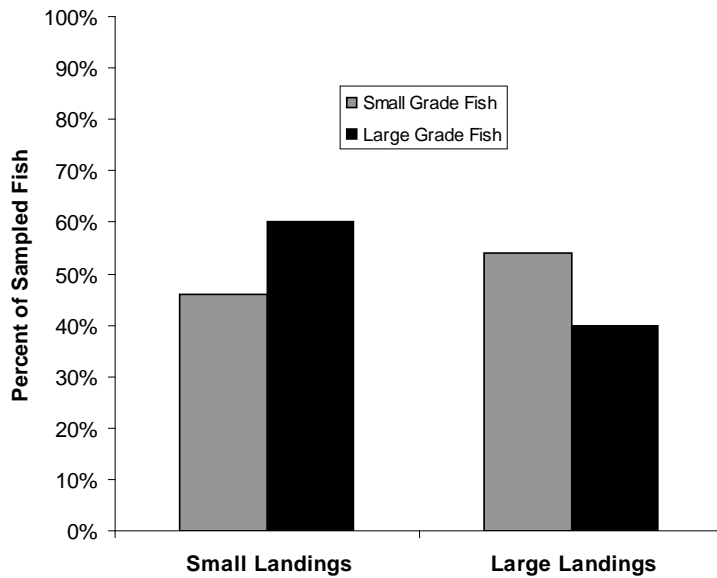


Figure 10 – Proportion of small (young) to large (older) grade fish for small and large landings. Large landings n = 17,626; small landings n = 9,658.

2013 RECREATIONAL FISHERY

The 2013 recreational tuna season proved to be well below average for effort and landings in comparison to recent years (Figures 11 & 12). Access to albacore for recreational vessels off Oregon can be highly variable, depending on weather conditions and distance to the fish. Hazardous seas in July delayed the early season for sport tuna fishermen, and the warmer water associated with productive tuna fishing did not approach sport vessel ranges until mid-August. Peak effort and landings occurred in August and early September, and quickly dropped off in late September.

Directed charter fishing effort for albacore totaled 2,734 angler trips in 2013, a 3% decrease from the five-year average of 2,823 angler trips (Table 8). Directed private albacore trips totaled 6,670 angler trips, a 24% decrease from the five-year average of 8,766 angler trips (Table 9).

Directed charter catch for albacore totaled 5,761 fish in 2013, a 27% decrease from the five-year average at 7,881 fish (Table 10). Directed private albacore catch totaled 15,816 fish, a 49% decrease from the five-year average of 30,908 fish (Table 11).

Combined charter and private albacore landings for 2013 indicate that Newport, Garibaldi, and Depoe Bay were the top three ports with 88% of all Oregon's recreational catch (Table 12). These three top recreational ports landed a combined 44% fewer fish than the five-year average. Effort and landings were significantly represented by the north Oregon coast, while Charleston landed 91% less albacore than their five-year average.

Charter vessel catch-per-unit of effort (CPUE) in 2013 was calculated to 2.1 albacore per angler, while the private vessel CPUE was calculated to 2.4 albacore per angler (Table 13). The combined CPUE for Oregon's recreational season was calculated to 2.3 albacore per angler, the lowest catch rate in the last seven years.

