China's Pursuit of Marine Resources and Its Maritime Law Enforcement Agencies

中国の海洋資源探究と海上法執行機関

SATO, Koichi¹

佐藤 考一

Introduction

China (People's Republic of China: PRC) is claiming the sovereignty of the South China Sea Islands including the Paracel Islands, the Macclesfield Bank, and the Spratly Islands against some nations belonging to the Association of Southeast Asian Nations (ASEAN). The dispute of the Spratly Islands and their surrounding sea area is most well-known, and China, Vietnam, the Philippines, Malaysia, and Brunei are competing for sovereignty over these territories. China also claims the Japanese Senkaku Islands in the East China Sea.

It is said that there are two major reasons for China to claim the islands and sea areas. Firstly, China badly needs the natural resources, such as fish and oil & gas, found in the South and East China Seas. Secondly, China needs the South China Sea area for defense and security purposes, especially for the maintenance of its strategic submarines used for their second strike capability against the United States of America.² This paper looks into the issues of natural resources, and the activities of Chinese maritime law enforcement agencies which are deployed in the South and East China Seas to assert and protect Chinese sovereignty and maritime interests.

This paper is composed of four parts. The first part provides information on recent Chinese fishery and oil & gas productions and their future prospects in the South and East China Seas. Both of these resources have been developed because the burgeoning Chinese population and its subsequent economic development have demanded further protein and energy resources from the sea. Some reports indicated that fishery resources were drained, some coastal sea areas were contaminated by the wastewaters from rivers, and most of the offshore oil & gas fields in the near sea were already developed.

The second part of the paper provides an overview of the history of organizations of patrol boats belonging to Chinese maritime law enforcement agencies such as the State Oceanic Administration (SOA), China Marine Surveillance (CMS), the Bureau of Fisheries (BOF), and the Fisheries Law Enforcement Command (FLEC), which escort the maritime surveillance vessels and Chinese fishing boats.

The third part of the paper provides information on the current deployment of Chinese patrol boats in the South and East China Seas and the responses from neighboring countries. Some press members of ASEAN reported that these patrol boats made trouble with the foreign fishing boats and oil detection vessels. Japanese press members also denounced that Chinese patrol boats were illegally entering Japanese territorial waters.

The fourth part of the paper draws the concluding remarks, providing some aspects from the observation of the above three parts.

1. Chinese fishery and oil & gas productions and their future prospects in the South and East China Seas

In his 1995 book, Lester R. Brown raised the issue of the increase in the Chinese population and the future shortage of grains.³ It was true that China made a great effort to control the rate of population increase in accordance with the wake-up call of Dr. Brown, though the Chinese population has showed an increase of 358 million people, three times that of the Japanese population, from 1980 to 2010.⁴ The per capita Gross Domestic Product (GDP) in China has also increased 4.9 times from 1998 (6038 yuan) to 2010 (29678 yuan).⁵ The increase in both the population and the per capita GDP escalated the consumption of not only grains but also protein (in the form of animal meats and fish) and energy resources (oil and gas).

(1) Fishery catch in the South and East China Seas

The Chinese fishery statistics reported that the fish catch in the South China Sea was 1.31 million tons in 1989, and jumped up to 3.50 million tons in 1999.⁶ But the quantity of the fish catch in the South China Sea stagnated in the 2000s, and the total quantity of Chinese marine fish farming exceeded the total quantity of the Chinese fish catch in 2006 (see Table-1). What has happened in the Chinese Fishing Industries?

Year	South China Sea	East China Sea	Yellow Sea	Bohai Sea	All China	Marine Farming
1999	3.50				14.98	9.74
2000	3.40				14.77	10.61
2001	3.38				14.40	11.32
2002	3.38				14.33	12.12
2003	3.56				14.32	12.53
2004	3.50				14.51	13.16
2005	3.64				14.53	13.84
2006	3.82				14.42	14.46
2007	3.21	4.18	2.88	0.99	11.36	13.07
2008	3.25	4.39	2.91	1.02	11.50	13.40
2009	3.26	4.42	3.03	1.05	11.79	14.05
2010	3.29	4.61	3.04	1.06	12.04	14.82
2011	3.39	4.92	3.04	1.05	12.42	15.51

Table-1: Fish Catch of China 1999-2010 (unit: million tons) *

Source: Guo Wenlu & Huang Shuolin, Nanhai Zhengduan Yu Nanhai Yuyeziyuan Quyu Hezuoguanli Yanjiu (The Research of Conflict and Regional Cooperation for Fishery Resource in the South China Sea), Haiyang Chubanshe, Beijing, 2007, p. 91. Zhongguo Yuye Nianjian (China Fisheries Yearbook) 2000-2011, Ministry of Agriculture, Beijing. The figures of the catches in the South China Sea from the year 1999 to 2005 summed up the catches of Guangdong, Guangxi, and Hainan provinces only. The figures of the catches in the South China Sea from the year 2006 to 2010 are the total catches in the South China Sea of all the provinces.

