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**ANNUAL REPORT TO THE COMMISSION  
PART 1: INFORMATION ON FISHERIES, RESEARCH, AND STATISTICS**

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**WCPFC-SC11-AR/CCM-02**

**CANADA**

# 2015 Annual Report to the Western and Central Pacific Fisheries Commission

## Canada

### PART I. INFORMATION ON FISHERIES, RESEARCH, AND STATISTICS (For 2014)

#### Fisheries and Oceans Canada Ecosystems and Science Branch, Pacific Biological Station

Scientific data was provided to the Commission in accordance with the decision relating to the provision of scientific data to the Commission by 30 April 2015	YES
If no, please indicate the reason(s) and intended actions:	

#### 1.0 SUMMARY

Canada has one fishery for highly migratory species in the Pacific Ocean, a troll fishery targeting juvenile north Pacific albacore tuna (*Thunnus alalunga*). Catch and effort data from this fishery for 2014 are summarized in this document. There was no reported by-catch and no reported interactions with pelagic sharks, sea birds, or turtles by this fishery during 2014 in the WCPFC Convention Area. Canadian flagged vessels targeting albacore tuna did not enter the WCPFC convention area north or south of the equator in 2014.

Catch and effort by the Canadian fleet in WCPFC statistical areas have declined since 2002 and the fishery is now largely confined to the eastern Pacific Ocean east of 150°W. The 2014 fishery largely occurred in the coastal waters of North America, with little catch and effort in highseas waters of the north Pacific Ocean beyond the exclusive economic zones of Canada and the United States. Annual Canadian catch and effort in the north Pacific within the WCPFC convention area has ranged from 11 to 1,007 t and 17 to 1,017 vessel-days, respectively, between 1995 and 2005. Catch and effort in the south Pacific Ocean by the Canadian albacore troll fleet has ranged between 0 and 313 t and 4 and 348 vessel-days, respectively, from 1995 to 2007. Canadian vessels have not participated in a south Pacific fishery since 2007 and catch and effort in the north Pacific WCPFC statistical area has been negligible (< 1 t of catch and < 5 vessel-days effort annually) since 2006. There was no effort or catch reported by Canadian vessels in the WCPFC convention area north or south of the equator in 2014.

Canadian research is focused on north Pacific albacore tuna and projects include pop-up satellite archival tagging of albacore tuna to track migration, documenting climatic effects on albacore tuna recruitment, and assessing oceanographic determinants of distribution and abundance in the eastern Pacific Ocean.

## **2.0 TABULAR ANNUAL FISHERIES INFORMATION**

This report presents estimates of annual effort and catches of tunas and other highly migratory species (HMS) and vessel participation in Canadian fisheries operating in the Western and Central Pacific Fisheries Commission (WCPFC) Convention Area for 2004-2014. The fishery data provided in this report were taken from Canadian Albacore Tuna Database version 15.02.17. The data for 2004 to 2013 are definitive while the 2014 data are provisional.

The Canadian HMS fishery is a troll fishery using jigs to target juvenile albacore in the Pacific Ocean. Catch and effort data for both the north and south Pacific components of this fishery are reported in Table 1. The preliminary catch and effort estimates for 2014 are 4,781 t of north Pacific albacore tuna and 4,747 vessel-days of effort by 160 troll vessels. The estimated catch is 6% less than the 2013 catch and effort is down 27% relative to 2013 (Table 1). No catch or effort were reported from the south Pacific Ocean in 2014 (Table 1; Fig. 3).

## **3.0 BACKGROUND**

Canadians have been fishing for albacore tuna in the Pacific Ocean since 1939, but catches remained well below 1,000 t annually until the mid-1990s. Historically, the Canadian fishery has operated in the north Pacific Ocean between 20 and 55°N and from the North American coast as far west as 160°E and in the south Pacific Ocean between 30 and 45°S and 130-160°W. Although the Canadian fleet will follow albacore tuna concentrations into offshore waters, the majority of effort and catch has occurred in the coastal waters of Canada and the United States in the 2000s (Figs. 3 and 4) and few Canadian vessels have operated in the WCPFC northern statistical area since 2006. Canadian participation in the south Pacific albacore tuna fishery was never high and ceased after the 2006 season (Table 2; Fig. 2). Management regulations for Canadian albacore tuna troll vessels are in the Integrated Fisheries Management Plan (IFMP), which covers the period from 01 April 2014 to 31 March 2015 and is available at <http://www.dfo-mpo.gc.ca/Library/353288.pdf>.

## **4.0 FLAG STATE REPORTING OF NATIONAL FISHERIES**

### **4.1 Canadian Albacore Tuna Troll Fishery**

The Canadian troll fishery operating in the WCPFC statistical areas experienced a significant decline in participation in the 2000s (Table 2; Fig. 2). Vessel participation in the northern WCPFC statistical area declined from 15 in 2003 to 1 in 2005 and from 2006 through 2010 no Canadian vessels fished in the northern statistical area. Two vessels entered in 2011 and 2012 and one vessel in 2013, but catch and effort were minimal in these years, and in 2013 no vessels entered the convention area. Participation in the south Pacific albacore tuna fishery has never exceeded five vessels and following the 2006 fishing season, no Canadian vessels have fished in the south Pacific fishery (Table 2; Fig. 2).

Canada implemented an onboard catch sampling program in 2009 to obtain size composition data from the Canadian troll fishery (size data from 1981 to 2008 were collected by the US port sampling program). These data are collected by fishermen who record the lengths of the first 10 albacore tuna landed on a daily basis. The target sampling rate is 1% of the total reported catch (in pieces) and has been achieved every year (Table 3). At least 99% of the albacore tuna measured annually were caught outside the northern WCPFC statistical area. Fifty-seven (57) vessels participated in 2014 and turned in 11,208 fork length (FL) measurements of juvenile

north Pacific albacore tuna, for a sampling rate of 1.6% of the total reported catch (N = 699,395 fish). No measurements were reported from within the WCPFC convention area.

#### **4.2 Interactions with other Species in the WCPFC Convention Area**

There were no reported interactions or bycatch of pelagic sharks, seabirds, or sea turtles by the Canadian fishery in the WCPFC convention area in 2014.