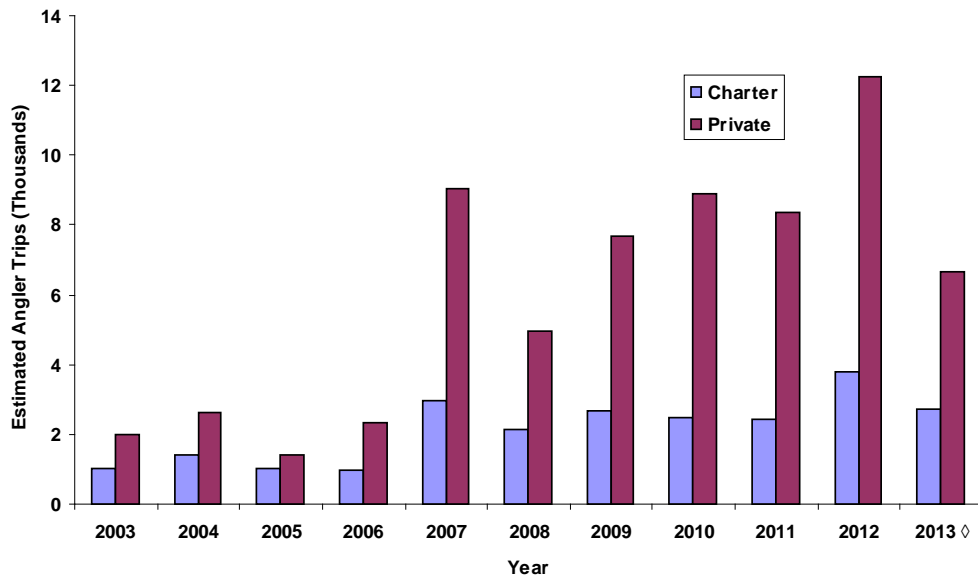


Figure 11 – Oregon recreational albacore fishing effort (angler trips) separated by vessel type, 2003-2013. ◇ 2013 totals are preliminary.

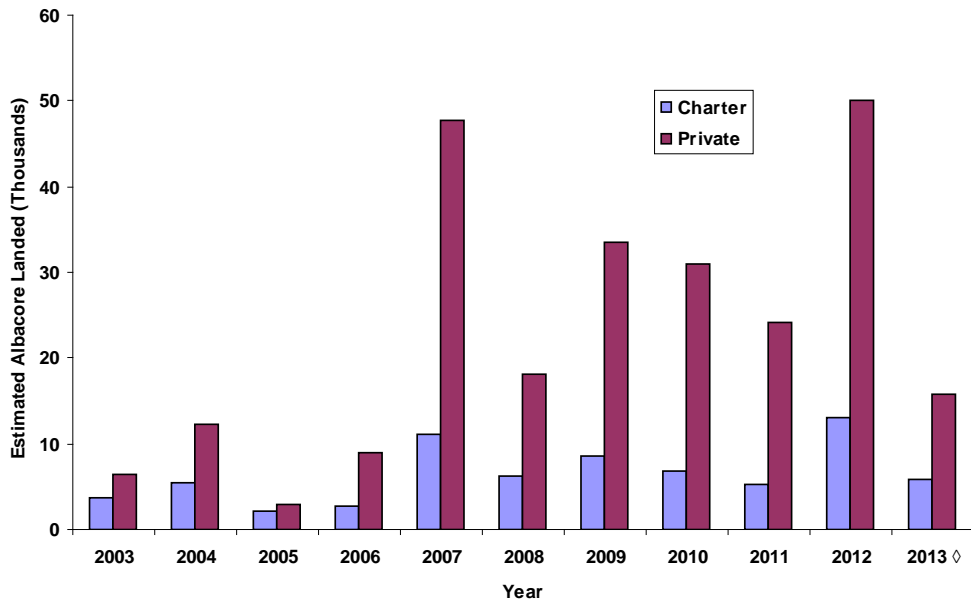


Figure 12 – Oregon recreational albacore catch (estimated number of fish) by vessel type, 2003-2013. ◇ 2013 totals are preliminary.

Table 8 – Oregon charter vessel albacore fishing effort (angler trips) by port, 2003-2013.

Port	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013 \diamond	5-Year Average \yen
Astoria	28	46	72	108	311	390	330	399	193	407	306	327
Garibaldi	31	64	80	38	111	164	117	212	150	310	315	221
P. City	0	12	5	0	9	5	1	8	0	7	5	4
D. Bay	110	256	151	94	683	245	432	595	503	1,169	985	737
Newport	583	722	611	646	1,463	1,089	1,260	970	1,217	1,393	1,064	1,181
W. Bay	109	160	77	0	12	0	12	0	0	0	0	2
Charleston	55	68	0	10	69	109	240	142	206	240	52	176
Bandon	36	48	14	83	231	107	222	149	166	247	7	158
G. Beach	14	NS	0	0	30	0	48	0	0	0	0	10
Brookings	51	46	12	0	57	14	20	0	14	0	0	7
Total	1,017	1,422	1,022	979	2,976	2,123	2,682	2,475	2,449	3,773	2,734	2,823

 \diamond 2013 Preliminary Totals \yen 5-year average includes 2009-2013

NS Indicates no port samplers present that year

Table 9 - Oregon private vessel albacore fishing effort (angler trips) by port, 2003-2013.

