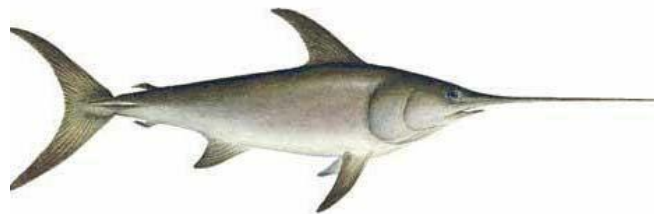
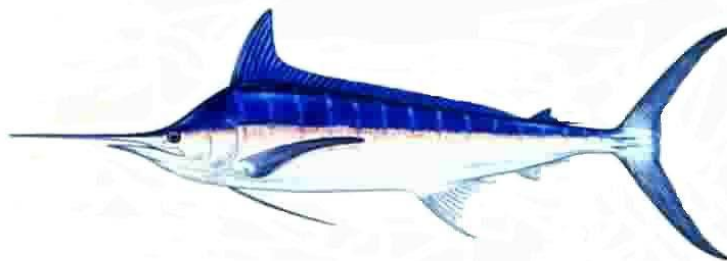




Updated Blue Marlin Catches in the North and South Pacific from WCPFC Data¹

Darryl T. Tagami
NOAA NMFS Pacific Island Fisheries Science Center
Honolulu, Hawaii, USA

Haiying Wang
Joint Institute for Marine and Atmospheric Research
University of Hawaii
Honolulu, Hawaii, USA



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Darryl T. Tagami
Pacific Islands Fisheries Science Center
National Marine Fisheries Service, NOAA
Honolulu, Hawaii 96822 U.S.A.

Haiying Wang
University of Hawaii
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Honolulu, Hawaii 96822 U.S.A.

Abstract

This working paper presents catch summaries and distribution plots of blue marlin in the North Pacific and South Pacific from non-ISC member countries. The data was provided by the WCPFC for longline catches of blue marlin only. The purpose was to provide the ISC Billfish Working Group with billfish catch data not available in the ISC or ISC Working Groups data holdings. This represents the first time this blue marlin catch data has been made available to the ISC for stock assessment purposes.

INTRODUCTION

WCPFC Data Holdings

The Western and Central Pacific Fisheries Commission (WCPFC) was established by the Convention for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (WCPF Convention) in June 2004. The WCPFC currently has 25 member countries, 7 Participating Territories, and 7 Cooperating Non-Members.

Japan, Chinese Taipei, Korea, and U.S.A. are member countries of both the ISC and the WCPFC. Many other WCPFC member countries fish in the North Pacific but are not members of the ISC.

METHODS

The WCPFC provided to the ISC Billfish Working Group historical longline catch data for blue marlin (*Makaira nigricans*) in the North and South Pacific. These Category I data are presented in Table 1 by country for cumulative catch in metric tons, total years, and catch per year.

For comparison, blue marlin longline catches from the WCPFC database are also presented for ISC countries Japan, Chinese Taipei, Korea, and U.S.A.

The WCPFC also provided Category II data, aggregated catch and effort data by 5-degree squares and by year/quarters for member countries. These data are presented for the most recent 5-year period (2007-2011) for the top 6 countries in Figures 2-8.

This Category II data are also presented by quarters for 2007-2011 with all countries combined in Figures 9-11.

The WCPFC also provided Category III data, size frequency data by 5-degree squares and year. These data will be briefly summarized in a separate presentation but will not be described in a working paper.

RESULTS

The total catch of blue marlin for ISC members from the WCPFC longline data is presented in Table 1 for all years through 2011.

The total catch of blue marlin for non-ISC members from the WCPFC longline data is also presented in Table 1 for all years through 2011. China, Indonesia, French Polynesia, and Vietnam have the greatest cumulative catches.

The total catch of blue marlin for ISC members in 2007-2011 from the WCPFC longline data is 56,743 metric tons (Table 2). About 55% of that total is produced by Chinese Taipei, about 22% is produced by Japan, and 19% is produced by Korea. Chinese Taipei produced a mean catch of 6,286 mt per year from 2007-2011.

The total catch of blue marlin for non-ISC members in 2007-2011 from the WCPFC longline data is 19,153 metric tons (Table 2). About 32% of that total is produced by China, about 30% is produced by

Indonesia, and about 11% is produced by Vietnam. China and Indonesia have averaged over 1000 mt per year in 2007-2011.

Distribution of Blue Marlin Longline Catch and Effort

Figure 1 displays the distribution of blue marlin longline catches in the North Pacific by ISC and WCPFC member countries (I = ISC, W = WCPFC). Here ISC member countries are Japan, Chinese Taipei, Korea, and USA.

Figure 2 displays the distribution of blue marlin longline catch and effort in the North and South Pacific for all WCPFC countries for 2007-2011. Note that the catch totals are in weight caught (mt); effort is in 1000 hooks.

Figure 3 displays the distribution of blue marlin longline catch and effort in the North and South Pacific for Japan for 2007-2011. Note that the catch totals are in weight caught (mt); effort is in 1000 hooks.

Figure 4 displays the distribution of blue marlin longline catch and effort in the North and South Pacific for Chinese Taipei for 2007-2011. Note that the catch totals are in weight caught (mt); effort is in 1000 hooks.

Figure 5 displays the distribution of blue marlin longline catches in the North and South Pacific for Korea for 2007-2011. Note that the catch totals are in weight caught (mt); effort is in 1000 hooks.

Figure 6 displays the distribution of blue marlin longline catches in the North and South Pacific for Indonesia for 2007-2011. Note that the catch totals are in weight caught (mt); effort is in 1000 hooks.

Figure 7 displays the distribution of blue marlin longline catches in the North and South Pacific for China for 2007-2011. Note that the catch totals are in weight caught (mt); effort is in 1000 hooks.

Figure 8 displays the distribution of blue marlin longline catches in the North and South Pacific for United States for 2007-2011. Note that the catch totals are in weight caught (mt); effort is in 1000 hooks.

Distribution of Blue Marlin Longline Catch and Effort by Quarters

Figure 9 displays the distribution of blue marlin longline catches (mt) in the North and South Pacific for all WCPFC countries from 2007-2011 by quarters. Note that the catch totals are in weight caught (mt).

Figure 10 displays the distribution of blue marlin longline effort (1000 hooks) in the North and South Pacific for all WCPFC countries from 2007-2011 by quarters. Note that the effort totals are in 1000 hooks.

Figure 11 displays the distribution of blue marlin longline catch per unit effort in the North and South Pacific for all WCPFC countries from 2007-2011 by quarters. Note that the CPUE is in weight caught (mt) divided by 1000 hooks.

Figure 12 displays histograms of blue marlin longline mean catch (mt), mean catch (number caught), and mean effort (1000 hooks) for North and South Pacific for all WCPFC countries from 2007-2011 by quarters.