#### **4.3 Swordfish**

Canadian-flagged vessels or Canadian vessels under charter, lease or similar arrangements operating as part of the domestic Canadian fishery, did not fish for or catch swordfish (*Xiphias gladius*) south of 20 °S during the 2000-2014 period.

### **5.0 COASTAL STATE REPORTING**

Canada is not a coastal state within the WCPFC Convention Area.

### **6.0 SOCIO-ECONOMIC FACTORS**

Vessels participating in the Canadian fishery are primarily salmon troll vessels and most are between 11 and 18 m in length. Fishing effort by these vessels occurs primarily within the Canadian and United States exclusive economic zones (EEZs) from the southern Oregon coast to the northern tip of Vancouver Island (Figs. 3 and 4). Several vessels greater than 18 m in length are able to access offshore waters and remain at sea for several months.

Fishing activity is dependent on price, ocean and weather conditions, availability of albacore tuna, strength of other fisheries (particularly the salmon fishery) and fuel costs. Effort in the coastal fishery normally peaks in August and September, after the salmon troll season has wound down. High fuel prices coupled with an apparent increase in the availability albacore tuna closer to North America and uncertainty concerning conditions in the mid- Pacific were probably factors in the contraction of the operational area that began in the 2000s.

The main factor affecting the operation of the Canadian albacore troll fishery are the terms of the fishing regime in the bilateral Canada-United States Albacore Tuna Treaty. The fishing regime currently in effect limits the number of Canadian vessels in US waters to 45 between June 15 and September 15 annually for 2014 to 2016. The reductions to the number of vessels permitted to access US waters and length of the fishing period relative to previously negotiated fishing regimes, has resulted in more effort and catch by Canadian vessels in the Canadian EEZ. For example, prior to 2012 (the last year of operation under the previous fishing regime), 66% of the effort and catch by the Canadian fishery occurred within US EEZ waters compared to 33% of effort and 41% of catch on average in 2013 and 2014 (Canadian vessels were not permitted to fish in US waters in 2012). In 2014, this increased emphasis on fishery operations in Canadian waters appears to have coincided with a northward shift in fish distribution into Canadian waters. Hypotheses to address this distributional change are under investigation.

### **7.0 DISPOSAL OF CATCH**

Canadian troll vessels are equipped with freezers to blast freeze albacore tuna for both foreign and domestic sashimi and loin markets. The majority of catch is off-loaded at domestic ports, with Vancouver, Victoria, and Ucluelet handling up to 85% of the total annual landings and ports in the United States, especially Ilwaco WA, and Astoria OR, handling the remaining landings.

Small amounts of frozen fish ( $\ll 1$  t) are occasionally sold directly to the public through dock-side sales or are kept for personal use. These sales are recorded in logbooks and included in catch estimates for this fishery.

## **8.0 ONSHORE DEVELOPMENTS**

There were no notable developments in 2014.

## **9.0 FUTURE PROSPECTS OF THE FISHERY**

Uncertainty concerning future access to waters within the US EEZ to fish for albacore tuna is the most important issue for the Canadian troll fishery at present and will affect future participation. The 2012 season demonstrated the impact that lack of access to these waters can have on future prospects for the Canadian fishery unless alternatives are developed. A new fishing regime is in place for the 2014 to 2016 fishing seasons. The United States government has indicated that it will seek further reductions in Canadian access to albacore tuna in US EEZ waters in the future. High fuel costs and increasing costs for supplies and services will also continue to constrain the economic performance of some sectors of the Canadian albacore tuna troll fishery.

## **10.0 STATISTICS**

### **10.1 Fishery Data Collection System**

Canadian albacore tuna catch and effort data are compiled from hailing records, logbooks, and sales slips from buyers and processing plants and stored in the *Canadian Albacore Tuna Catch and Effort Relational Database* (Stocker et al. 2007). This database contains all fishery-related data from 1995 to the present and provides the best estimate of total annual catch and effort by temporal and geographic strata.

All vessels are required to hail when they start and stop fishing and when they change zones, consisting of the Canadian EEZ, US EEZ, and the high-seas outside the EEZs. Hail data are used to estimate the number of vessels participating in the fishery and the approximate area of these activities (Stocker et al. 2007).

Canadian vessels must carry logbooks while fishing for highly migratory species in any waters of the Pacific Ocean. Daily catch (number of fish and estimated average weight) and effort, fishing location, and some gear details are recorded in logbooks. Completed copies of the logbooks must be returned for data entry after the fishing season ends (see Stocker et al. 2007).

Sales slips provide the most accurate estimates of albacore tuna catch weight because these data represent the weights upon which buyers or processors pay for fish. Harvesters record a sales slip ID number in their logbooks for each trip and once sales slips are returned to Fisheries and Oceans Canada, they are matched against each trip using the ID number and the sales slip weight is substituted for the estimated weights recorded in logbooks. This reconciliation process is the primary tool used to verify logbook data several months to a year after the season is over.

### **10.2 Data Coverage**

The annual catch and effort data shown in Table 1 represent expanded (or raised) rather than reported values and were obtained from Version 15.02.17 of the *Canadian Albacore Tuna Catch and Effort Relational Database*. The data are expanded to account for vessels that do not submit logbook data (see Stocker 2007 for details). The amount of expansion needed to arrive at these

figures can be determined from the annual logbook coverage figures shown in Table 1. The vessel participation data (Table 2) represent the number of unique vessels as determined from the hail, logbook, and sales slip data streams. Catch and effort distribution data (Figs. 3 and 4) are based on logbook data and are not expanded to account for non-reporting vessels.

### **10.3 Observer Programme**

Canada does not have an observer program for its albacore tuna troll fleet.

### **10.4 Port Sampling**

Canada does not have a port sampling program to measure albacore tuna fork lengths or other biological information during domestic off-loads. Historically some vessels unloading in US ports had portions of their catch sampled by US port samplers and these data were made available to Canada. The record of port sampled length frequency data is discontinuous from 1984 to 2008.