* The statistics excludes the fish catch of the pelagic fishing.

A Taiwanese scholar noted that overfishing and the expansion of the fishing areas to maintain the high catches of China and the East Asian countries in the Western Central Pacific including the South China Sea were possible factors contributing to these numbers.⁷ He also pointed out the influence of environmental pollution in the South China Sea. This should hold true, not only for the South China Sea, but also for the East China Sea.

In 2011, China's total quantity of its marine fish catch was 12.42 million tons, while the total quantity of its marine fish farming production was 15.51 million tons. The total quantity of its fresh water catch was 2.23 million tons, and its total fresh water fish farming production was 24.72 million tons.⁸ To compare, that same year, Japan's total quantity of marine fish catch was 3.80 million tons, and its total quantity of marine fish farming production was 0.86 million tons. The total quantity of Japan's fresh water fish catch was 0.03 million tons, and its total fresh water fish farming production was 0.04 million tons.⁹

China's total fishery production quantity excluding pelagic fishing¹⁰ in 2011 was 54.88 million tons, and Japan's total fishery production quantity in the same year was 4.73 million tons; Japan's total fishery production quantity was just 8.61% of that of China's. We can easily understand why China has a strong appetite for increased fishery production. These statistics also show the massiveness of the quantity of China's fresh water fish farming. It occupies 45% of the Chinese total fishery production, in comparison with Japan's 0.8%. These data let us guess at the serious pollution damage done to Chinese coastal waters for marine fish farming.

China's Ocean Development Report supports our guess. It reported on the severe marine pollution in the Chinese coastal areas including the South China Sea, especially the sea area at the mouth of the Zhu Jiang (Pearl River)¹¹ in 2009. It reported that there are sedimentations of cadmium, copper, petroleum oil waste, arsenic, dichloro-diphenyl-trichloroethane (DDT), and polychlorinated biphenyl (PCB) on the seabed of Chinese coastal areas.¹² Red tides were reported 82 times in China in 2007, including 10 times in the South China Sea.¹³ Evidence suggests that marine and river pollution are the cause for the decrease in fish catch rates in the near sea, and thereby for the expansion of the fishing area.

China's State Oceanic Administration classifies the seriousness of marine environmental pollution into three levels: first, the healthy grade, with good conditions for the marine ecosystem; second, the semi-healthy grade, with some environmental changes occurring due to marine pollution, though the eco-system can recover from the damage within a short period; and third, the unhealthy grade, with the eco-system seriously damaged by marine pollution, wherein the eco-system cannot recover within a short period.¹⁴ The China's Ocean Development Report stated that the mouth of the Zhu Jiang (Pearl River: South China Sea) was graded unhealthy from 2004 to 2007.¹⁵ In 2010, the sea area around the mouth of the Zhu Jiang was graded as semi-healthy, though the gulf of Jinzhou (Bohai Sea), and the gulf of Hangzhou (East China Sea) were graded as unhealthy.¹⁶ It seems to be one of the reasons behind Chinese enthusiasm for the fisheries in the South and East China Seas.

If the Chinese government fails in the prevention of marine and river pollution in the near future, China's coastal waters will soon die. Chinese fishing boats would go fishing in the South and East China Seas to cover the huge demand of fishery products, and the conflicts of Chinese fishing and patrol boats with those of Japan and the ASEAN countries, such as Vietnam, the Philippines, Malaysia, and Indonesia would escalate. Further, overfishing in the South and East China Seas would drain fishery resources as well.

(2) Oil and gas production in the South and East China Seas

Chinese oil consumption in 2000 was said to be 1,741 million barrels.¹⁷ It became 1,825 million barrels in 2002, and it was almost equivalent to Japanese consumption rates. It increased gradually. Finally the Chinese oil consumption in 2010 became 3,306 million barrels. The oil demand has increased rapidly, and a report predicts that Chinese oil consumption in 2030 will be 5,840 million barrels.¹⁸

China developed offshore oil to fill up the increasing energy demand (Table-2). It was 15.6% of the total oil production in 2006 in China.¹⁹ The Chinese government established the CNOOC Limited (China National Offshore Oil Cooperation Limited) in 1982, and promoted the detection and production of offshore oil & gas. The total offshore oil & gas production has subsequently risen from 1.43 million tons (10.4 million barrels) in 1990 to 8.42 million tons (61.4 million barrels) in 1995, and the production was said to be beyond 50 million tons (364.9 million barrels) in 2010.²⁰