CONCLUSIONS

From the total catch of blue marlin (75,896 mt) from the WCPFC longline database in 2007-2011, about 75% was caught by ISC members (Chinese Taipei, Japan, Korea, and U.S.A.), and about 25% was caught by non-ISC members (Table 2).

Chinese Taipei was the leading producer among ISC members in 2007-2011 with 31,428 mt, followed by Japan (12,714 mt) and Korea (10,906 mt).

Of the non-ISC members in the WCPFC, the leading producers in 2007-2011 were China (6,176 mt), Indonesia (5,811 mt), Vietnam, and French Polynesia (Table 2).

From the distribution plots of blue marlin longline catch and effort in the North and South Pacific for 2007-2011, Chinese Taipei had the largest cumulative effort (1,378,157 in 1000 hooks), followed by Indonesia (666,422 in 1000 hooks), China (49,384 in 1000 hooks), Korea (340,959 in 1000 hooks), Japan (291,766 in 1000 hooks), and U.S.A. (214,727 in 1000 hooks).

Chinese Taipei and Japan generally fished throughout the western and central Pacific Ocean in 2007-2011. Indonesia's fishing effort was primarily focused around the equator between 120 degrees East and 135 degrees East longitudes.

From the distribution plots of blue marlin longline catch and effort in the North and South Pacific for 2007-2011 by quarters, the average catch north of the equator was generally higher in Quarters 2 (April-June) and 3 (July-September). The average catch south of the equator was slightly higher in Quarter 4 (October-December) than the rest of the year.

REFERENCES

Tagami, Darryl and Haiying Wang.

2012. Blue Marlin Catches in the North and South Pacific from WCPFC Data. ISC/12/

Table 1 – Blue marlin longline cumulative catch (mt) by country from WCPFC database.

ISC Countries	Total Catch (mt)	Total Years	Catch per Year	First Year	Last Year
UNITED STATES OF AMERICA	9,728.00	32	303.90	1980	2011
REPUBLIC OF KOREA	70,661.00	37	1909.80	1975	2011
CHINESE TAIPEI	193,146.00	54	3576.80	1958	2011
JAPAN	273,512.00	50	5470.20	1962	2011
totals	547,047.00	173	11,260.70		

WCPFC Countries	Total Catch (mt)	Total Years	Catch per Year	First Year	Last Year
NAURU	0.00	5	0.00	2000	2004
PALAU	0.00	9	0.00	1992	2004
NEW ZEALAND	2.00	2	1.00	1987	2011
KIRIBATI	6.00	5	1.20	1995	2011
SENEGAL	7.00	3	2.33	2005	2007
NIUE	24.00	6	4.00	2005	2011
BELIZE	121.00	17	7.12	1995	2011
SPAIN	182.00	8	22.75	2004	2011
MARSHALL ISLANDS	219.00	6	36.50	1992	2011
VIETNAM	5,027.00	12	418.92	2000	2011
TONGA	376.00	30	12.53	1982	2011
COOK ISLANDS	505.00	14	36.07	1994	2011
SAMOA (WESTERN)	488.00	19	25.68	1993	2011
AUSTRALIA	661.00	27	24.48	1985	2011
NEW CALEDONIA	688.00	29	23.72	1983	2011
SOLOMON ISLANDS	1,197.00	22	54.41	1973	2011
PAPUAL NEW GUINEA	1,230.00	17	72.35	1993	2011
FEDERATED STATES OF MICRONESIA	1,463.00	21	69.67	1991	2011
VANUATU	2,244.00	14	160.29	1995	2011
FIJI	3,648.00	22	165.82	1990	2011
PHILIPPINES	3,904.00	41	95.22	1970	2011
FRENCH POLYNESIA	5,573.00	22	253.32	1990	2011
CHINA	20,291.00	24	845.46	1988	2011
INDONESIA	21,435.00	34	630.44	1978	2011
totals	69,291.00	409	2,963.28		

Table 2 – Blue marlin longline cumulative catch (mt) by country for 2007-2011 from WCPFC database.

	Total Catch		
ISC Countries	(mt)	Total Years	Catch per Year
UNITED STATES OF AMERICA	1,695	5	339
REPUBLIC OF KOREA	10,906	5	2,181
JAPAN	12,714	5	2,543
CHINESE TAIPEI	31,428	5	6,286
totals	56,743		11,349

	Total Catch		
WCPFC Countries	(mt)	Total Years	Catch per Year
VIETNAM	2,147.00	5	429.40
SOLOMON ISLANDS	554.00	2	277.00
PAPUA NEW GUINEA	663.00	5	132.60
FEDERATED STATES OF MICRONESIA	914.00	5	182.80
VANUATU	715.00	5	143.00
FIJI	746.00	5	149.20
PHILIPPINES	192.00	4	48.00
FRENCH POLYNESIA	1,235.00	5	247.00
CHINA	6,176.00	5	1,235.20
INDONESIA	5,811.00	5	1,162.20
totals	19,153.00	5	4,006.40