### **10.5 Unloading/Transshipment**

At-sea transshipment or in-port transshipment activities were not reported by the Canadian albacore tuna troll fleet in 2014.

## **11.0 RESEARCH ACTIVITIES**

### **11.1 Stock assessment**

Canada currently chairs the ISC Albacore Working Group (ISC-ALBWG) and is leading the development of a management strategy evaluation process for north Pacific albacore tuna. Initial evaluations to address target reference point selections are expected in late 2016.

### **11.2 Biological Research**

A pilot program to tag juvenile albacore tuna in the eastern Pacific Ocean with pop-up satellite archival tags (PSATs) was developed in 2014 and will be implemented in 2015. The goal is to study the movements and daily behavior of juvenile north Pacific albacore tuna in the spring as they approach the North American coast and in the fall as they leave the North American coast.

## **12.0 LITERATURE CITED**

Stocker, M., Stiff, H., Shaw, W., and Argue, A.W. 2007. The Canadian albacore tuna catch and effort relational database. Canadian Technical Report of Fisheries and Aquatic Sciences 2701: vi+76 p.  
<http://www.dfo-mpo.gc.ca/Library/327827.pdf>

Table 1. Catch and effort statistics for the Canadian troll fishery targeting albacore tuna in the WCPFC convention area, 1995 to 2014. A 0 means no reported data. .

Year	Logbook Coverage (%) <sup>D</sup>	North Pacific <sup>A</sup>		WCPFC CA <sup>B</sup>		South Pacific	
		Catch (t)	Effort (v-d)	Catch (t)	Effort (v-d)	Catch (t)	Effort (v-d)
1995	18	1,761	5,923	23	17		
1996	24	3,321	8,164	811	523	82	168
1997	30	2,166	4,320	1,007	1,017	149	171
1998	50	4,177	6,018	752	455	167	111
1999	71	2,734	6,970	151	327	254	197
2000	68	4,531	8,769	586	608	313	348
2001	81	5,248	10,021	569	383	208	168
2002	74	5,379	8,323	259	250	144	158
2003	96	6,861	8,429	453	389	0	4
2004	92	7,857	9,942	123	159	63	67
2005	94	4,829	8,564	11	57	72	111
2006	95	5,833	6,243	0	0	135	105
2007	92	6,040	6,902	0	0	30	59
2008	93	5,464	5,774	0	0	0	0
2009	97	5,693	6,540	0	0	0	0
2010	96	6,527	7,294	0	0	0	0
2011	98	5,415	8,605	1	0	0	0
2012	99	2,498	6,005	<1	2	0	0
2013	99	5,090	6,469	<1	4	0	0
2014 <sup>C</sup>	100	4,781	4,747	0	0	0	0

A – Total catch and effort in the north Pacific, including catch and effort within the WCPFC convention area

B – North Pacific albacore catch and effort west of 150 °W longitude (inside the WCPFC convention area).

C – Provisional estimates from Canadian database version 15.02.17.

D - Logbook coverage is calculated by dividing the number of vessels returning logbooks by the total number of vessels.

Table 2. Number of Canadian troll vessels active in the WCPFC Convention Area for 1995-2014.

Year	North Pacific <sup>A</sup>	North Pacific – WCPFC Statistical Area	South Pacific
1995	287	3	3
1996	295	25	3
1997	200	32	3
1998	214	27	5
1999	238	14	5
2000	243	12	4
2001	248	7	4
2002	232	7	1
2003	193	15	1
2004	221	5	2
2005	213	1	2
2006	174	0	1
2007	207	0	0
2008	134	0	0
2009	138	0	0
2010	159	0	0
2011	177	2	0
2012	175	2	0
2013	183	1	0
2014 <sup>C</sup>	160	0	0

A - Total number of Canadian vessels in the north Pacific Ocean, including vessels accessing the WCPFC Convention Area.

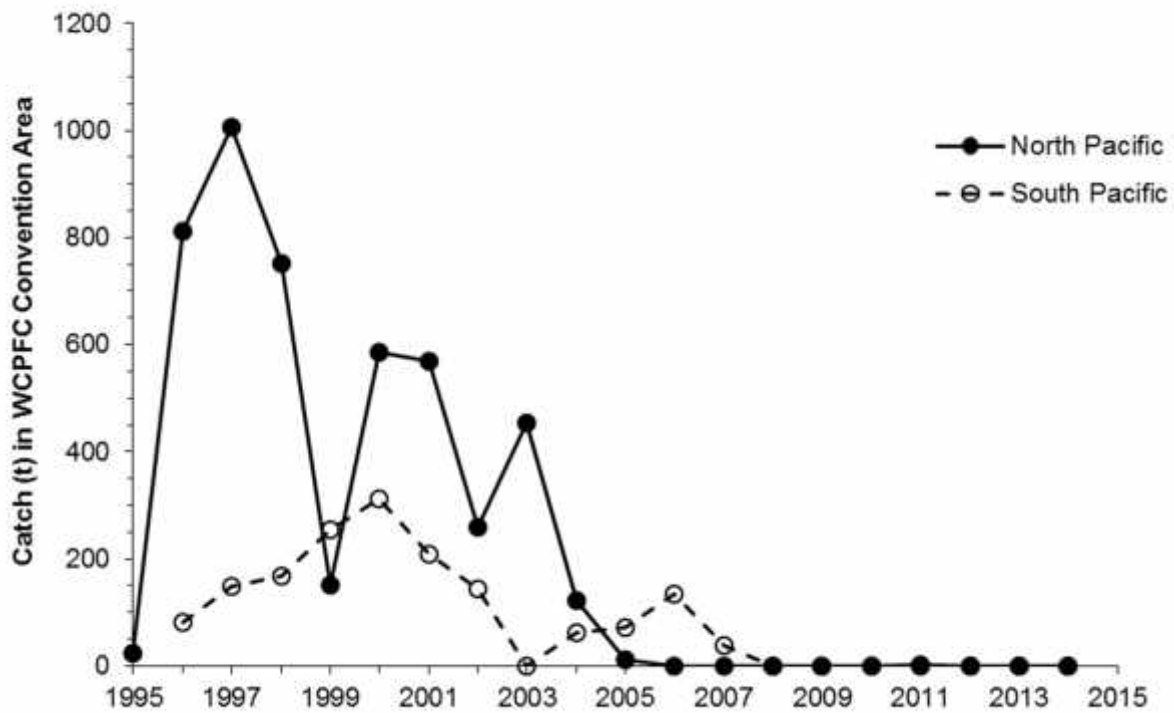
B – Canadian vessels that reported entering the WCPFC Convention Area.