Port	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013 \diamond	5-Year Average \yen
Astoria	77	95	186	187	338	422	59	242	97	161	90	130
Garibaldi	94	88	120	641	1,263	960	1,059	2,535	579	2,075	1,898	1,629
P. City	134	132	58	80	209	35	92	246	80	330	127	175
D. Bay	227	419	406	385	1,644	743	694	1,067	930	1,760	1,502	1,191
Newport	224	697	586	644	2,415	1,475	1,991	2,959	2,519	3,807	2,306	2,716
Florence	NS	0	0	NS	30	67	15	16	24	28	NS	21
W. Bay	44	98	20	12	367	231	370	177	475	403	286	342
Charleston	528	561	19	144	1,712	960	2,962	1,526	2,871	3,503	376	2,248
Bandon	4	53	0	76	132	0	239	19	41	152	0	90
P. Orford	10	NS	NS	NS	NS	NS	NS	NS	53	0	NS	27
G. Beach	55	NS	0	6	12	0	28	0	108	0	0	27
Brookings	610	505	39	179	932	85	166	115	564	21	85	190
Total	2,007	2,648	1,434	2,354	9,054	4,978	7,675	8,902	8,341	12,240	6,670	8,766

 \diamond 2013 Preliminary Totals \yen 5-year average includes 2009-2013

NS Indicates no port samplers present that year

Table 10 - Oregon charter vessel albacore catch (number of fish) by port, 2003-2013.

Port	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013 ◇	5-Year Average ¥
Astoria	106	172	275	231	907	1,167	1,016	1,294	366	1,386	836	980
Garibaldi	119	186	170	204	628	440	322	651	149	1,061	878	612
P. City	0	62	3	0	70	98	4	20	0	52	13	18
D. Bay	254	572	186	113	2,139	670	942	1,552	858	3,387	1,874	1,723
Newport	1,978	2,934	1,043	1,653	4,920	3,126	3,419	2,364	2,231	4,880	2,062	2,991
W. Bay	555	782	327	0	36	0	31	0	0	0	0	6
Charleston	281	192	0	50	301	269	850	410	537	836	68	540
Bandon	243	216	46	398	1,607	333	1,727	510	1,034	1,527	30	966
G. Beach	147	NS	0	0	256	0	161	0	0	0	0	32
Brookings	91	327	3	0	319	81	41	0	25	0	0	13
Total	3,774	5,443	2,053	2,649	11,183	6,184	8,513	6,801	5,200	13,129	5,761	7,881

◇ 2013 Preliminary Totals

¥ 5-year average includes 2009-2013

NS Indicates no port samplers present that year

Table 11 - Oregon private vessel albacore catch (number of fish) by port, 2003-2013.

Port	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013 ◇	5-Year Average ¥
Astoria	496	499	317	804	1,832	1,809	247	344	208	920	284	401
Garibaldi	498	819	155	3,160	4,943	3,993	4,119	10,309	539	6,405	5,628	5,400
P. City	369	1,932	53	92	1,910	314	767	1,468	387	1,697	150	894
D. Bay	1,230	2,259	943	1,413	9,100	2,666	3,458	3,477	2,277	6,995	3,397	3,921
Newport	762	2,894	1,472	1,875	14,825	6,267	10,887	9,911	5,843	17,187	5,242	9,814
Florence	NS	0	0	NS	65	287	41	32	13	36	NS	31
W. Bay	191	624	8	0	1,571	460	969	547	1,281	1,229	190	843
Charleston	811	2,258	12	816	8,370	2,153	12,036	4,617	10,629	14,875	749	8,581
Bandon	2	167	0	517	624	0	813	28	115	685	0	328
P. Orford	46	NS	NS	NS	NS	NS	NS	NS	424	0	NS	424
G. Beach	109	NS	0	0	210	0	21	0	967	0	0	247
Brookings	1,962	812	2	303	4,289	136	184	187	1,539	9	176	419
Total	6,476	12,264	2,962	8,980	47,739	18,085	33,542	30,920	24,222	50,038	15816	30,908

◇ 2013 Preliminary Totals

¥ 5-year average includes 2009-2013

NS Indicates no port samplers present that year

Table 12 – Percentage of Oregon’s recreational albacore catch (combined charter and private) by port, 2013.

Port	Landing %
Newport	33.9%
Garibaldi	30.2%
Depoe Bay	24.4%
Astoria	5.2%
Charleston	3.8%
W. Bay	0.9%
Brookings	0.8%
Pacific City	0.8%
Bandon	0.1%