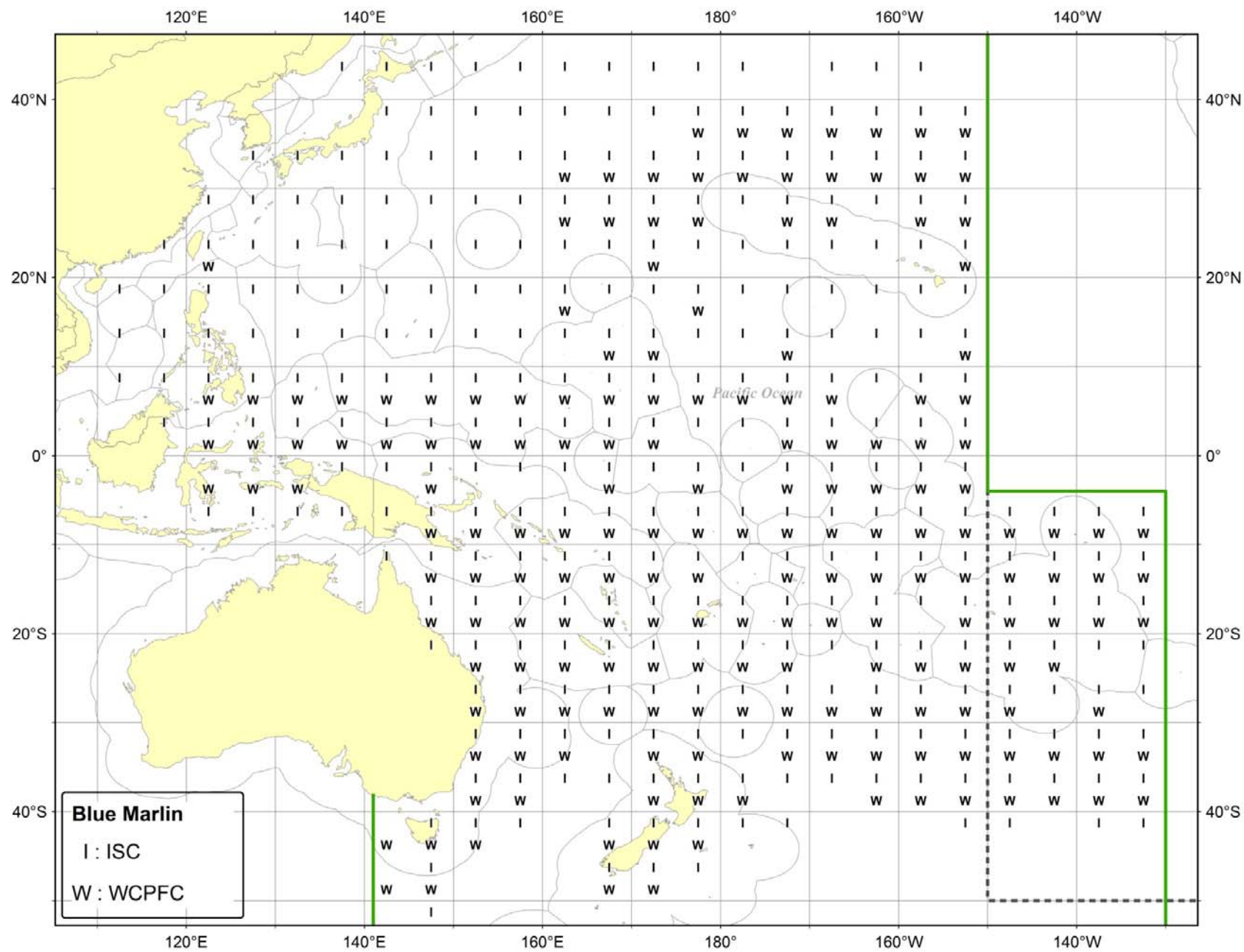


Figure 1. Distribution of Blue Marlin catches by ISC and WCPFC (non-ISC) countries for all years combined

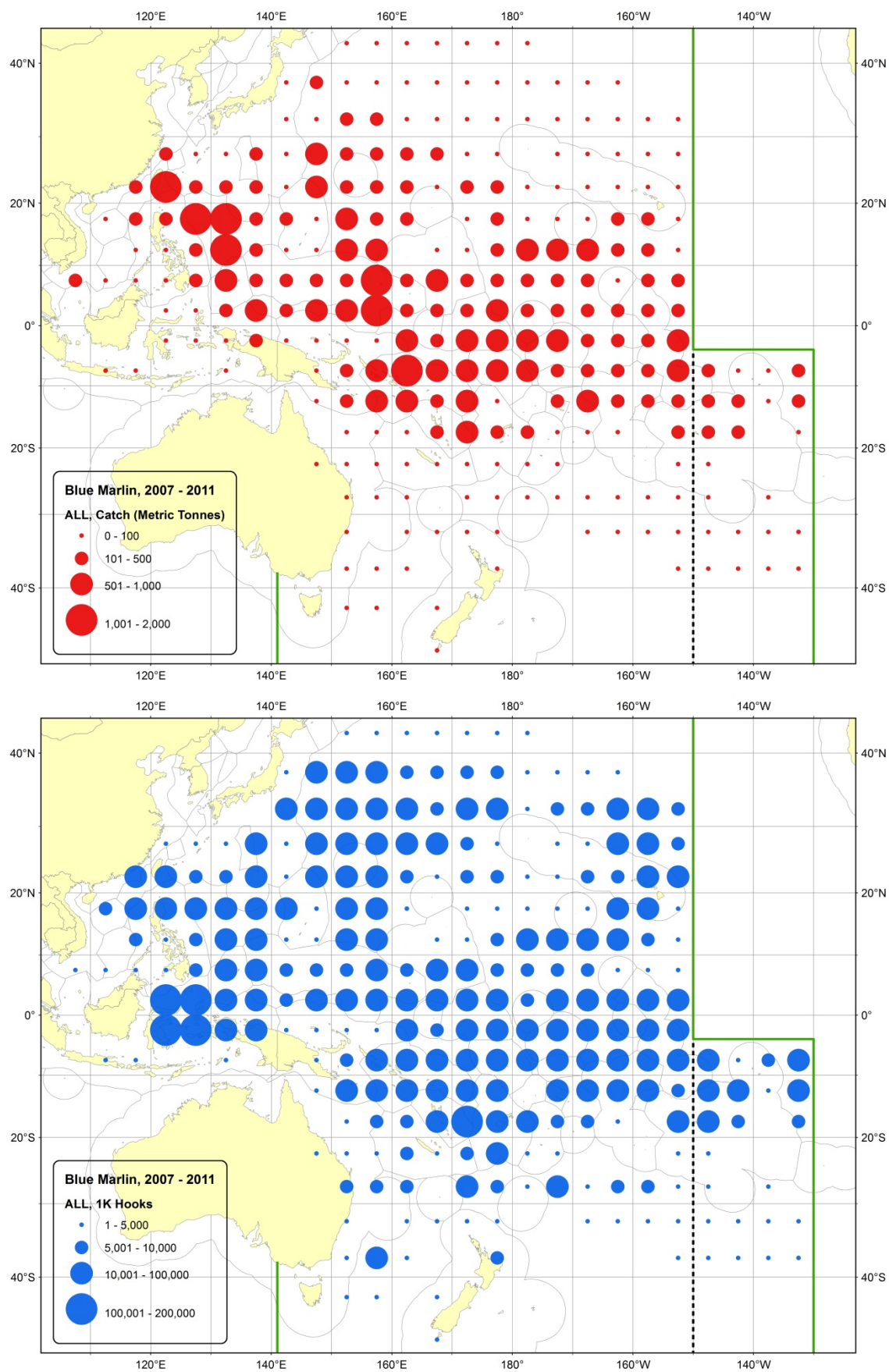


Figure 2. Blue Marlin 2007-2011: summed Catch (mt) and 1K Hooks by all WCPFC countries

