SCIENTIFIC COMMITTEE
TENTH REGULAR SESSION

Majuro, Republic of the Marshall Islands
6-14 August 2014

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

WCPFC-SC10-AR/CCM-02

CANADA

2014 Annual Report to the Western and Central Pacific Fisheries Commission

Canada

PART I. INFORMATION ON FISHERIES, RESEARCH, AND STATISTICS (For 2013)

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 2014	**YES**
If no, please indicate the reason(s) and intended actions:	

1. 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 2013 are summarized in this document. There was little reported by-catch and no reported interactions with pelagic sharks, sea birds, or turtles by this fishery in 2013. Minimal albacore catch (<1 t) and effort (4 vessel-days) were recorded in the WCPFC statistical area north of the equator in 2013. Canadian flagged vessels did not operate in the south Pacific Ocean in 2013.

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. Annual Canadian catch and effort in the north Pacific within the WCPFC convention area has ranged from 11 and 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.

Canadian research is focused on north Pacific albacore and projects include the collection and analysis of juvenile albacore weight-length data, pop-up satellite archival tagging of albacore to track migration, documenting climatic effects on albacore 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 2004-2013. The WCPFC Convention Area consists of Pacific waters west of 150°W north of the equator and the entire Pacific Ocean south of the equator for the purposes of this report. The data for 2004 to 2012 are definitive and the 2013 data are considered provisional at this time.

The Canadian HMS fishery is a troll fishery using jigs to target juvenile albacore in the Pacific Ocean. Catch and effort data for the both the north and south Pacific components of this fishery are reported in Table 1. The preliminary catch estimate for 2013 is 5,090 t of north Pacific albacore, which is a 104% increase in catch relative to 2012 (Table 1; Fig. 1). Less than 1 t of the 2013 catch was harvested in the northern WCPFC statistical area and effort was 4 vessel-days. No catch or effort were reported from the south Pacific Ocean in 2013 (Table 1; Fig. 1).

3. 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. The north Pacific Ocean is the primary operational area for the Canadian fishery. This operational area began to contract in the 2000s and few Canadian vessels have operated in the WCPFC northern statistical area since 2006. Canadian participation in the south Pacific albacore fishery was never high and ceased altogether after the 2006 season (Table 2; Fig. 2).

Canadian catch and effort targeting north Pacific albacore ramped up in the mid-1990s (Fig. 1). 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). Management regulations for Canadian albacore troll vessels are in the Integrated Fisheries Management Plan (IFMP), which covers the period from 01 April 2013 to 31 March 2014 and is available at http://www.dfo-mpo.gc.ca/Library/348174.pdf. The majority of catch and effort in the north Pacific Ocean occurs in a four month period from July to October and in the south Pacific Ocean between January and March.

4. FLAG STATE REPORTING OF NATIONAL FISHERIES

4.1 Canadian Albacore 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. Participation in the south Pacific albacore 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 landed on a daily basis. The target sampling rate is 1% of the total reported catch (in pieces) and has been achieved every year and the size of harvested fish has varied little since 2009 (Table 3). At least 99% of the albacore measured annually were caught outside the northern WCPFC statistical area. Seventy-five (75) vessels participated in 2013 and turned in 17,150 FL measurements of juvenile north Pacific albacore, for a sampling rate of 2.24% of the total reported catch (N = 765,929 fish). Thirteen measurements were reported from within the WCPFC convention area, ranging from 51 to 80 cm FL.

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 2013.

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 2000-2012 period.

5. COASTAL STATE REPORTING

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

6. 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 albacore availability closer to North America and uncertainty concerning conditions in the mid- Pacific were probably factors in the contraction of the operational area of the Canadian fishery that began in the 2000s.

The main factors 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, which provides for access by Canadian-flagged and US-flagged vessels licensed to fish for albacore and for the landing of albacore catches at designated ports within each country. Historically, 78% of the effort and catch by the Canadian fishery has occurred within the US waters. A three-year fishing regime expired at the end of December 2011 and a new regime was not negotiated for 2012, which resulted in a 54% reduction in catch and 30% reduction in effort relative to 2011 because Canadian vessels were not able to enter US waters to fish albacore. A one-year fishing regime negotiated for the 2013 season specified that up to 45 Canadian vessels could fish in US waters

between June 15 and September 15. Both the number of vessels and length of the fishing period are reductions relative to previously negotiated fishing regimes, and these reductions are reflected in the effort (24%) and catch (31%) in US waters relative to long-term averages. The terms of the 2013 fishing regime were subsequently adopted by both countries for a new three year regime in April 2014 and will take effect with the 2014 fishing season.

7. DISPOSAL OF CATCH

Canadian troll vessels are equipped with freezers to blast freeze albacore 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 by Canadian vessels and ports in the United States, especially Ilwaco WA, and Astoria OR, handling the remaining landings. Small amounts of frozen fish (<<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. This fishery does not discard catch at sea.