C – Provisional estimates from Canadian database version 15.02.17.

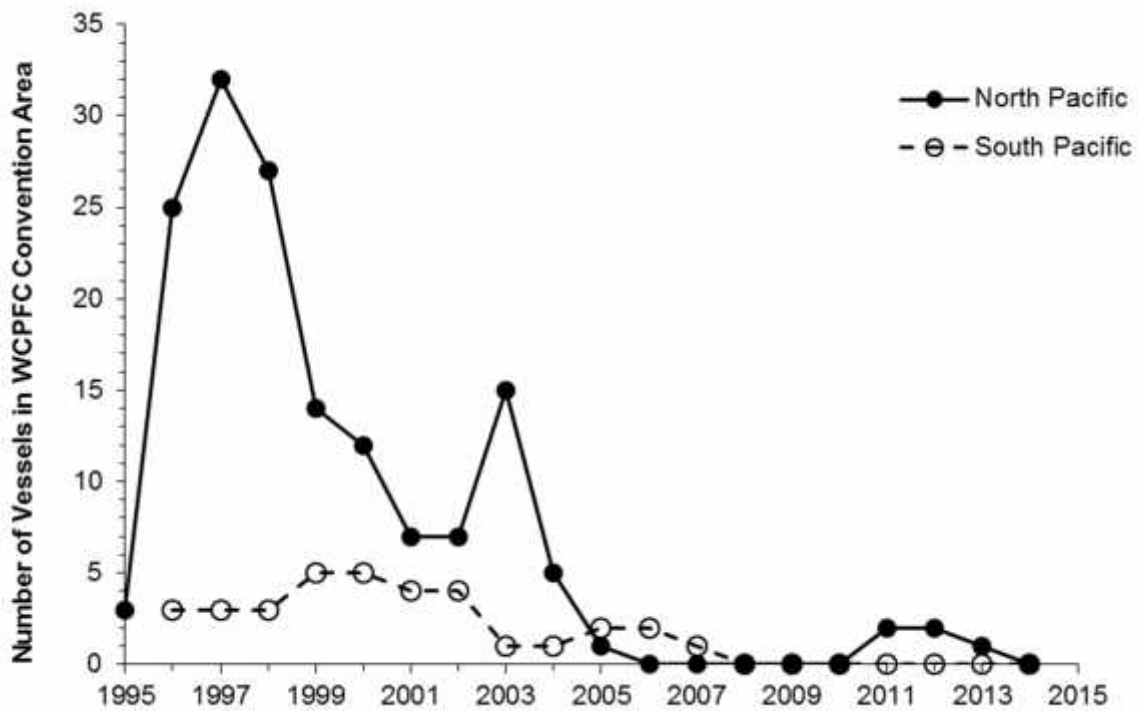


**Table 3.** Summary of size (fork length, FL) sampling program results for the Canadian albacore tuna troll fishery, 2009-2014. More than 99% of the fish measured were captured outside of the WCPFC Convention Area.

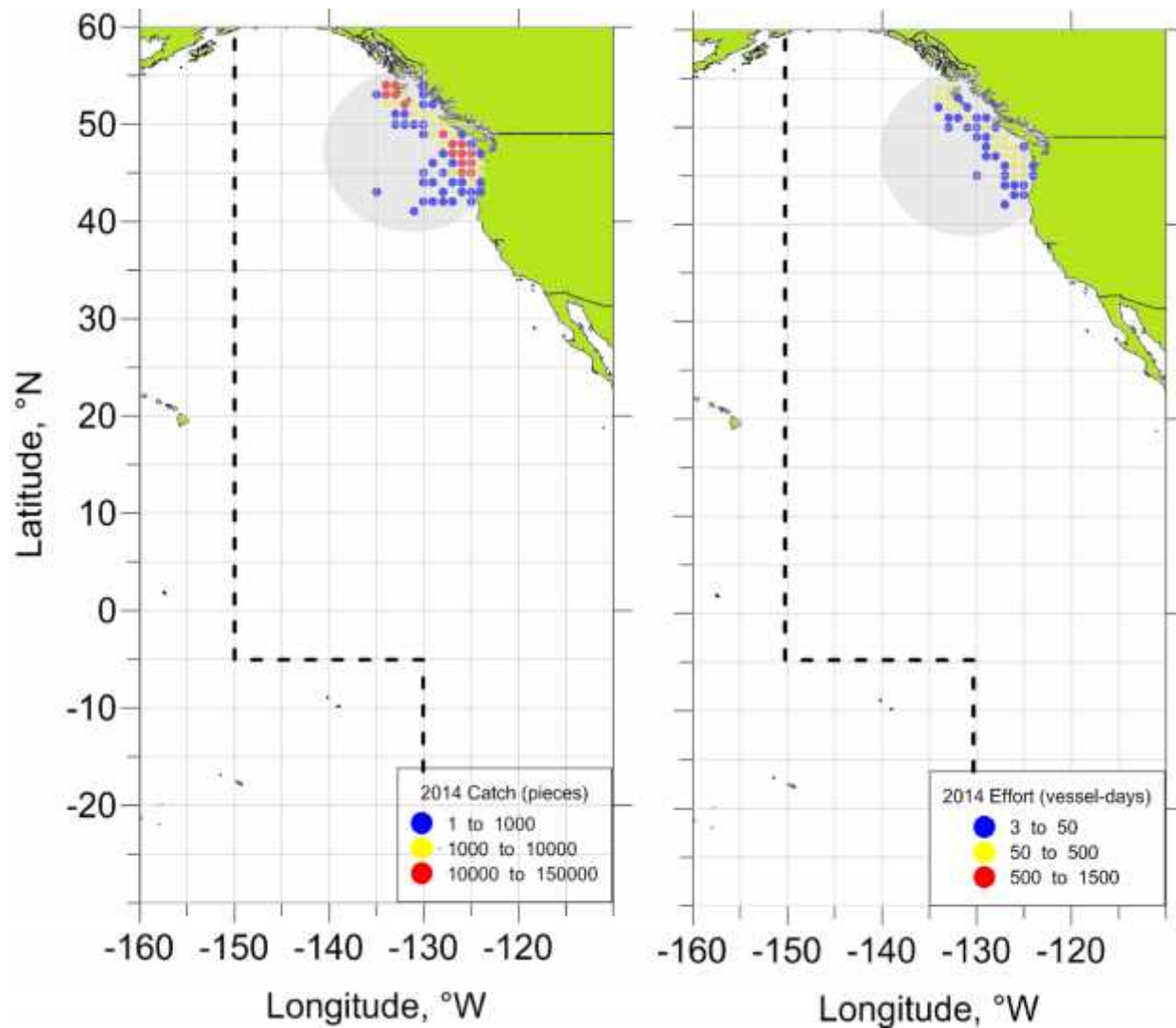
Year	Sample Size, N	Min FL (cm)	Mean FL (cm)	Max FL (cm)	Standard Deviation (cm)	Reported Catch (pieces)	Sampling Rate
2009	14,723	46.0	68.2	98.0	5.7	955,553	1.54%
2010	9,882	51.0	71.5	90.0	6.7	927,051	1.07%
2011	14,263	50.0	69.9	90.0	6.4	830,336	1.72%
2012	11,139	43.0	70.2	100.0	5.6	371,279	3.00%
2013	17,150	45.0	71.2	105.0	5.7	765,929	2.24%
2014	11,208	43.0	72.5	102.0	6.4	699,395	1.60%