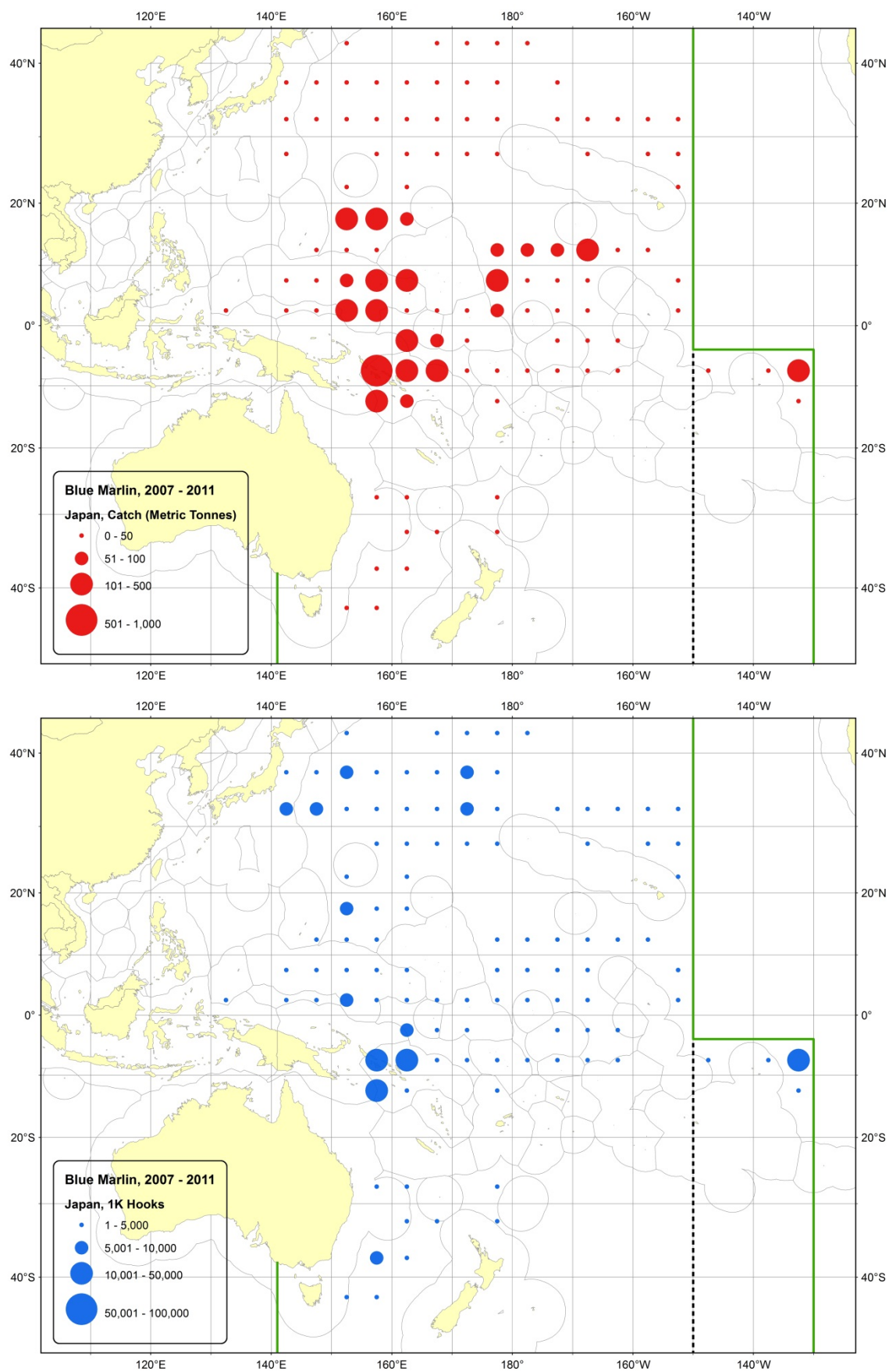


Figure 3. Blue Marlin 2007-2011: summed Catch (mt) and 1K Hooks by Japan

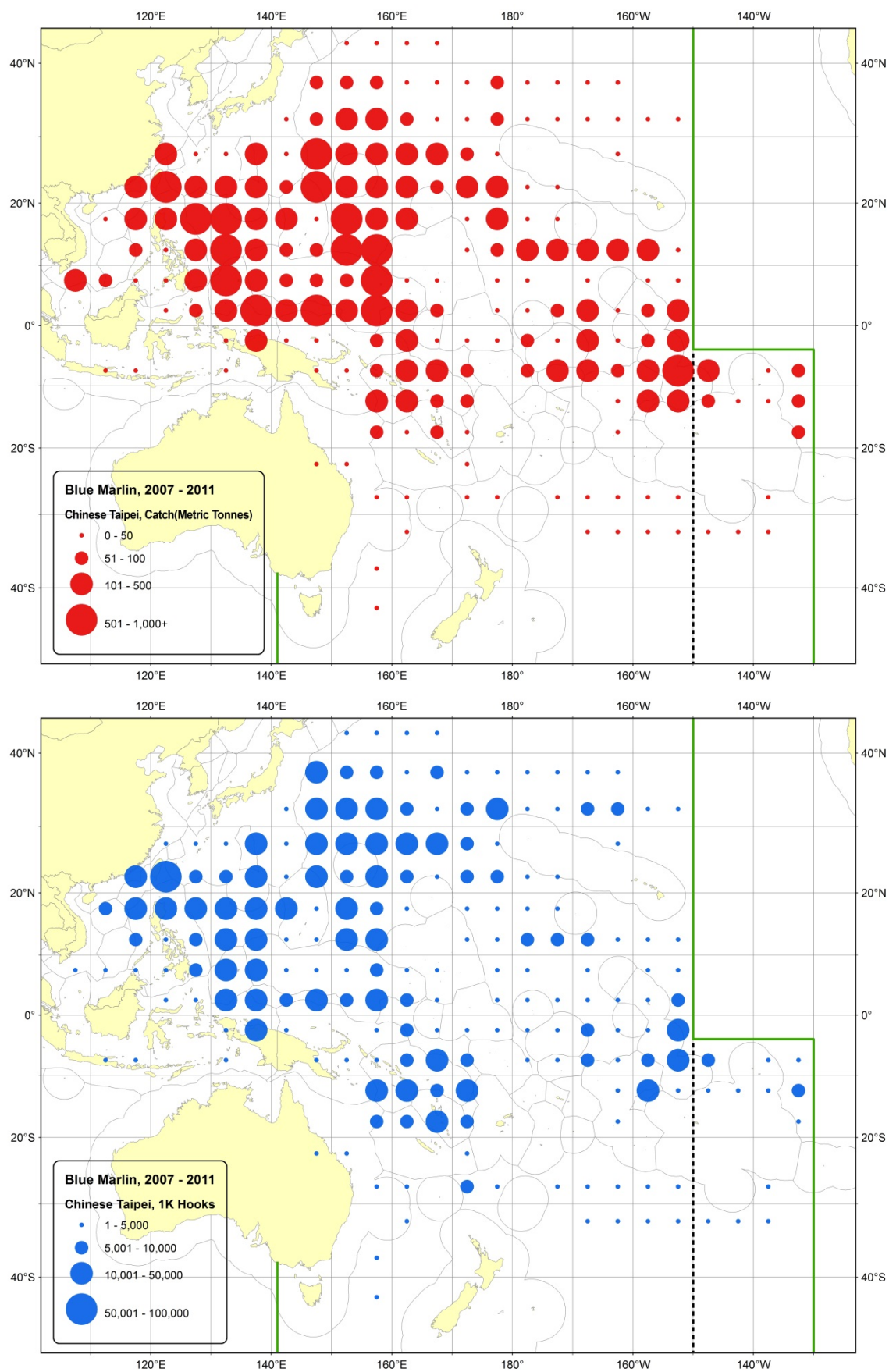


Figure 4. Blue Marlin 2007-2011: summed Catch (mt) and 1K Hooks by Chinese Taipei