8. ONSHORE DEVELOPMENTS

There were no notable developments in 2012.

9. FUTURE PROSPECTS OF THE FISHERY

Uncertainty concerning future access to waters within the US EEZ to fish for albacore 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. At present a three-year fishing regime will take effect for the 2014 fishing season. But uncertainty remains as the United States government has indicated that it will seek further reductions in Canadian access 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 troll fishery.

10. 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. 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 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.

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 14.04.01 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 troll fleet.

10.4 Port Sampling

Canada does not have a port sampling program to measure albacore 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/Transhipment

At-sea transshipment or in-port transshipment activities were not reported by the Canadian albacore troll fleet in 2013.

11. RESEARCH ACTIVITIES

11.1 Stock assessment

Canada currently chairs the ISC Albacore Working Group (ISC-ALBWG) and led the 2014 stock assessment process, which produced updated stock status and conservation information based on fishery data from 1966 through 2012.

11.2 Biological Research

Weight-length – Five vessels were equipped with scales in 2012 and 2013 to record fork lengths and weights of the first 10 fish landed daily. The goals of this activity are to update weight-length conversion tables for use in estimating average daily catch weight and to improve current weight-length conversions used to convert length data to weights for stock assessment modeling and by vessel captains to estimate weights in their logbooks. Approximately 3,000 data pairs were reported in 2012 and another 3,000 in 2013 by crews from two vessels. Analysis of these data is underway to assess growth differences between areas and years.

Migration Studies – A pilot program to tag juvenile albacore in the eastern Pacific Ocean with pop-up satellite archival tags (PSATs) was developed and appropriate gear was purchased for implementation in 2013. The goal is to study the movements and daily behavior of juvenile north Pacific albacore in the spring as they approach the North American coast and in the fall as they leave the North American coast.

12. 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 2013. A 0 means no reported data. .

		North Pacific[A]		WCPFC CA[B]		South Pacific	
Year	Logbook Coverage (%)[D]	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[C]	99	5,090	6,469	<1	4	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 14.04.01.

D - Logbook coverage is calculated by dividing the number of logbook reporting vessels by the total number of vessels.

Table 2. Number of Canadian troll vessels active in the WCPFC Convention Area for 1995-2013.

Year	North Pacific[A]	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[C]	183	1	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 14.04.01.

Table 3. Summary of size (fork length, FL) sampling program results for the Canadian albacore troll fishery, 2009-2013. 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%

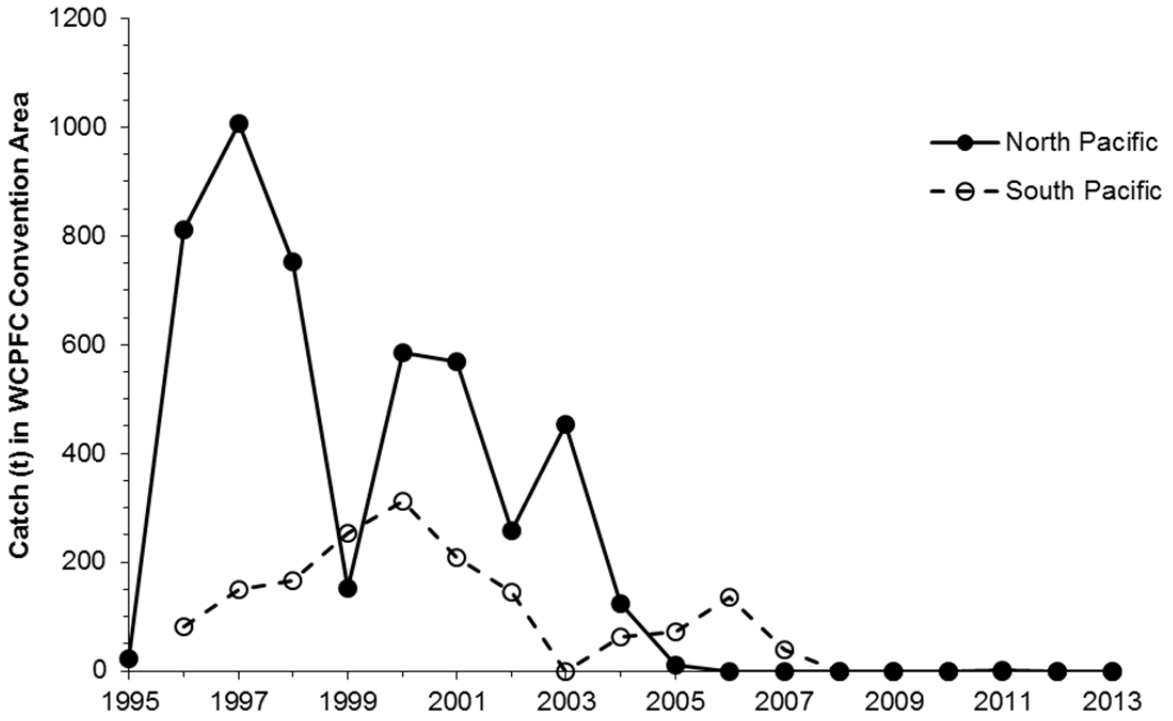

Figure 1. Historical annual catch of albacore tuna by the Canadian troll fleet in the WCPFC Convention Area in the north Pacific Ocean west of 150°W and the south Pacific Ocean for 1995 to 2013. The provisional catch estimate for 2013 is < 1 t (see Table 1)