Table-2. Total Offshore Off Froudetion in China							
Year	1990	1995	2000	2003	2004	2005	2006
Million tons	1.43	8.42	17.57	24.30	26.01	28.78	28.71
Million barrels	10.4	61.4	128.2	177.3	189.8	210.0	209.5

Table-2: Total Offshore Oil Production in China

Specific gravity: 1 barrel = 0.137 tons

Source: Guo Sizhi, "Sekiyu / Sekika Sangyo": Oil and Petroleum Chemical industries, ed. Tomoo Marukawa, Zhugoku Sangyo Handobukku 2007-2008: Chinese Industrial Handbook (Tokyo, Sososha Publishing, 2007), 37. Duan Fengjun, "Zhugoku No Kaiyo Kaihatsu Senryaku" China's Maritime development Strategy, Gaiko: Diplomacy, Vol. 13 (May 2012): 82-83.

The CNOOC Limited published its own statistics. It includes all of the COONC's offshore oil & gas production, and some of them were daily production based (BOE/D: barrels of oil equivalent

per day). Therefore we should recalculate them to annual base (BOE). Table-3 shows the CNOOC's offshore oil & gas production per year.

	13	able-5: C	NUUC	s Olisho	re Oli &	Gas Pro	auction	in China		
Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
BOE	126.5	130.2	140.0	154.8	167.0	171.3	194.9	227.7	328.8	331.8
Oil(mb)	109.0	111.9	116.9					186.0	263.4	258.5
Gas (bcf)	99.5	106.2	133.3					238.5	379.6	427.8

Table-3: CNOOC's Offshore Oil & Gas Production in China

Unit: mb / mmbbls: million barrels, bcf: billion cubic feet

Souce: http://www.cnoocltd.com/ (accessed July 10, 2012).

Currently, two-thirds of the Chinese offshore oil production is proceeded in the Bohai Sea area, and one-third is proceeded in the South China Sea, and the production in the East China Sea was said to be less than 0.01%.²¹ Almost all of the oil & gas fields are located in the shallow places of the sea areas, like in the sedimentary basins that are connected to the mouths of rivers, like the Huang He (Yellow River), Zhu Jiang (Pearl River), and Hong Ha (Red River). No claimant has succeeded in oil production in the deep and central sea area of the South China Sea, especially in the sea area surrounding the Spratly Islands.

In November 2008, a Chinese specialist reported that the Bohai Sea area's oil deposit was 1,332 million tons, the Yellow Sea's deposit was 157 million tons, the East China Sea's deposit was 344 million tons, and the South China Sea's deposit was 5,379 million tons.²² He also reported that the Bohai Sea area's gas deposit was 18 million cubic meters, the Yellow Sea's deposit was 11 million cubic meters, the East China Sea's deposit was 279 million cubic meters, and the South China Sea's deposit was 763 million cubic meters. We can easily understand that the oil & gas deposits in the East China Sea area marginal, though China insists on the development of gas fields in the competing sea area with Japan. It is also clear that the oil & gas deposits in the South China Sea area.

If so, the future offshore oil & gas production in the South China Sea would be more prospective in comparison with the oil & gas production in the Bohai Sea area, though the Chinese have two difficulties for its production. Firstly, the Chinese deposit estimation is not so reliable, because no Chinese oil company had deep-water oil-detection technology until May 2012. Their oil detection has been limited to the shallow sea areas. That is one of the reasons that some oil deposit estimations in the South China Sea by the United States are quite different from the Chinese estimations. They are about 3%~13% of the Chinese estimations.²³ The CNOOC Limited published that they finally acquired deep-sea oil detection technology on 7 May 2012, so that their drilling rig could reach 3,000 meters in depth, and now they may be able to determine whether their estimation was correct or not.²⁴

Secondly, the expansion of CNOOC detection areas to the deep-sea areas in the South China Sea means that they will enter the sea areas surrounding the Spratly Islands more often. These islands are also claimed by the neighboring ASEAN nations, particularly, Vietnam, the Philippines, Malaysia, and Brunei. If so, maritime skirmishes between the Chinese maritime law enforcement agencies and those of ASEAN nations may escalate.

2. The History of Chinese Maritime Law Enforcement Agencies

Much has been said about the maritime law enforcement agencies in China. Professor Lyle J. Goldstein, a former U.S. Navy Officer said, "There are five dragons in China," General Luo Yuan, a People's Liberation Army (PLA) Major General said, "Nine dragons govern the Chinese waters," and Nanyang Xingzhou Lianhe Zaobao, a Chinese newspaper in Singapore, reported that eleven ministries are in charge of maritime affairs in China.²⁵ Which is right? We, the outsiders may not know the real situation, though the number of Chinese maritime law enforcement agencies' vessels that appear in the blue water are limited.