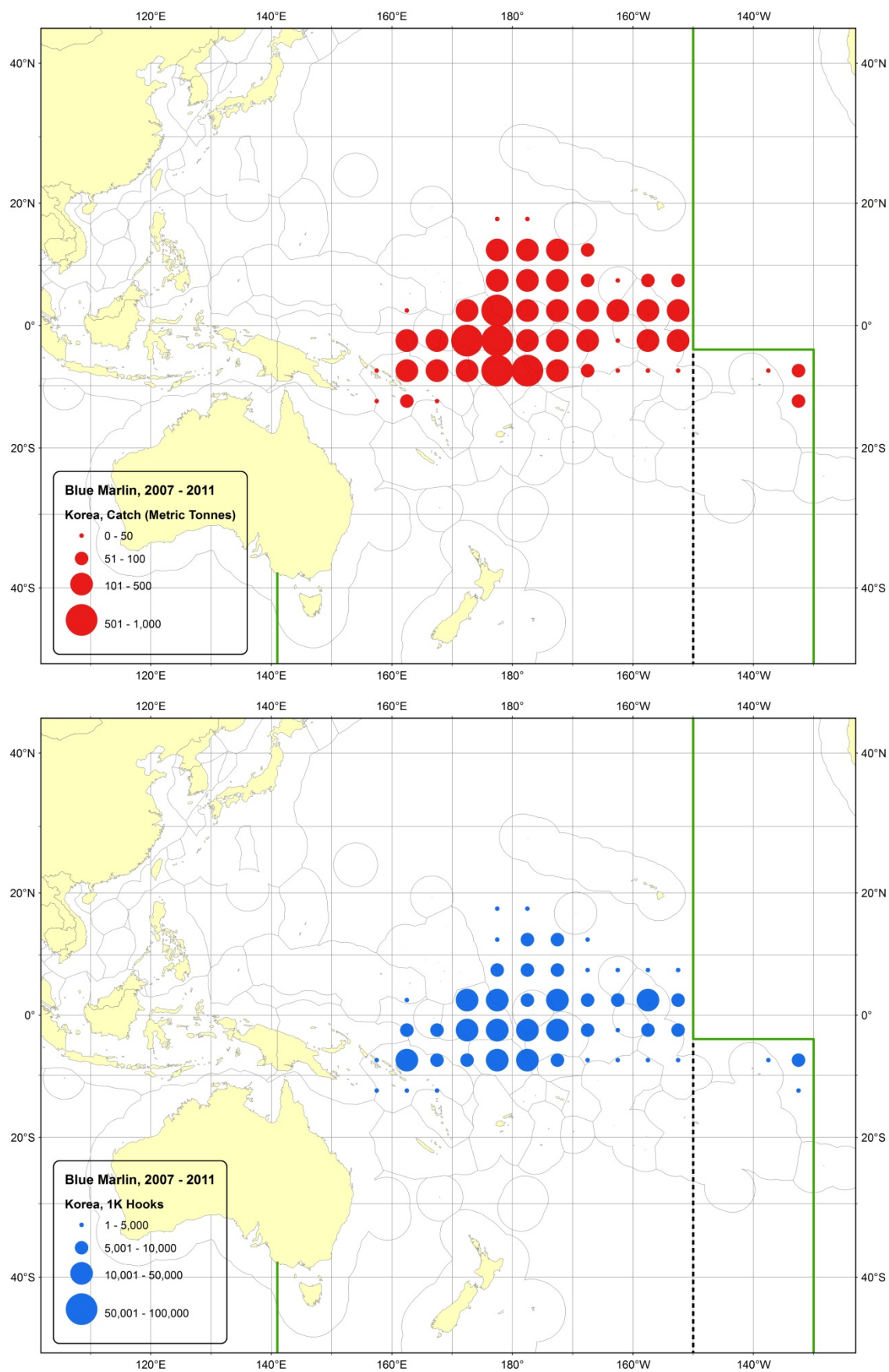


Figure 5. Blue Marlin 2007-2011: summed Catch (mt) and 1K Hooks by Korea

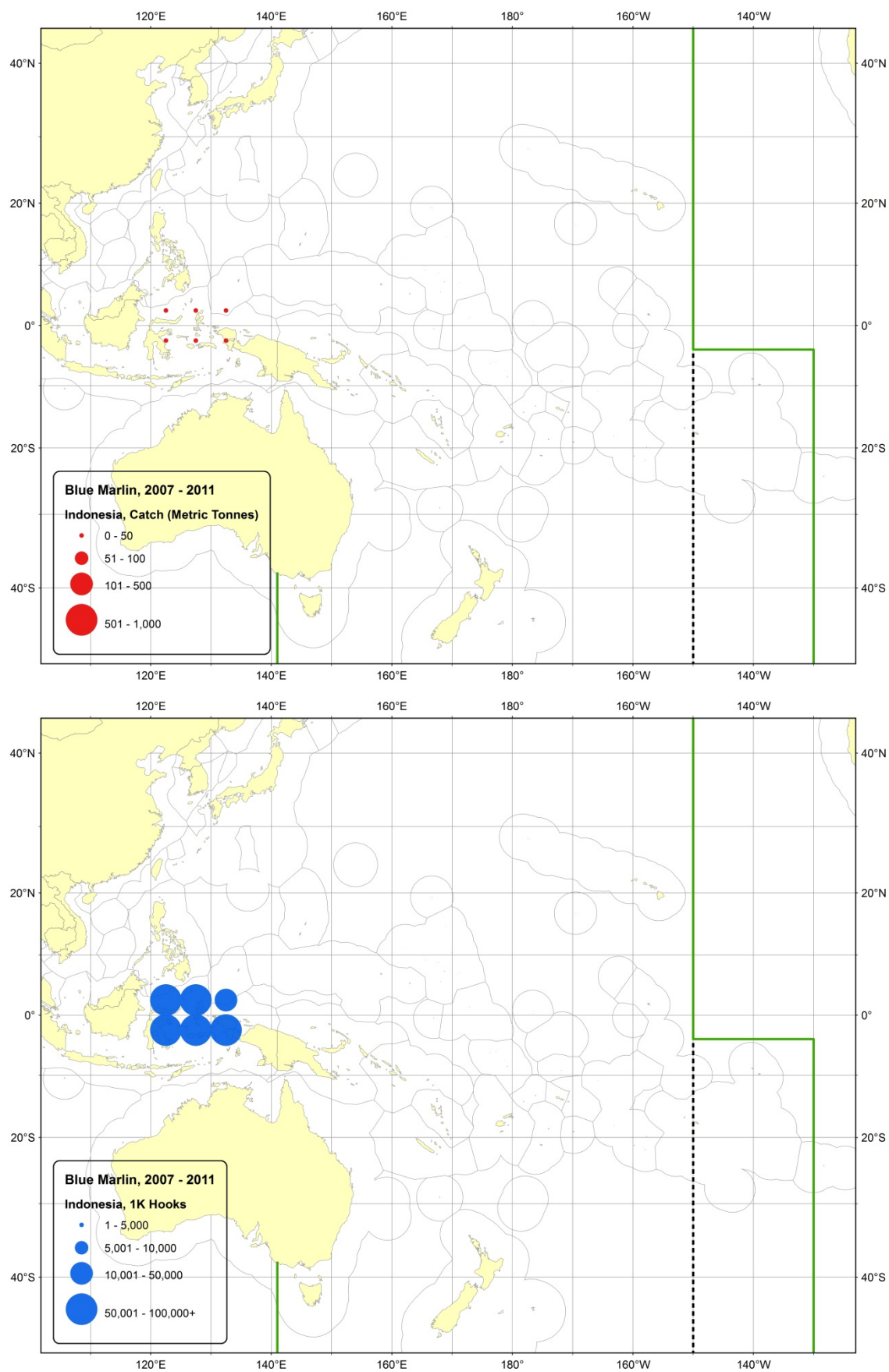


Figure 6. Blue Marlin 2007-2011: summed Catch (mt) and 1K Hooks by Indonesia