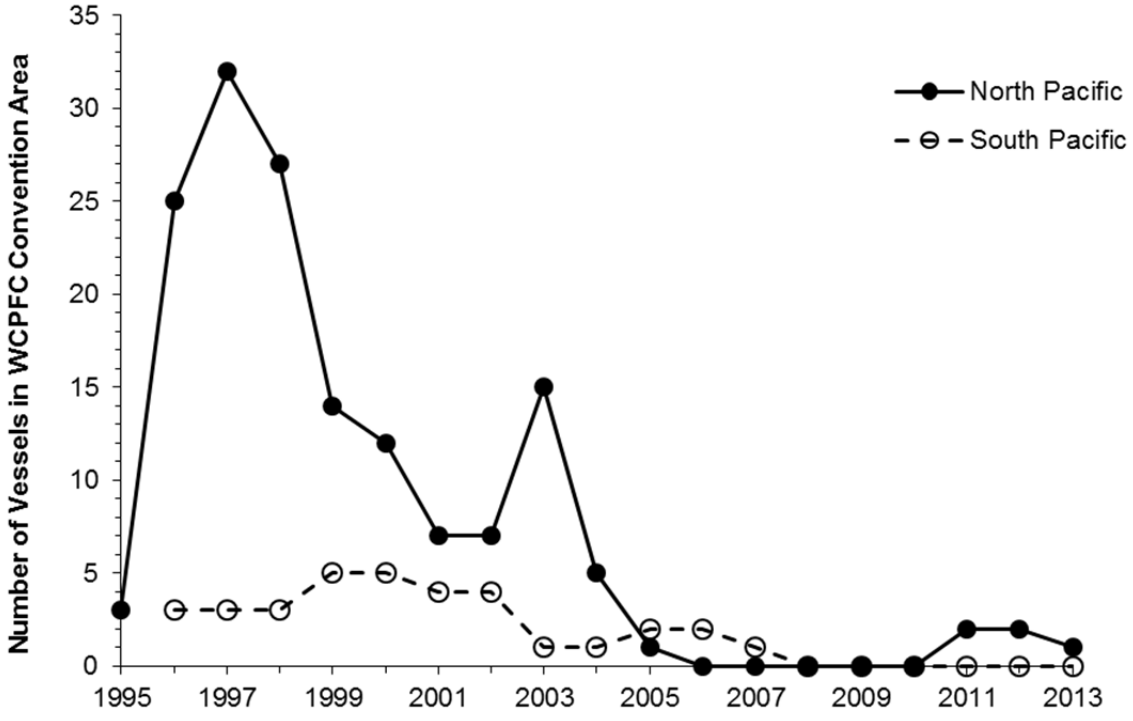

Figure 2. Historical annual vessel numbers for the Canadian troll fleet targeting albacore tuna in the WCPFC Convention Area in the north Pacific Ocean west of 150°W and the south Pacific Ocean for 1995 to 2013. Canadian vessels have not reported fishing in the south Pacific Ocean since 2006.