The Chinese maritime law enforcement agencies are namely as follows: the Ministry of Land and Resources (MOLR); China Marine Surveillance (CMS) of the State Oceanic Administration (SOA), the Ministry of Agriculture (MOA); the Bureau of Fisheries (BOF) and the Fisheries Law Enforcement Command (FLEC), the Ministry of Public Safety (MPS); the Maritime Police and Border Control under the China Coast Guard (CCG) of the Border Control Department (BCD), the General Administration of Customs and border control post, the Ministry of Transport (MOT); the Maritime Safety Administration (MSA) and Maritime Rescue (MR), the coastal prefectures' local search & rescue centers and salvage sections,²⁶ and the Ministry of Education's Marine Research Vessel of Ocean University of China. This section looks into "five dragons," (CMS, FLEC, CCG, Customs, MSA), and tries to give a short introduction to the restructure of the SOA in March 2013²⁷.

(1) China Marine Surveillance (CMS)



Photo-1: CMS 51 (Japan Coast Guard)

The State Oceanic Administration (SOA) was established by the permission of the state council and the ratification of the People's Congress on 22 July 1964²⁸. The SOA has been under the control of state council as an institution, though it has been practically managed and controlled by the PLA navy. The SOA established CMS in 1983, and it was transferred to the Ministry of Land and Resources (MOLR) in 1998. CMS officially named its fleet the CMS Fleet in January 1999. In 2012, the CMS Fleet was composed of 380 vessels, including 27 boats with displacements of over 1,000 tons.²⁹ The CMS fleet divides into three, namely, the North Sea flotilla, the East Sea flotilla, and the South Sea flotilla, in accordance with the PLA navy's three fleets. It was also said that CMS had 9 airplanes and 8,400 members in 2011.³⁰ The tasks of CMS are the patrol of Chinese waters, and the maintenance of Chinese maritime rights, sovereignty, environment, marine resources (fish and oil & gas), and maritime order. The CMS vessels conducted a joint exercise with the PLA navy and FLEC vessels in the East China Sea on 19 October 2012, simulating a crash with rival claimants of disputed waters.³¹

(2) Fisheries Law Enforcement Command (FLEC)



Photo-2: FLEC31001 (Japan Coast Guard)

The Ministry of Agriculture (MOA) established the fishery law enforcement fleet under the fishery law of the PRC in 1986, and it was officially named the FLEC (Yuzheng in Chinese) in 1995.³² In 2012, the FLEC organization was composed of 1,421 vessels, including 8 boats with displacements of more than 1,000 tons.³³ Some FLEC boats are armed with machine guns.³⁴ The FLEC fleet divides into three, namely the Yellow Sea & Bohai Sea flotilla, the East Sea flotilla, and the South Sea flotilla. It was also said that the FLEC had 1,000 members in 2005.³⁵ The tasks of the FLEC are protection of Chinese fishing boats from foreign ships including foreign law enforcement agencies, maintenance of marine resources (anti-poaching, off-season fishing), marine biodiversity, fishery safety (search & rescue), and fishery management. The FLEC vessels also have a close relationship with the PLA navy.³⁶

(3) Border Control Department (BCD)

The BCD's original organization was the maritime public security task unit, and it was established in early 1970s to cope with increasing coastal security issues.³⁷ The maritime public security task unit developed and renamed the BCD flotilla in June 1987, and it finally became the BCD fleet under the Ministry of Public Security in 2007.³⁸ In 2011, the BCD fleet was composed of 265 patrol vessels and boats, including 3 boats weighing over 1,000 tons of displacement.³⁹ Some BCD boats are armed with machine guns.⁴⁰ The BCD fleet is divided in three, namely the Yellow Sea & Bohai Sea flotilla, the Yellow Sea & East Sea flotilla, and the South Sea flotilla. The tasks of the BCD are prevention of the infiltration of enemy agents (subversive elements against the Chinese Government), armed robbery, piracy, human trafficking, illegal immigration, and smuggling (commodities, weapons, illicit drug, and so on).

(4) Customs: Office of Smuggling Prevention

The General Administration of Customs and border control post established the Office of Smuggling Prevention in 1998, though the law enforcement activities of Customs at sea seem to have begun a long time ago. It is also under the control of the Ministry of Public Security.⁴¹ The Customs task force was composed of 212 patrol boats including 16 boats of more than 400 tons of displacement in 2011.⁴² The Customs office had 9000 members in 2011. The tasks of the Customs office are prevention of tax evasion, smuggling in the same way as the BCD, and the investigation of smugglers and related criminals. It is also in charge of immigration management.