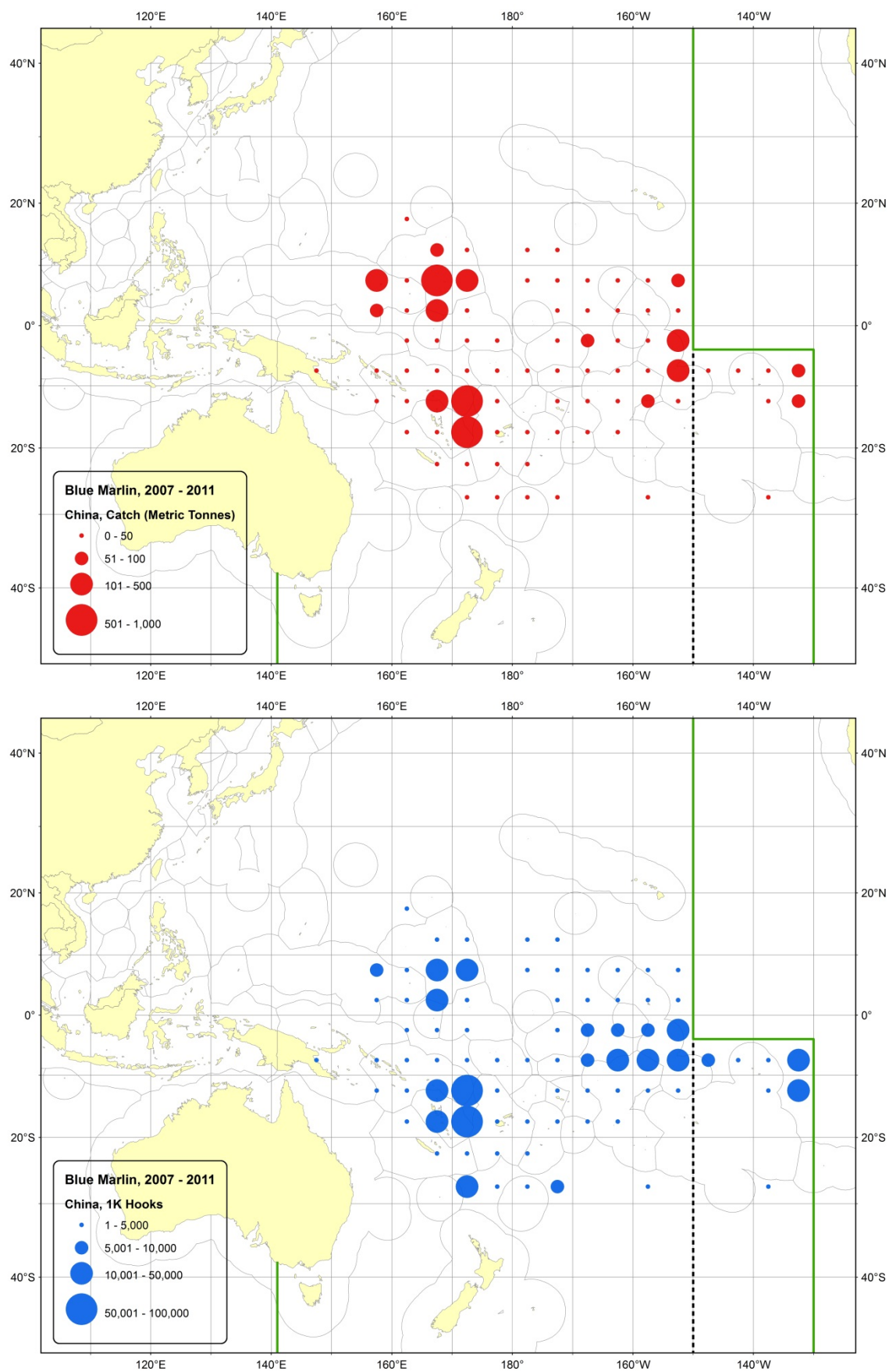


Figure 7. Blue Marlin 2007-2011: summed Catch (mt) and 1K Hooks by China

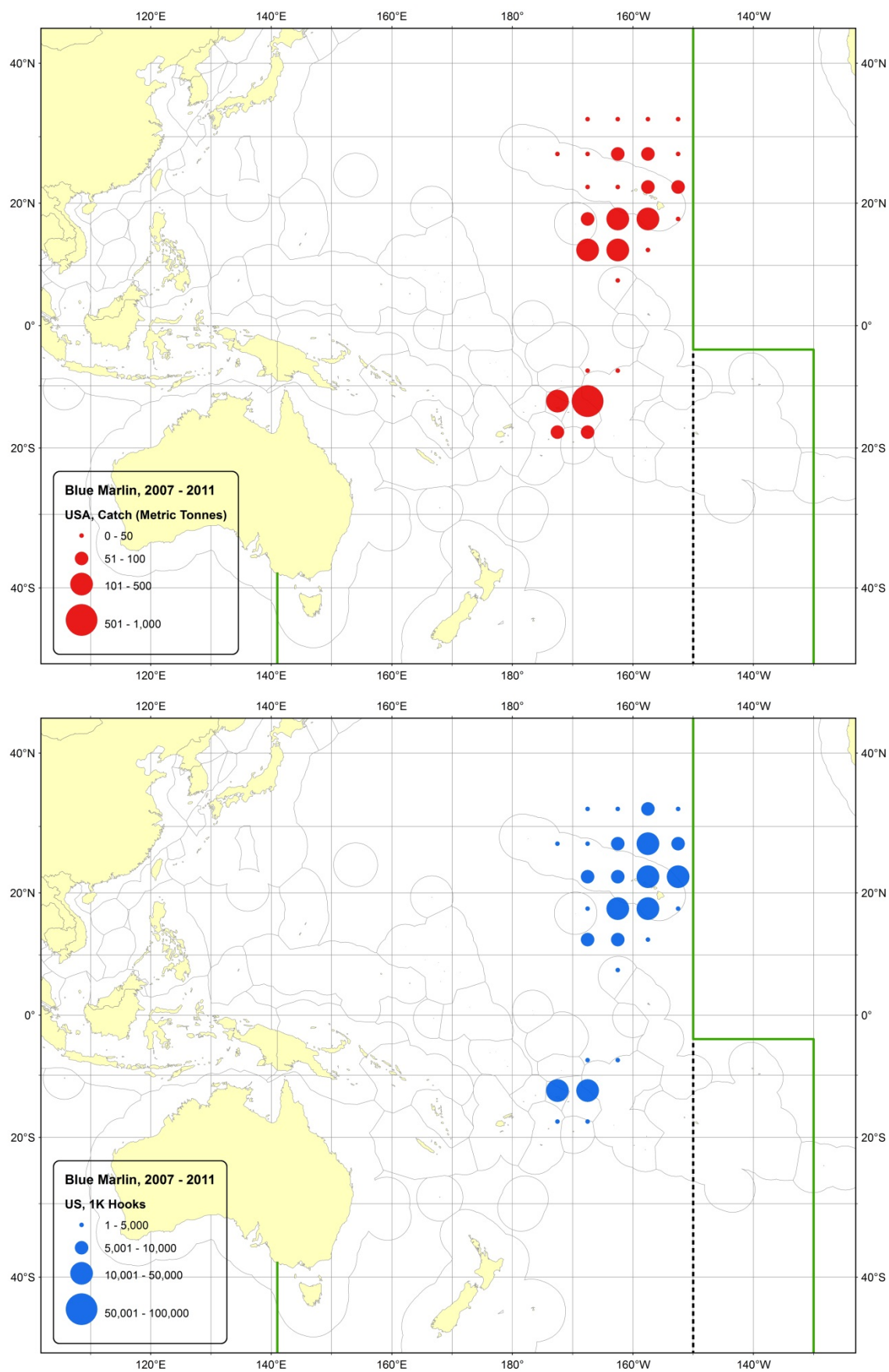


Figure 8. Blue Marlin 2007-2011: summed Catch (mt) and 1K Hooks by the United States