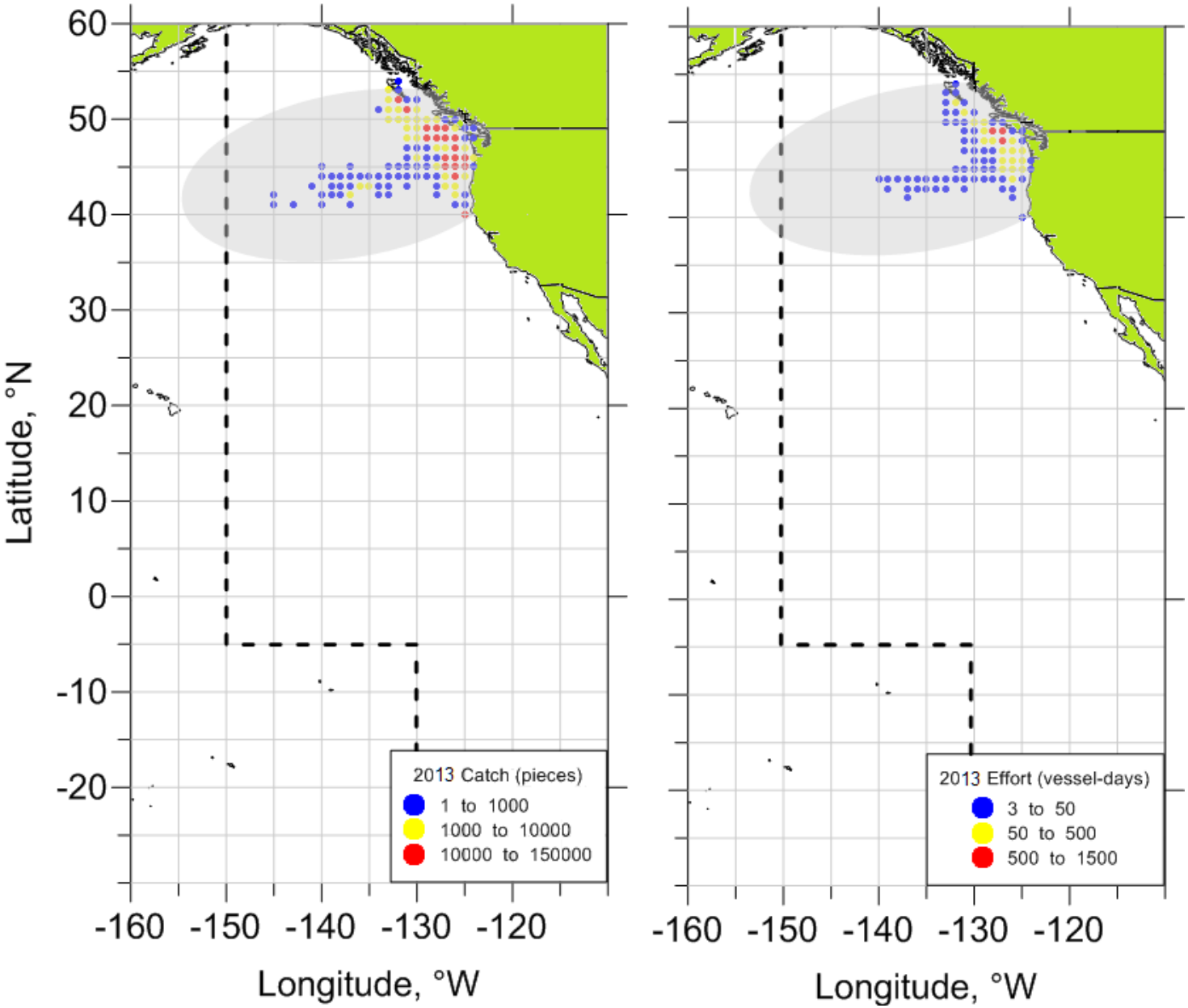

Figure 3. Annual distribution of albacore catch (left) and effort (right) by the Canadian troll fleet active in the Pacific Ocean for 2013. Data are plotted on a 1° x 1° grid with symbols located on the bottom-right corner of each cell. Cells in which fewer than three vessels reported are not shown to preserve data confidentiality. Grey area is the approximate operational area of the Canadian fishery in 2013. Dashed line is the WCPFC Convention Area boundary.