(5) Maritime Safety Administration (MSA)

The Ministry of Transport (MOT) merged the Port Management Bureau and the Ships Inspection Bureau in 1998, and named it the Maritime Safety Administration (MSA) and Maritime Rescue (MR)⁴³. The MSA had 813 vessels and boats including 3 vessels weighing more than 1,000 tons of displacement in 2011,⁴⁴ though 97% of its boats were for internal waters or the coastal sea area. In 2011, the MSA had 20,000 members and four districts, namely, Tianjin, Shanghai, Guangdong, and Hainan. The tasks of the MSA are the management of navigation safety, search & rescue, navigation control, prevention of maritime pollution, survey & sounding, and dredging. The MSA will not join the restructured SOA.⁴⁵



Photo-3: MSA21 (Japan Coast Guard)

(6) Restructure of the State Oceanic Administration (SOA)

Many of the tasks of the "five dragons" at sea overlapped each other, and were ineffective (Table-3). Some Chinese officers like He Zhong Long, a Captain of the BCD, had begun to study the integration of the five dragons in early 2000s. He carried out research on the Japan Coast Guard, the U.S. Coast Guard, and the South Korean Marine Police as integration models, and published the report.⁴⁶ The Chinese Communist Party (CCP) and the Chinese government were also not happy

with the performances of the "five dragons", and finally they tried to restructure and integrate them.

Table-4: Tasks of the Chinese Maritime Enforcement Agencies						
Tasks	Marine	Anti-	Marine	Public	Anti-	Navigation
Agency	Resources	Poaching	Environment	Security	Smuggling	Safety
CMS	\bigcirc	\bigcirc	\bigcirc	0		
FLEC	\bigcirc	\bigcirc	\bigcirc			\bigcirc
BCD		0		\bigcirc	\bigcirc	
Customs				\bigcirc	\bigcirc	
MSA			\bigcirc			\bigcirc

Source: He, Zhong Long, Zhongguo Hai'an Jingweidui Zujian Yenjiu: Research of the Build-up of the Chinese Coast Guard Agency (Beijing, Haijun Chubanshe, 2007), 36-40. Liku, Yi: Lu, Yi in Chinese, 2011, "Zhugoku No Kosutogado Soshiki Wa Do Natteiruka: Report on the Chinese Coast guard Agencies," Sekai No Kansen: Ships of the World (September 2011): 90-95. Yu Jianbin, "Lixing Xunhang Xuanshi Zhuquan, Renmin Ribao, Zhongguo Yuye Nianjian: China Fisheries Yearbook 2006 (Beijing, Ministry of Agriculture, 2006), 147.

First, the CCP and the Chinese government nominated Meng Hongwei for Deputy Chief of the SOA and Chief of the newly established Bureau of the CCG in March 2013.⁴⁷ Meng Hongwei is Vice Minister of the Ministry of Public Security. His political status is equivalent to that of a full minister, and it is higher than the SOA Chief Liu Cigui, also a Vice Minister.⁴⁸ If so, this nomination means that the CCP and the Chinese government acknowledged the intervention of the Ministry of Public Security in the SOA.49

Further, the CMS, FLEC, and Customs were merged into the newly established Bureau of the CCG, though the MSA opposed merging with the others, and remained as the navigation safety agency for internal waters.⁵⁰ It was also said that the "four dragons" were being merged into one, and it would be possible to upgrade to a new ministry-level body, though that was not realized. Li Mingjiang explained that

> ... This was partly because of the general policy of reducing the number of ministries in the central government. It was also partly due to the opposition from the civilian foreign policy community which feared that a strong oceanic ministry would further weaken its role in managing the country's maritime disputes.⁵¹

The newly established Bureau of the CCG opened its office in the SOA building on 22 July 2013.⁵² A new CCG signboard was put up beside the SOA signboard. It looked rather strange, because outsiders got the impression from the picture on the SOA homepage that part of the SOA building had been occupied by the CCG. The Bureau of the CCG began to repaint the "four dragon"-vessels' bow marks and numbers to the new CCG's bow marks and numbers, though the merger seemed to take time.53

The Chinese President Xi Jinping invited the Vietnamese President Trung Tan Sang to Beijing on 19 June 2013, and the two leaders agreed to set up a hotline to resolve fishing incidents in the disputed South China Sea waters.⁵⁴ The two countries' agriculture ministers signed the hotline agreement, and the SOA and CCG were left out of the event, which means that some part of the FLEC is still under the control of the MOA.