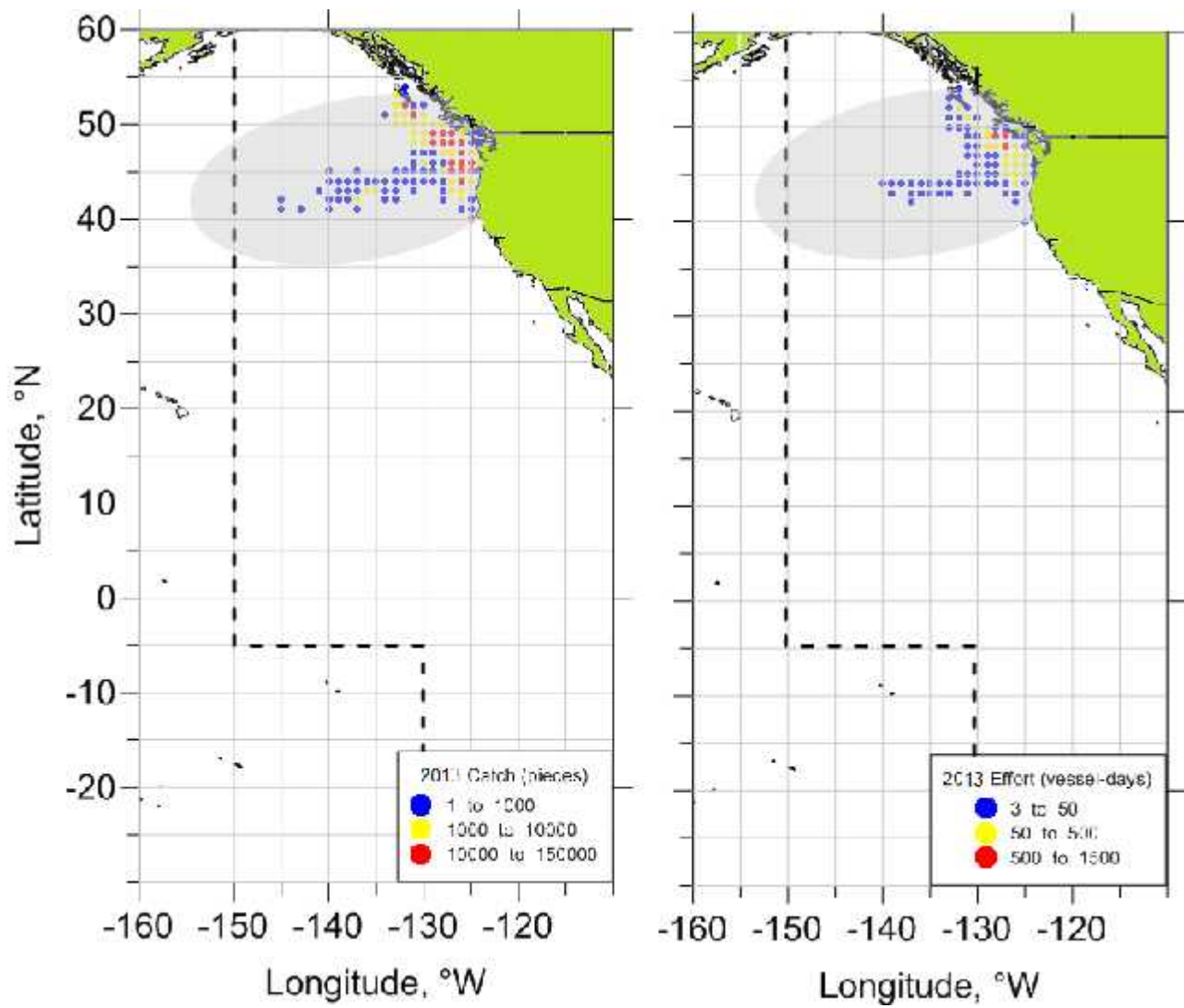
**Figure 1.** Historical annual catch of albacore tuna by the Canadian troll fleet in the WCPFC Convention Area in the north Pacific Ocean west of 150°W and the south Pacific Ocean for 1995 to 2014. The provisional catch estimate for 2014 is 0 t. (see Table 1).