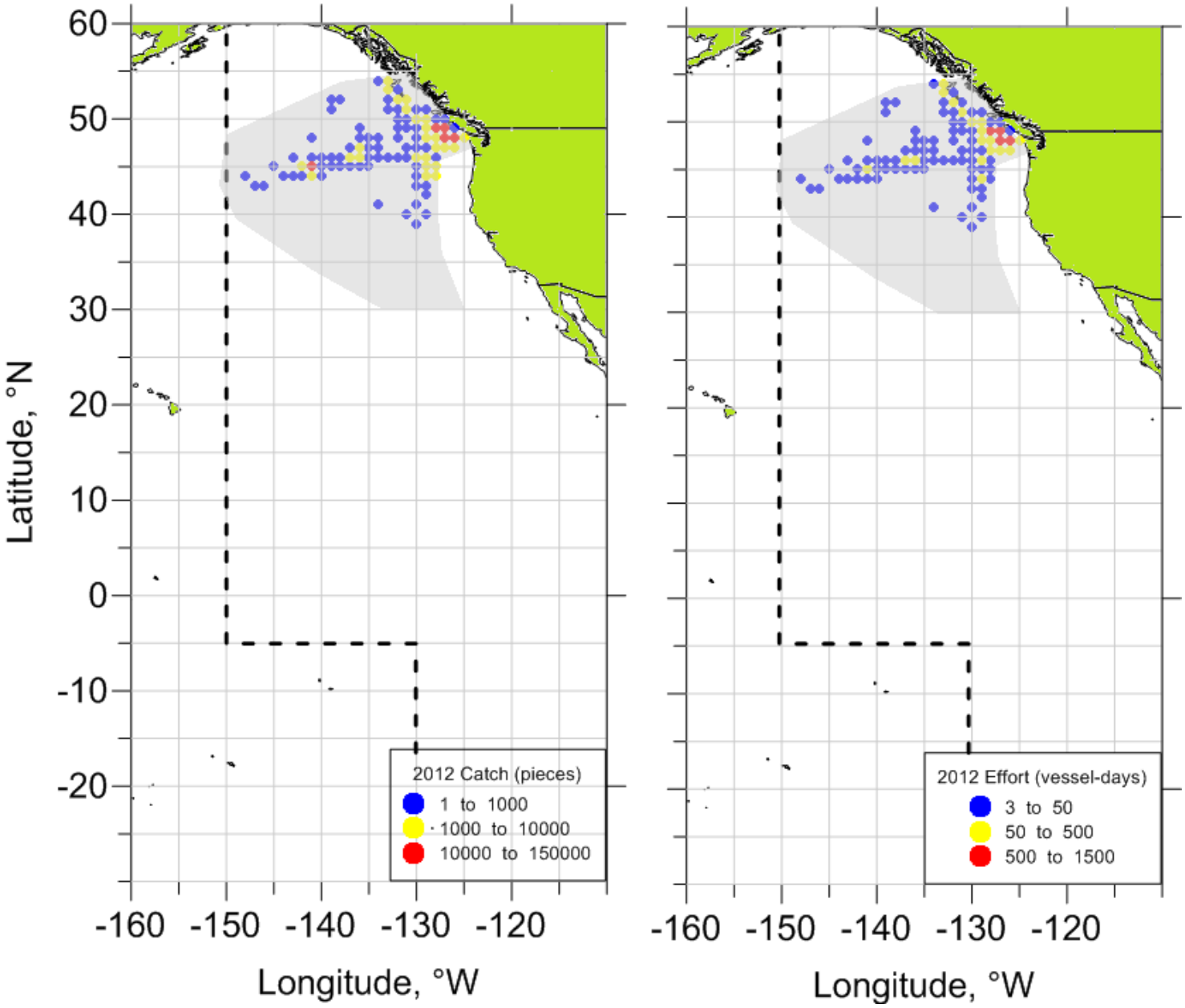

Figure 4a. Annual distribution of albacore catch (left) and effort (right) by the Canadian troll fleet active in the Pacific Ocean for 2012. Data are plotted on a 1° x 1° grid with symbols located on the bottom-right corner of each cell. Cells in which fewer than three vessels reported are not shown 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.