Table 13 – Oregon’s preliminary 2013 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	Charter	Total	Private	Charter	Total	Private	Charter	Total
Astoria	284	836	1,120	90	306	396	3.2	2.7	2.8
Garibaldi	5628	878	6,506	1898	315	2,213	3.0	2.8	2.9
Pacific City	150	13	163	127	5	132	1.2	2.6	1.2
Depoe Bay	3397	1874	5,271	1502	985	2,487	2.3	1.9	2.1
Newport	5242	2062	7,304	2306	1064	3,370	2.3	1.9	2.2
Florence	-	-	-	-	-	-	-	-	-
W. Bay	190	0	190	286	0	286	0.7	-	0.7
Charleston	749	68	817	376	52	428	2.0	1.3	1.9
Bandon	0	30	30	0	7	7	-	4.3	4.3
P. Orford	-	-	-	-	-	-	-	-	-
G. Beach	0	0	0	0	0	0	-	-	-
Brookings	176	0	176	85	0	85	2.1	-	2.1
						0			
Total	15,816	5,761	21,577	6,670	2,734	9,404	2.4	2.1	2.3

- **Recreational Length Frequency Analysis**

Length frequency information was collected on 848 recreationally caught albacore from most of Oregon’s ports by Ocean Recreational Boat Survey (ORBS) port samplers in 2013. Modal analysis using a mixed distribution model calculated the average length for small grade fish at 64.6±3.3 cm for 8% of all sampled fish, and the large grade fish at 77.2±3.9 cm for 92% of all sampled fish. Based on length to weight approximations the average weight for small grade fish is 12 pounds, and 21 pounds for large grade fish (Clemens 1961).

Figure 13 shows the length frequency histogram of non-sorted, randomly sampled albacore during the 2013 recreational season. The length data suggests a bimodal distribution; where the primary mode represents an older age-class of approximately 4.7 years old, and the secondary mode represents a younger age-class of approximately 3.7 years old (Suda 1966).

Although many fewer fish were sampled for length in the recreational catch than commercial, there appears to be a strong trend towards the larger grade albacore landed by sport vessels as compared to commercial vessels. Results from a two sample Kolmogorov–Smirnov test show that the length data between recreational and commercial landings, as well as between large and small commercial landings are significantly different with a p-value<2E-16 (Figure 14).

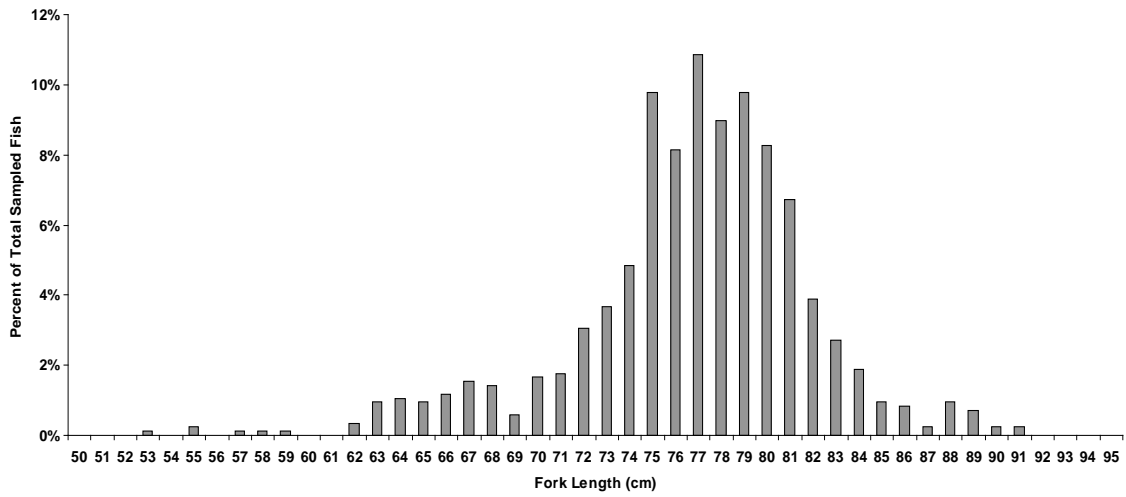


Figure 13 - Length frequency data for all ports sampled for tuna by ORBS in 2013.
n = 848.