3. Deployment of the Chinese maritime law enforcement agencies and the responses from neighboring countries

It is said that the "five dragons" patrol the South and East China Seas, though the CCG, Customs, and the MSA have owned only a small number of patrol vessels weighing more than 1,000 tons as stated above. It means that most of the patrols belonging to Chinese maritime law enforcement agencies in the blue waters have been conducted by the CMS and the FLEC. This section looks into the activities of the CMS and the FLEC and the response from the neighboring countries in the South and East China Seas in recent years.

(1) Indonesia

A small, Indonesian navy's patrol boat captured a poaching Chinese fishing boat in the Indonesian Exclusive Economic Zone (EEZ) off the Natuna Islands on 22 June 2010.⁵⁵ Then an armed FLEC patrol vessel, FLEC 311, appeared and confronted the Indonesian patrol boat. FLEC 311 is one of the biggest FLEC vessels: 4,450 tons (displacement), and formerly the PLA navy submarine rescue ship.⁵⁶ FLEC 311 asserted that the sea area was not part of the Indonesian EEZ by ship's radio, and forced the Indonesian patrol boat to liberate the Chinese fishing boat.

The Indonesian navy dispatched reinforcement boats, and recaptured the Chinese fishing boat the next day, on 23 June, but then FLEC 311 reappeared and pointed machine guns to Indonesian patrol boats, and forced them to re-liberate the Chinese fishing boat. It is said that some Indonesian maritime enforcement agency's officers were angered by the news, and requested stronger arms for their patrol boats.⁵⁷ Further, an Indonesian government official told a *Mainichi Shinbun* reporter, "The fish are not the Chinese target. There are abundant gas resources in the northern part of the EEZ of the Natuna Islands."⁵⁸

(2) Malaysia

CMS 83 and another CMS patrol vessels entered the gas fields of PETRONAS, the Malaysian national oil & gas company, in April 2010.⁵⁹ CMS 83 dropped a territorial marker in James Shoal, the southern edge of the Spratly Islands. Some media suspected that CMS 83 had detected resources in Malaysian waters as well. CMS 83 weighs 3,980 tons (full displacement).⁶⁰ FLEC 311 and two

other FLEC patrol vessels also entered the EEZ of Malaysia in April 2010, and the Malaysian navy dispatched two destroyers.⁶¹ They confronted each other for seventeen hours.⁶²

(3) The Philippines

Two CMS boats harassed the Philippine-chartered *MV Veritas Voyager* during seismic survey work in Reed Bank, a part of the Spratly Islands on 3 March 2011.⁶³ Reed Bank is said to be abundant with oil & gas. Therefore it has been a hot spot in the South China Sea conflict. However, there are not many employable exploration ships for oil & gas detection in the Philippines, so that the number of incidents is limited.

A Philippine Air Force (PAF) reconnaissance plane spotted eight Chinese fishing boats around the Scarborough Shoal (Panatag Shoal, or Bajo De Masinloc), and the Philippine navy (PN) deployed a patrol cutter, the *BRP Gregorio del Pilar* from its homeport in Palawan on 8 April 2012.⁶⁴ Two CMS vessels suddenly arrived and placed themselves between the arresting Philippine warship and the Chinese fishing boats. This was the beginning of a yearlong standoff at Scarborough Shoal.

To prevent the standoff from escalating to an armed confrontation, the Philippines replaced its surface combatant with a smaller coast guard vessel. Instead of reciprocating, China raised the stakes by deploying the FLEC 310, a large and most advanced patrol vessel: 2,500 tons (displacement), equipped with machine guns and a helicopter.⁶⁵ The entrance of the Chinese maritime law enforcement agencies and Chinese fishing boats into Philippine waters has continued intermittently.⁶⁶ China dispatched CMS 168, CMS 71, CMS 4668 and FLEC 311 on 13 March, and monitored south of the Scarborough Shoal, then dispatched CMS 262, CMS 263, CMS 72, CMS 75, and FLEC 302 to the Scarborough Shoal on 21 April 2013.⁶⁷

The Armed Forces of the Philippines (AFP) saw three CCG vessels and concrete blocks in the Scarborough Shoal as of 31 August 2013, Philippine Defense Secretary Voltaire Gazmin told a congressional hearing in Manila on 3 September 2013.⁶⁸ AFP reports showed that there were 75 concrete blocks allegedly put up by Chinese vessels.⁶⁹ The spokesman of the Chinese Foreign Ministry denied this information, and the Philippine government released photos of repainted CCG vessels near the Scarborough Shoal which were taken by the AFP surveillance plane.⁷⁰ This was the first time that China dispatched the repainted CCG vessels to the South China Sea.