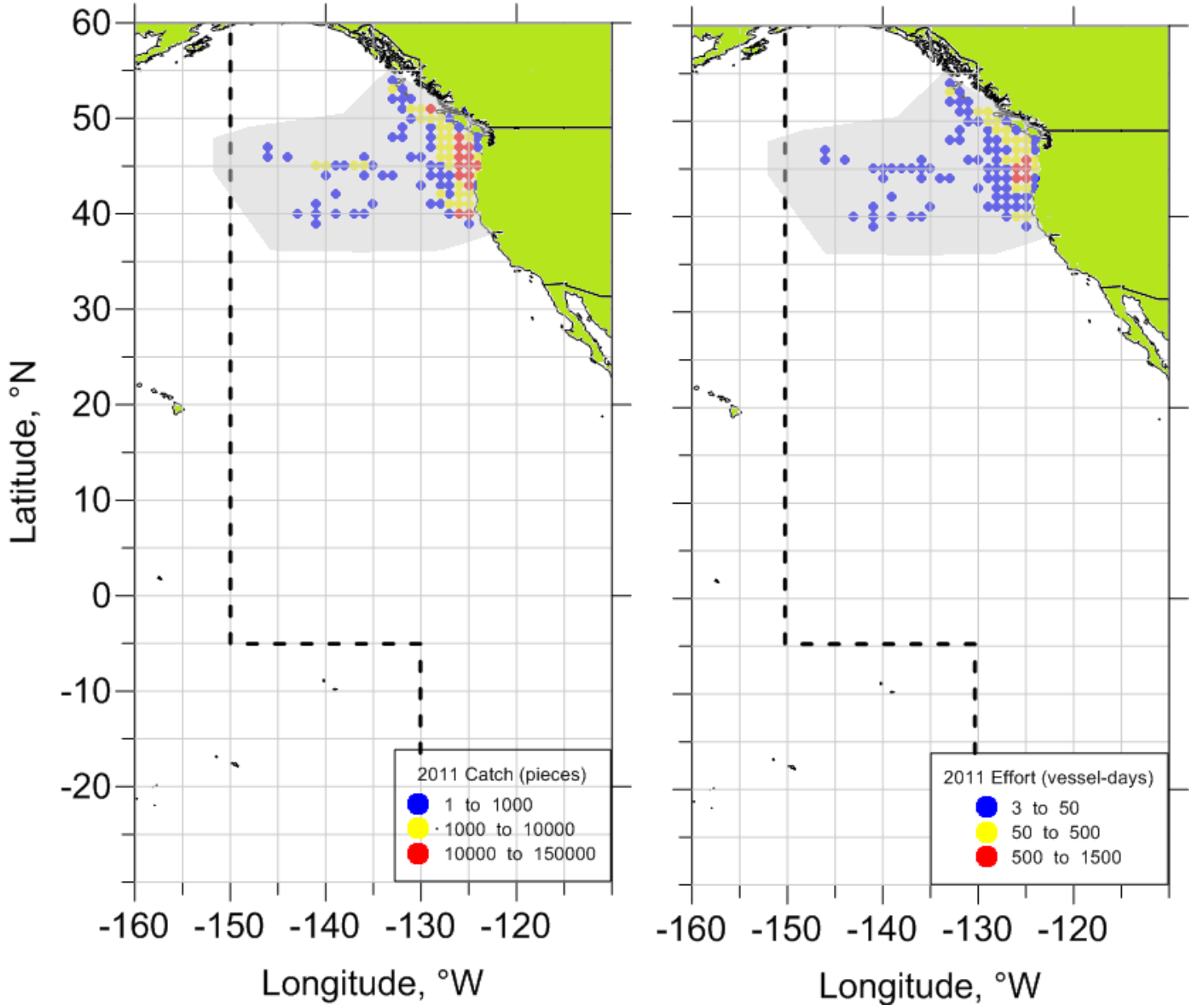

Figure 4b. Annual distribution of albacore catch (left) and effort (right) by the Canadian troll fleet active in the Pacific Ocean for 2011. Data are plotted on a 1° x 1° grid with symbols located on the bottom-right corner of each cell. Cells in which fewer than three vessels reported are not shown 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.