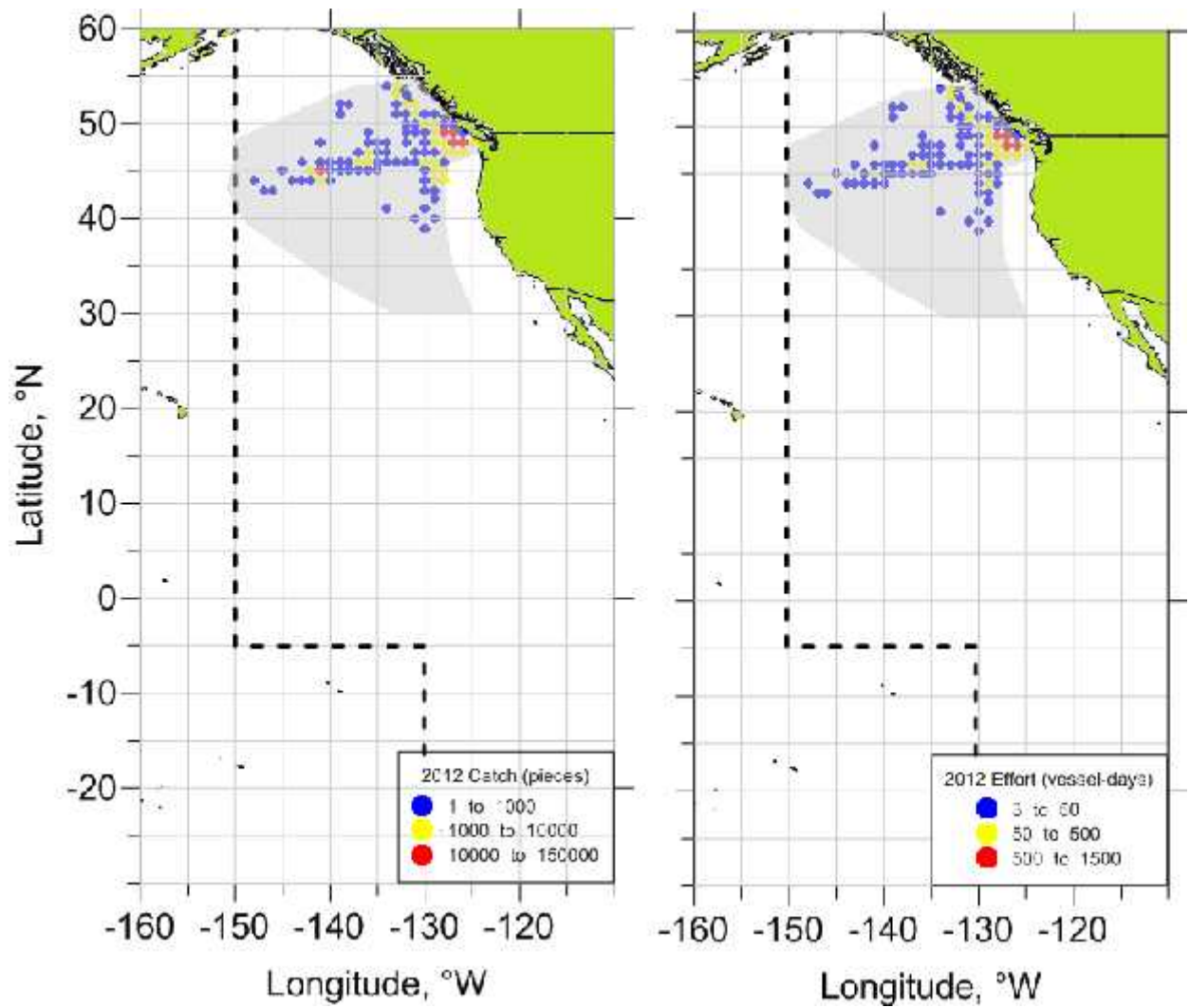
**Figure 2.** Historical annual vessel numbers for the Canadian troll fleet targeting albacore tuna in the WCPFC Convention Area in the north Pacific Ocean west of 150°W and the south Pacific Ocean for 1995 to 2014. Canadian vessels have not reported fishing in the south Pacific Ocean since 2006.