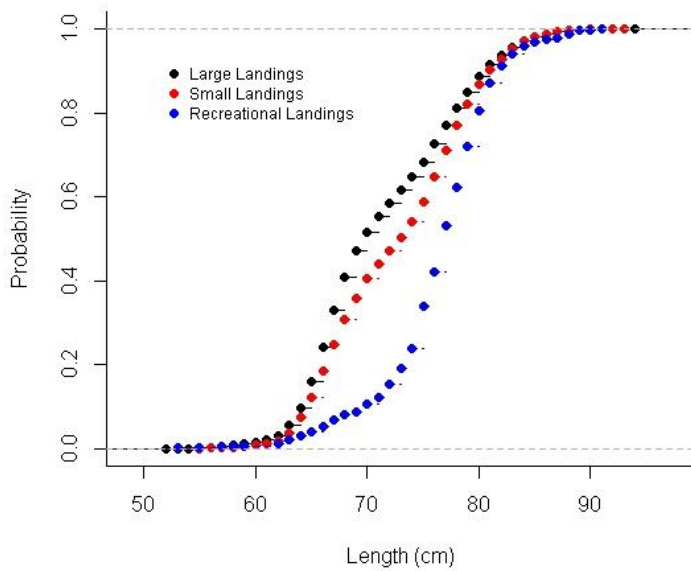


Figure 14 – Cumulative distribution frequencies of large commercial landings, small commercial landings, and recreational landings.

SUMMARY

Oregon's preliminary commercial albacore landings in 2013 totaled 10,171,575 pounds, a 2.4% increase from 2012, and 4.5% greater than the ten-year average (2004-2013). Ex-vessel revenues from albacore totaled \$16,011,154, a 6% increase from the 2012 season, and 35% above the ten-year average (2004-2013). Sampling goals were met and exceeded for the three primary ports, and Oregon overall.

Recreational tuna fishers experienced challenging conditions and a below average season landing an estimated 21,577 fish weighing approximately 444,486 pounds, 44% less fish than the five-year average (2009-2013).

Seventeen Canadian vessels landed 1,052,415 total pounds of albacore in Oregon during their three month eligibility of 2013, primarily in Astoria. All Canadian albacore landed in Oregon consisted of high quality blast-frozen fish which totaled to \$1,965,264 in ex-vessel revenues. The future of Canadian vessels fishing in the US EEZ is still not clear until the next bilateral agreement is made.

ACKNOWLEDGEMENTS

Thank you to all the albacore fishing vessel operators and crew who cooperatively provided fishing information during the 2013 sampling project, as well as fish plant staff and buyers who supported an efficient sampling platform on their property. Many thanks go out to ODFW port biologists and port samplers for collecting many length frequencies and distributing logbooks and envelopes: Dave Douglas, Sheryl Flores, Jonathon Latour, Scott Malvitch, Christian Heath, Kelly Lawrence, Dean Headlee, Nick Wilsman, Laura Green, Jamie Fuller, and Craig Good. Thank you to Mark Freeman, Ted Calavan, Pam Costello, and Nadine Hurtado for their support with ticket data and databases. Thanks to Jessica Moll and Eric Schindler for providing the recreational data component for monthly and annual reports. Also, thank you to John Childers and Amy Pease of the NMFS Southwest Fisheries Science Center. A special thanks to Carla Sowell, Cyreis Schmitt, Maggie Sommer, and Justin Ainsworth 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

2013 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	2	0	6	0	12	0	0	20
LBS LANDED BY COMMERCIAL SAMPLED VESSELS	2,113,879	0	3,195,274	0	1,122,705	98,777	5,145	6,535,780
NO. FISH MEASURED	6,599	0	15,028	0	5,256	351	50	27,284
NO. COMMERCIAL TRIPS SAMPLED FOR LENGTH-FREQUENCY	105	0	172	0	73	7	1	358
TOTAL NO. OF COMMERCIAL TRIPS/LANDINGS	218	143	538	12	248	22	36	1,217
TOTAL NO. OF COMMERCIAL VESSELS Ω	89	51	190	9	105	10	27	481
LBS LANDED BY COMMERCIAL JIG/TROLL VESSELS	2,384,756	257,307	4,719,241	193,704	1,901,811	252,920	53,802	9,763,541
LBS LANDED BY COMMERCIAL BAIT VESSELS	4,391	0	34,340	0	2,499	0	0	41,230
LBS LANDED BY COMMERCIAL JIG&BAIT VESSELS	198,737	0	168,067	0	0	0	0	366,804
LBS LANDED BY COMMERCIAL GILLNET VESSELS	0	0	0	0	0	0	0	0
LBS LANDED BY SPORT VESSELS**	23,072	134,024	150,462	3,914	16,830	3,626	112,558	444,486
LBS LANDED BY OTHER VESSELS	0	0	0	0	0	0	0	0
PERCENT COMMERCIAL COVERAGE (weight)	81.7%	0.0%	64.9%	0.0%	59.0%	39.1%	24.4%	64.3%
PERCENT COMMERCIAL COVERAGE (trips)	48.2%	0.0%	32.1%	0.0%	29.4%	31.8%	3.1%	29.6%

Ω 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.