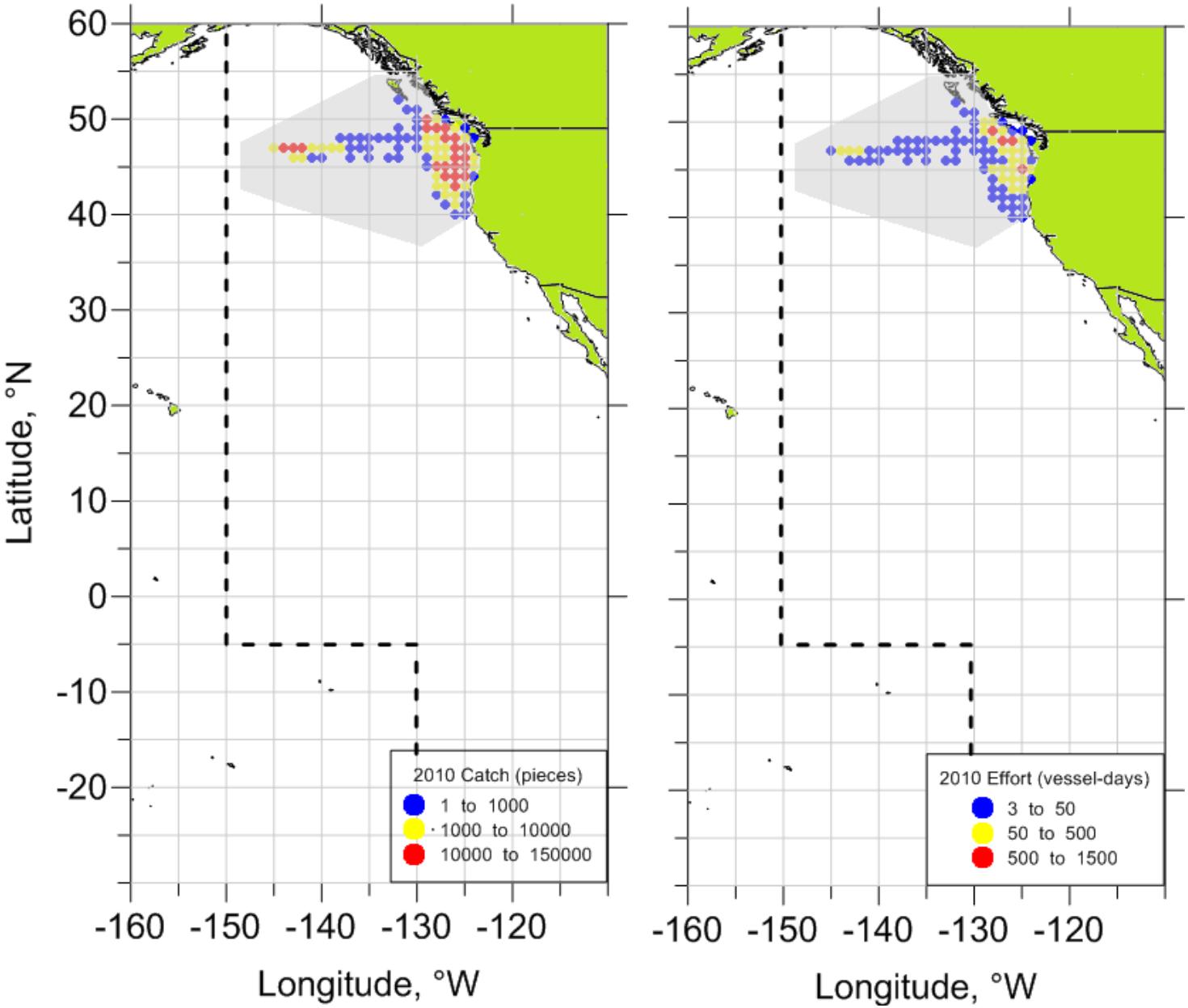

Figure 4c. Annual distribution of albacore catch (left) and effort (right) by the Canadian troll fleet active in the Pacific Ocean for 2010. Data are plotted on a 1° x 1° grid with symbols located on the bottom-right corner of each cell. Cells in which fewer than three vessels reported are not shown 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.

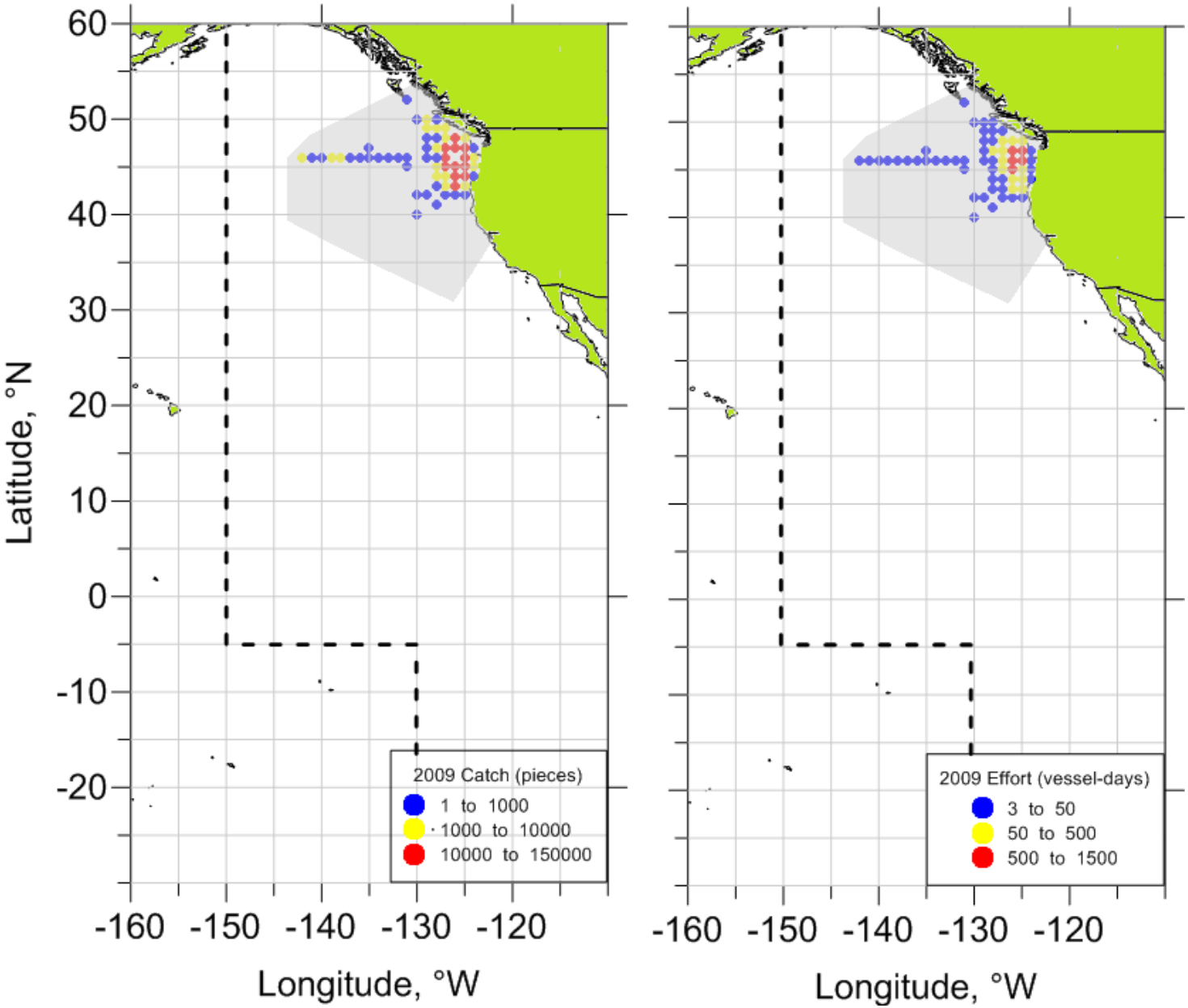

Figure 4d. Annual distribution of albacore catch (left) and effort (right) by the Canadian troll fleet active in the Pacific Ocean for 2009. Data are plotted on a 1° x 1° grid with symbols located on the bottom-right corner of each cell. Cells in which fewer than three vessels reported are not shown 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.