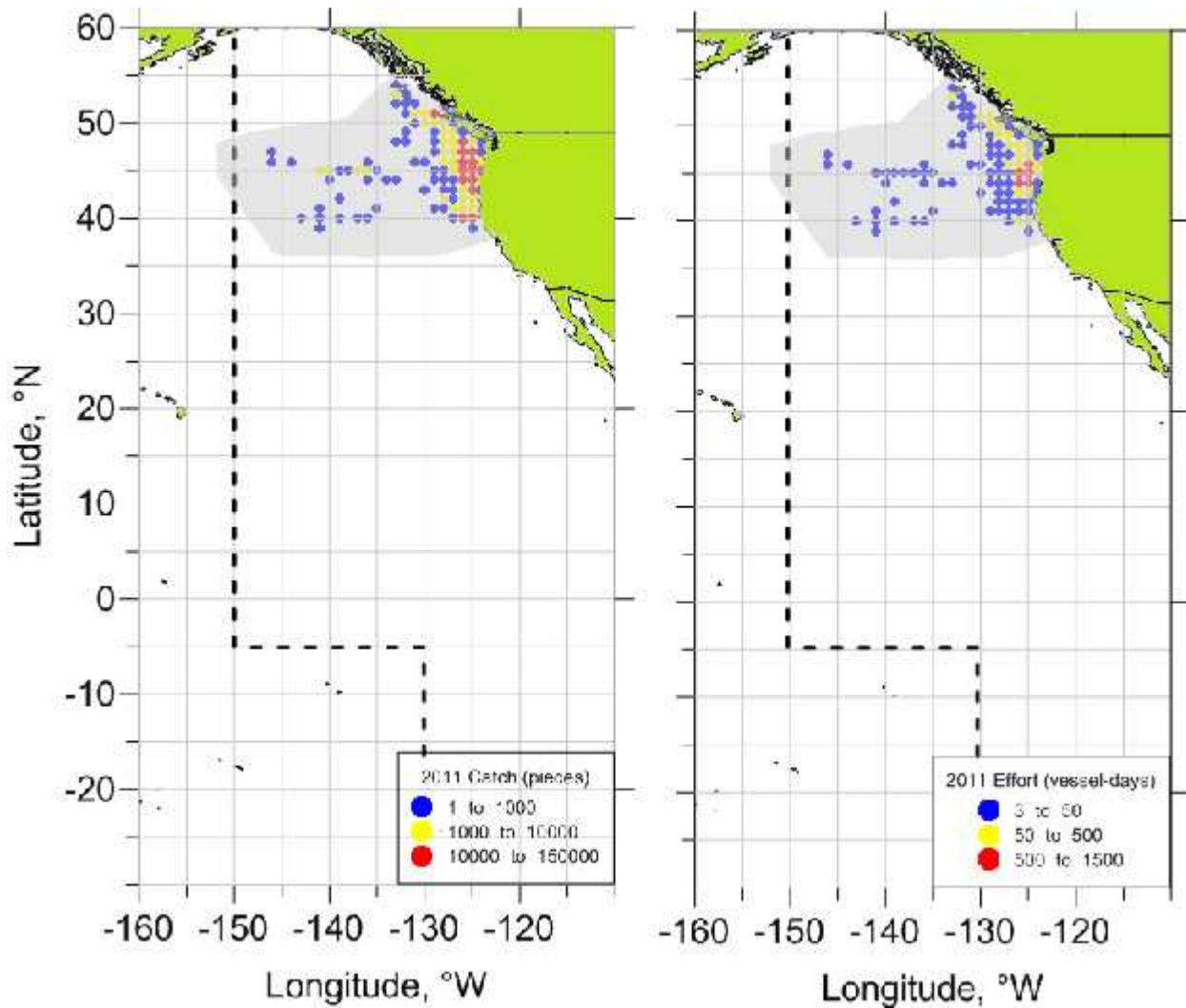
**Figure 3.** Annual distribution of albacore tuna catch (left) and effort (right) by the Canadian troll fleet active in the Pacific Ocean for 2014. Data are plotted on a 1° x 1° grid with symbols located on the bottom-right corner of each cell. Cells in which fewer than three vessels reported are not shown to preserve data confidentiality. Grey area is the approximate operational area of the Canadian fishery in 2014. Dashed line is the WCPFC Convention Area boundary.



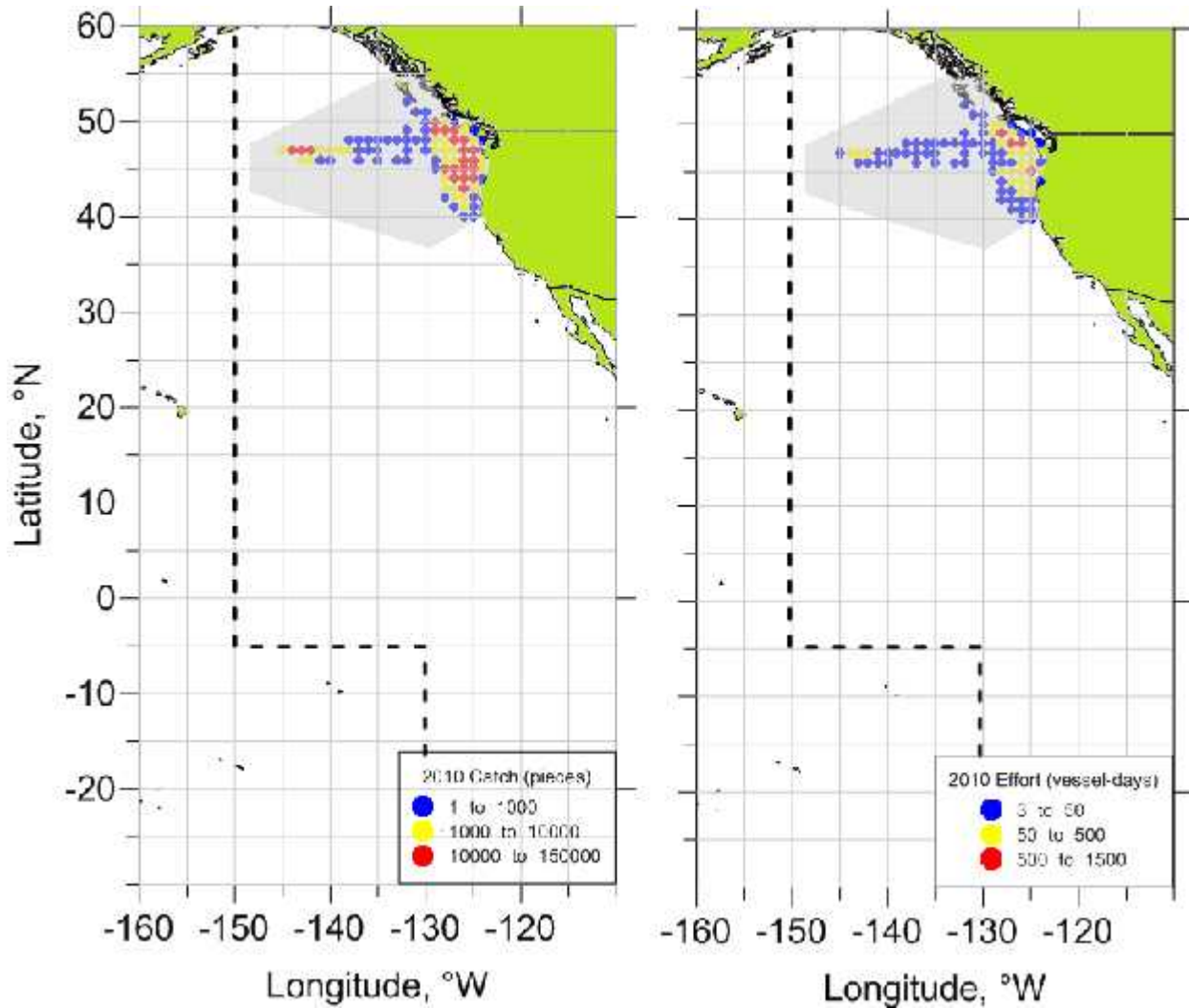
**Figure 4a.** Annual distribution of albacore tuna catch (left) and effort (right) by the Canadian troll fleet active in the Pacific Ocean for 2013. Data are plotted on a 1° x 1° grid with symbols located on the bottom-right corner of each cell. Cells in which fewer than three vessels reported are not shown to preserve data confidentiality. Grey area is the approximate operational area of the Canadian fishery in 2013. Dashed line is the WCPFC Convention Area boundary.