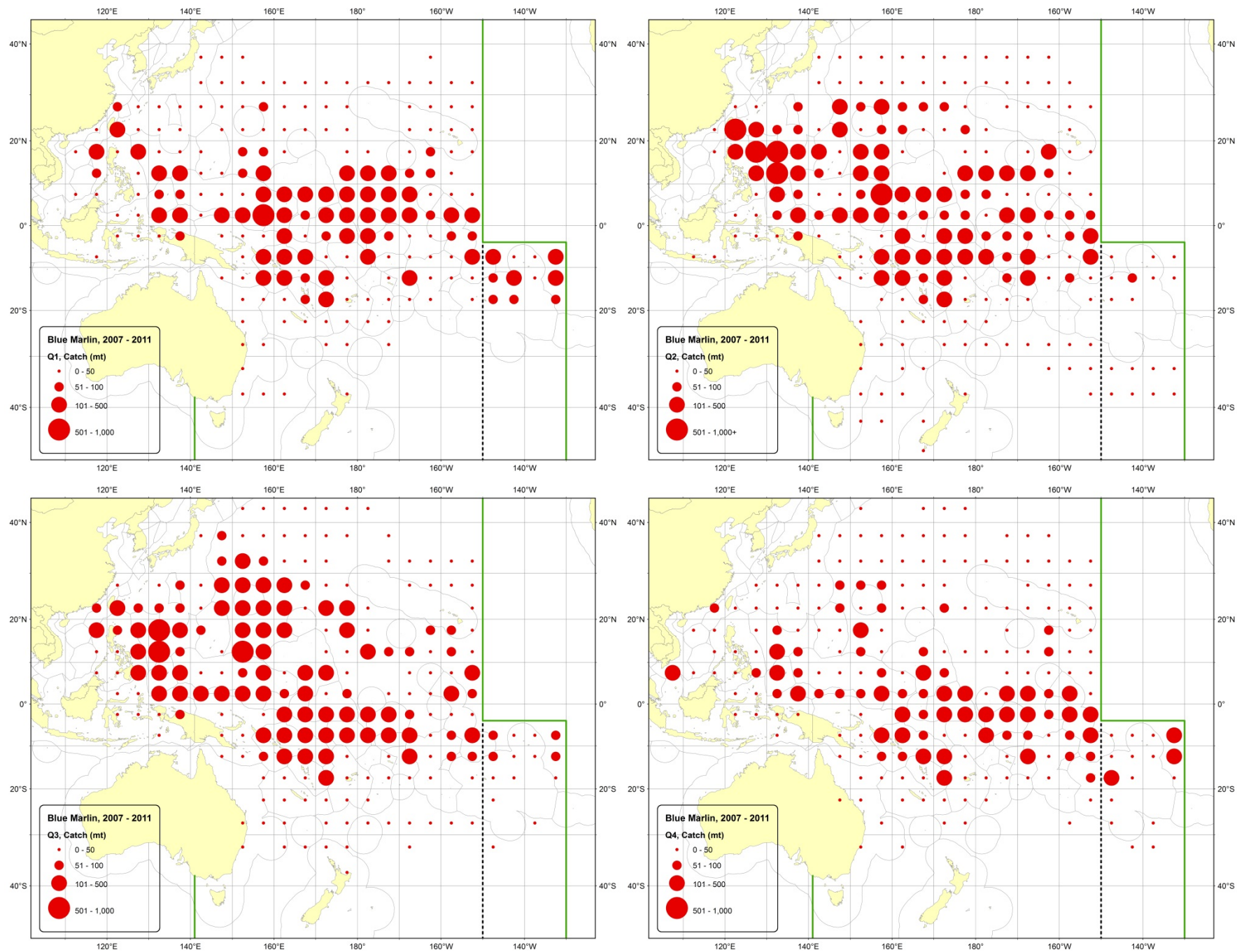


Figure 9. Blue Marlin 2007-2011: Quarterly summed Catch (MT) by all countries

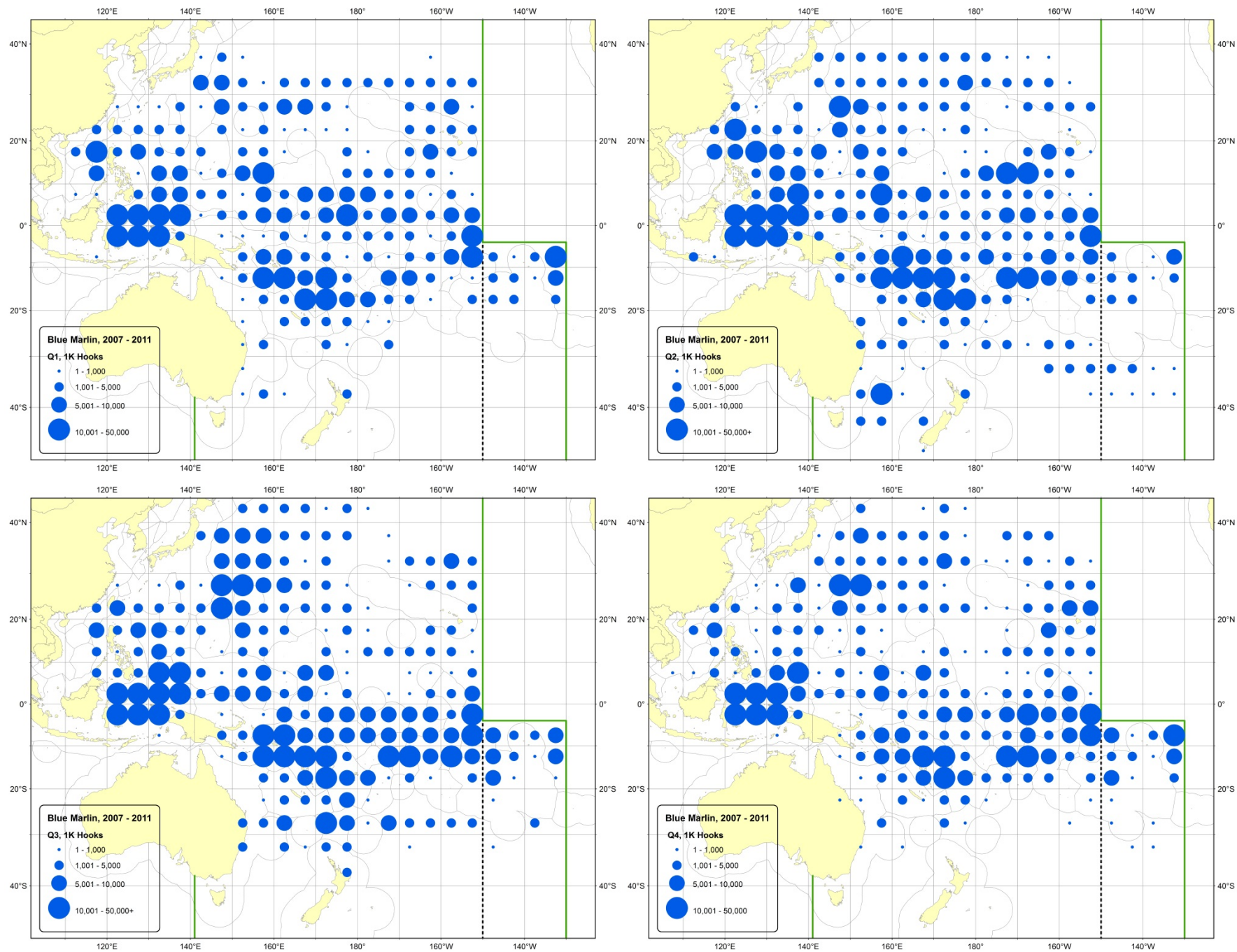


Figure 10. Blue Marlin 2007-2011: Quarterly summed 1K Hooks by all countries