Finally, President Benigno Aquino III told members of the Foreign Correspondents Association of the Philippines (FOCAP) on 23 October 2013 that the concrete blocks sighted by the Philippine navy months back 'are very old concrete blocks. It's not a new phenomenon. They don't seem to give a reason for an increase in anxiety.'⁷¹ It may ease the Sino-Philippine tensions on the Scarborough Shoal a little.

Another issue between China and the Philippines is the Ayungin Shoal (Second Thomas

Shoal) in the Spratly Islands. The AFP dispatched *BRP Sierra Madre* with marines to the Ayungin Shoal, and ran it aground at the shoal for defense purposes in May 1995.⁷² China dispatched 33 fishing boats and three CMS vessels to the near sea area of the Ayungin Shoal.⁷³ The Chinese Foreign Minister, Wang Yi, referred to *BRP Sierra Madre* at the ASEAN Regional Forum (ARF) in July 2013, saying that the Scarborough and Ayungin Shoals were China's, and that the Philippines should remove it.⁷⁴ The Philippines Foreign Secretary Albert del Rosario responded, "We don't have money to move it."⁷⁵

(4) Vietnam

Chinese vessels harassed and cut the seismic cables of commercial oil exploration vessels operating within the Vietnamese EEZ at least three times in two years from 2011 to 2012.⁷⁶ First, three CMS vessels approached the exploration ship *Binh Minh 2* and cut its seismic cable in Block 148 of the Vietnamese EEZ on 25 May 2011.⁷⁷ Then, the Chinese fishing vessel 62226, supported by the two FLEC vessels, FLEC 311 and FLEC 303, cut the seismic cables towed by *Viking II* in Block 136/03 near the Vanguard Bank in the west area of the Spratly Islands on 9 June 2011.⁷⁸ *Viking II* was hired by the Vietnam National Oil and Gas Group.

After that, two Chinese fishing vessels numbered 16025 and 16028 ran up behind the Vietnamese exploration ship *Binh Minh 2* which was conducting the seismic survey, and broke off the seismic survey cable on the Vietnamese continental shelf on 30 November.⁷⁹ It seems that the Chinese fishing vessels mentioned above have close relations with the FLEC or CMS. A retired PLA navy admiral pointed out the close relationship between the fishing vessels and FLEC vessels, and praised it, saying, "they have cooperated with each other, and struggled for the maintenance of Chinese maritime interests." He called the Chinese fishermen, "maritime militia" (Haishang Minbing).⁸⁰ "Maritime militia" is a word from the People's War Era, originally named by the then paramount leader Mao Zedong in 1959.⁸¹

As far as the employable exploration ships for oil & gas detection are concerned, the number of these ships in Vietnam is limited. This is the same condition as is in the Philippines. That is the reason why the number of maritime incidents revolving oil & gas detection in Vietnamese waters is limited also.⁸² On the other hand, fishing vessels and boats are abundant. That is the reason why disputes around fishing affairs in the South China Sea between China and Vietnam occurred almost every month.

For example, China's MOA deployed FLEC 311, FLEC 301, and FLEC 46012 to the Paracel Islands in March 2009, and they dispatched FLEC 311 and FLEC 202 to the sea area surrounding the Spratly Islands in April 2010 to defend Chinese fishing boats from "piracy and the neighboring countries' maritime law enforcement agencies."⁸³ FLEC 310 also escorted the Chinese fishing fleet to the sea area of the Spratly Islands in July 2012.⁸⁴ On the other hand, Vietnam denounced the

violent incidents caused by the PLA navy and Chinese maritime law enforcement agencies. For Example, Vietnam had accused an unidentified Chinese vessel of firing on a Vietnamese fishing boat near the Paracel Islands in March 2013, and they asserted that FLEC 306 chased and attacked two Vietnamese fishing boats in July 2013.⁸⁵

(5) Japan

The Chinese maritime law enforcement agencies' illegal entrance into Japanese territorial waters was rare before the nationalization of the Senkaku Islands on 11 September 2012.⁸⁶ The figure of illegal entrances jumped after nationalization, and it reached 63 days from 11 September 2012 to 10 September 2013.⁸⁷ The total figure of CMS, FLEC, and CCG vessels that entered Japanese territorial waters and its contiguous zone is 1,055 from 11 September 2012 to 11 September 2013.⁸⁸ The Japan Coast Guard has dispatched its patrol vessels in response to the Chinese provocation, escorted Japanese fishing boats, and also kept the Chinese vessels' crew and activists' yacht from landing.⁸⁹

The Bureau of the CCG repainted the old CMS and FLEC vessels' bow marks and numbers to the CCG's new bow marks and numbers after the integration of the "four dragons". Namely, FLEC 201 changed into CCG 2101(Photo-4 & Photo-5), and CMS 50 changed into CCG 2350. The new CCG vessels first appeared in the waters surrounding the Senkaku Islands on 24 July 2013. The Japan Coast Guard and the Japan Maritime Self-Defense Force (JMSDF) keep in close contact with each other, and watch the behaviors of the CCG vessels and PLA navy by sea and air, everyday.⁹⁰