**Figure 4b.** Annual distribution of albacore tuna catch (left) and effort (right) by the Canadian troll fleet active in the Pacific Ocean for 2012. Data are plotted on a 1° x 1° grid with symbols located on the bottom-right corner of each cell. Cells in which fewer than three vessels reported are not shown to preserve data confidentiality. Grey area is the approximate operational area of the Canadian fishery in 2012. Dashed line is the WCPFC Convention Area boundary.

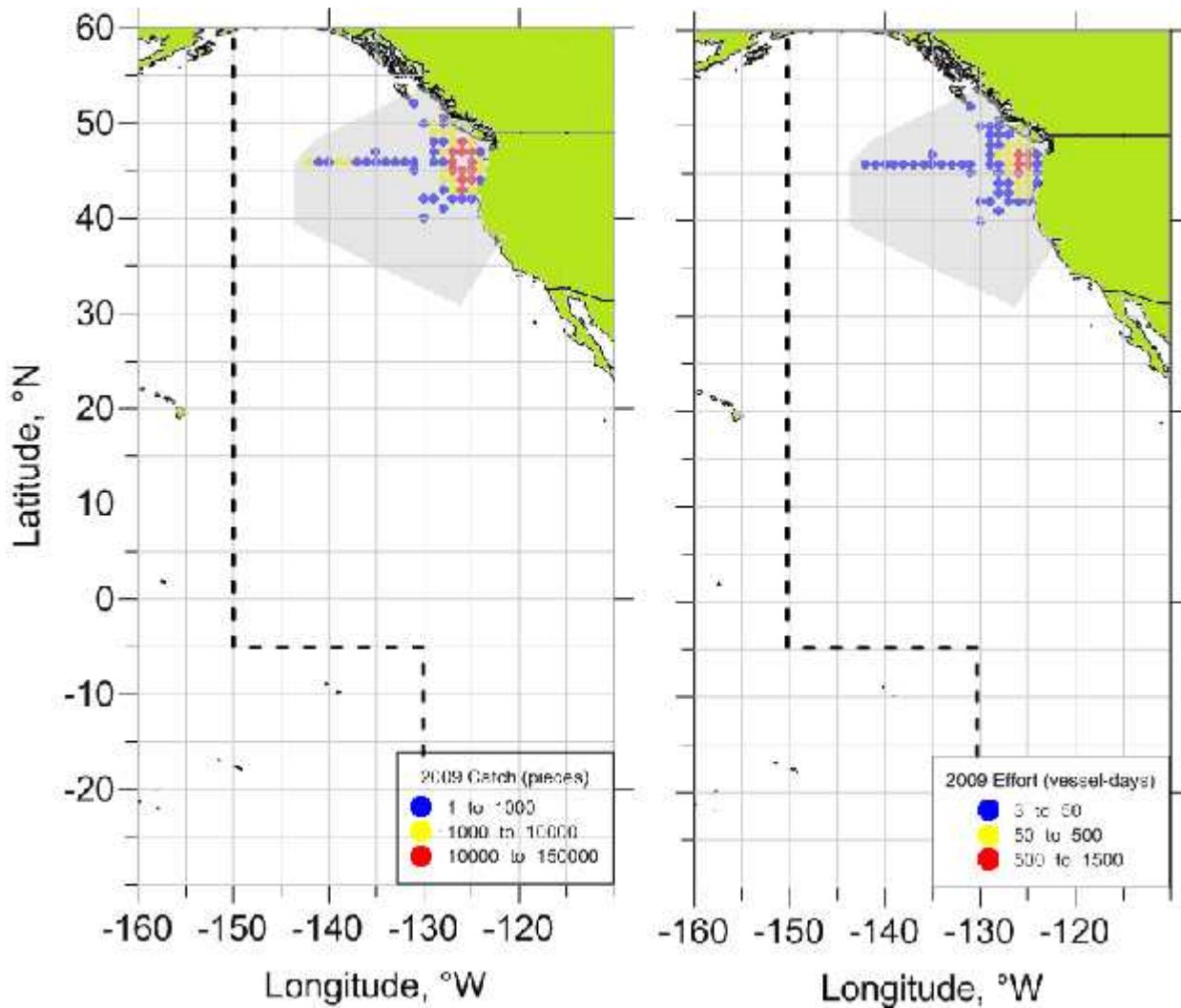


**Figure 4c.** Annual distribution of albacore tuna catch (left) and effort (right) by the Canadian troll fleet active in the Pacific Ocean for 2011. Data are plotted on a 1° x 1° grid with symbols located on the bottom-right corner of each cell. Cells in which fewer than three vessels reported are not shown to preserve data confidentiality. Grey area is the approximate operational area of the Canadian fishery in 2011. Dashed line is the WCPFC Convention Area boundary.



**Figure 4d.** Annual distribution of albacore tuna catch (left) and effort (right) by the Canadian troll fleet active in the Pacific Ocean for 2010. Data are plotted on a 1° x 1° grid with symbols located on the bottom-right corner of each cell. Cells in which fewer than three vessels reported are not shown to preserve data confidentiality. Grey area is the approximate operational area of the Canadian fishery in 2010. Dashed line is the WCPFC Convention Area boundary.





**Figure 4e.** Annual distribution of albacore tuna catch (left) and effort (right) by the Canadian troll fleet active in the Pacific Ocean for 2009. Data are plotted on a 1° x 1° grid with symbols located on the bottom-right corner of each cell. Cells in which fewer than three vessels reported are not shown to preserve data confidentiality. Grey area is the approximate operational area of the Canadian fishery in 2009. Dashed line is the WCPFC Convention Area boundary.