Figure 11. Blue Marlin 2007-2011: Quarterly CPUE (Catch in mt / 1K Hooks) by all countries

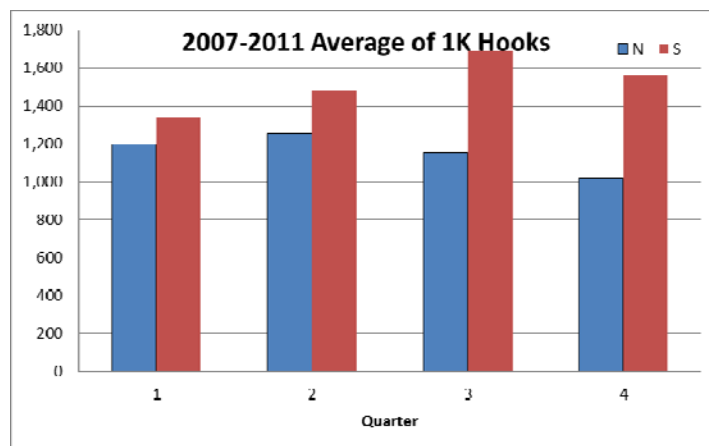
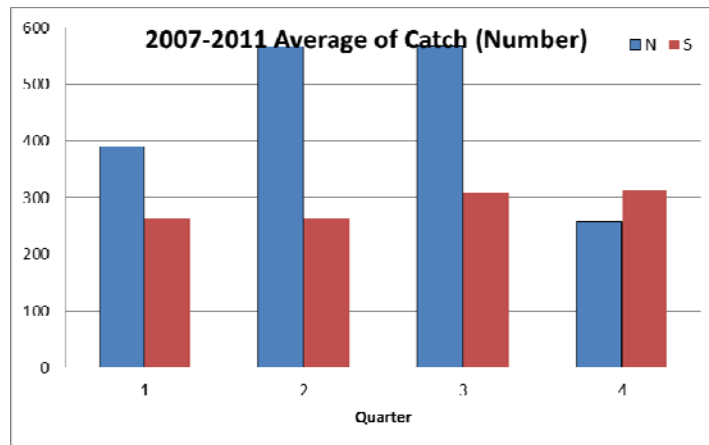
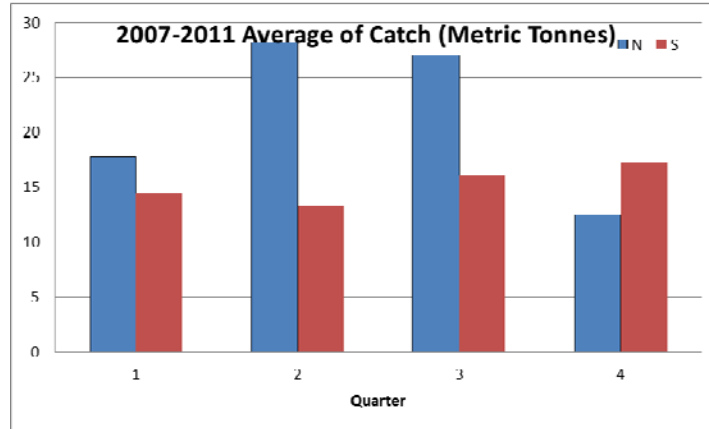


Figure 12.