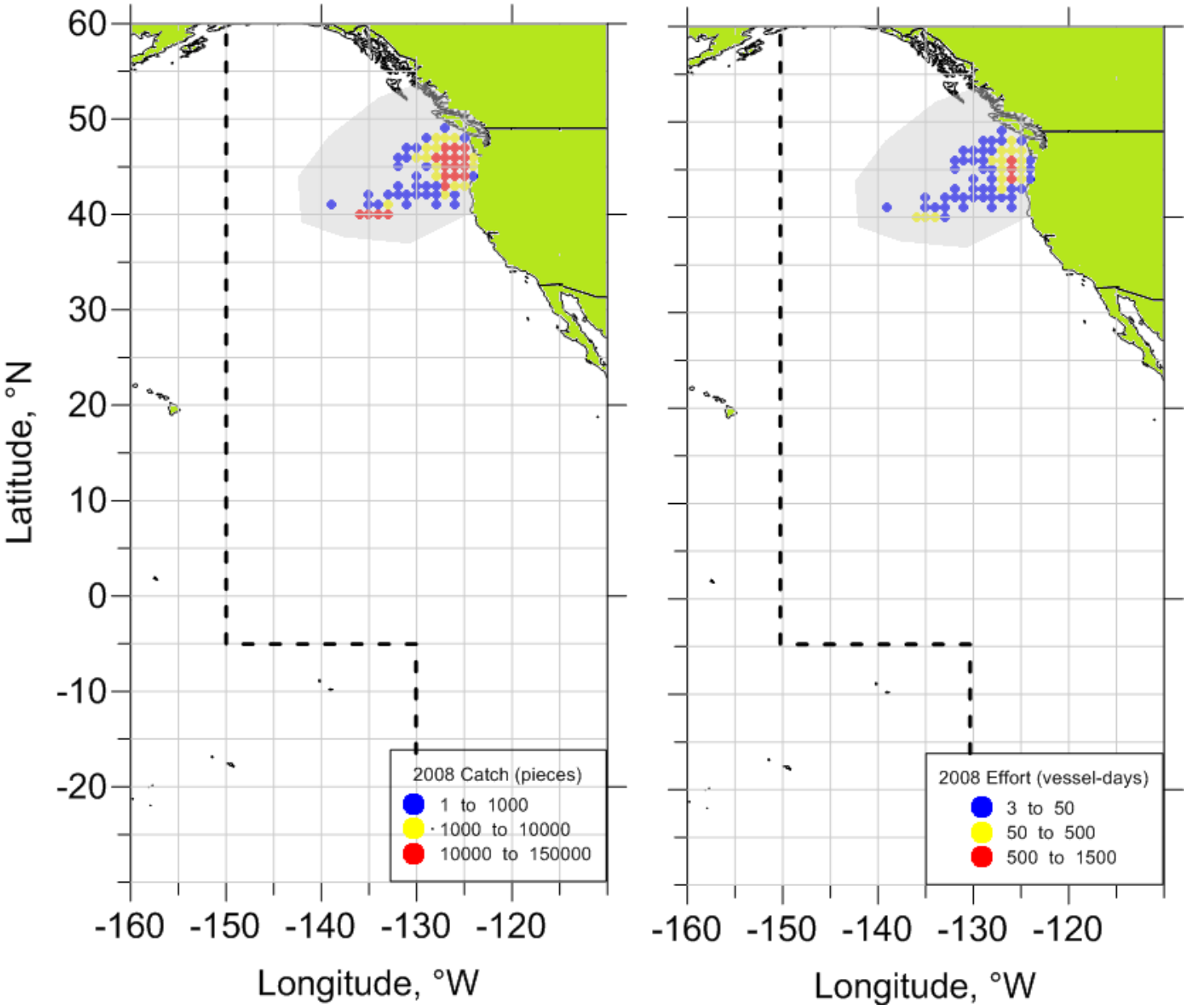

Figure 4e. Annual distribution of albacore catch (left) and effort (right) by the Canadian troll fleet active in the Pacific Ocean for 2008. Data are plotted on a 1° x 1° grid with symbols located on the bottom-right corner of each cell. Cells in which fewer than three vessels reported are not shown to preserve data confidentiality. Grey area is the approximate operational area of the Canadian fishery in 2008. Dashed line is the WCPFC Convention Area boundary.