Photo-4: FLEC201 (Japan Coast Guard)



Photo-5: CCG2101 (Japan Coast Guard)

(6) Viewpoints from the Statistics

Table-4 shows a comparison of deployments of the Chinese maritime law enforcement agencies in the South and East China Seas in recent years. The total number of vessels deployed in the South China Sea has been 62, and the total number of vessels deployed in the East China Sea has been 21. The number of vessels deployed in the sea area surrounding the Paracel Islands is the biggest (39) because the FLEC has a fishery administration station in the Paracel Islands, and the Sino-Vietnamese fishery conflicts surrounding the Paracel Islands are most intense.⁹¹

The number of deployed vessels in the sea area surrounding the Spratly Islands is 21, and the number of deployed vessels in the sea area surrounding the Scarborough Shoal is 18. These big numbers show the influence of Sino-Philippine confrontation on the Ayungin Shoal and the Scarborough Shoal.⁹² If so, may we say that the Chinese government attaches more importance to the conflict in the South China Sea than the conflicts in the East China Sea?

	Table	-5-1					
1) De	eployment of the Chinese Maritime Law E	Inforcement Agencies in the South China Sea					
	2004-2	2013					
FLEC	: Fisheries Law Enforcement Command	26 vessels					
CMS:	Chinese Maritime Surveillance	26 vessels					
MSA:	Maritime Safety Administration	7 vessels					
BCD:	Maritime Police and Border Control,						
	Border Control Department	3 vessels					
Sea A	Area surrounding the Paracel Islands; List	of Bow Numbers: subtotal 39					
FLEC	C 301, 302, 303, 306, 308, 309, 310, 311, 786						
FLEC	C 44061, 44183, 44261, 45001, 46012, 46161						
CMS	72, 74, 76, 77, 83, 84, 86, 261, 262, 263, 30	6, 308, 787, 788, 841, 1239, 2115					
MSA	11, 21, 31, 166, 171, 183, 1823						
Sea A	Area surrounding the Spratly Islands; List	of Bow Numbers: subtotal 21					
FLEC	2 301, 302, 303, 305, 308, 310, 311, 312, 440	61, 44183, 45001, 46012					
CMS	66, 71, 72, 83, 84						
MSA 11, 21, 31, 166							
Sea A	Sea Area surrounding Scarborough Shoal; List of Bow Numbers: subtotal 18						
FLEC	2 301, 302, 303, 310, 311, 46012, 44608						
CMS 71, 72, 75, 81, 84, 168, 262, 263							
MSA	MSA 21, 31, 166						
Sea A	Area surrounding the Pratas Islands; List o	of Bow Numbers: subtotal 2					
FLEC	C 302, 303						
Gulf	of Tonkin; List of Bow Numbers: subtotal	19					
FLEC	C 301, 302, 303, 310, 311, 45001, 45002, 450	06, 45021, 45039, 44601, 44602, 46012, 46013					
CMS	75, 84, 262, 263, 1118						
Mou	th of Pearl River; List of Bow Numbers: su	ibtotal 9					
FLEC	C 307						
CMS	167, 168, 169						
MSA	11, 31						
BCD	BCD 3367, 3368, 3369						
Chin	ese ships violated the EEZ and continental she	elf of Vietnam; List of Bow Numbers: subtotal 5					
CMS	17, 72, 84						
FLEC	C 303, 311						
CCG	3210(FLEC310), 3102(FLEC302), 3103(F	'LEC303), 3412(FLEC312) *					
CCG	3175(CMS75), 3367(CMS167), 3368(CMS	S168), 3469(CMS169), 3111(CMS9020),					
	3112(CMS9030)						
CCG	3401(Newly Built)						

② Deployment of the Chinese Maritime Law Enforcement Agencies in the East China Sea September 2010 – September 2013					
FLEC: Fisheries Law Enforcement Command	6 vessels				
CMS: Chinese Maritime Surveillance	15 vessels				
CCG: China Coast Guard 20 vessels*					
FLEC 201, 202, 206, 310 FLEC 31001, 32501					
FLEC 31001, 32501					
CMS 15, 23, 26, 27, 43, 46, 49, 50, 51, 66, 83, 13	1, 137,				
CMS 5001, 8002					
CCG 1112(FLEC118), 2101(FLEC 201), 2102 (FLEC 202), 2506 (FLEC 206) *					
CCG 1115(CMS15), 1117(CMS17), 1118(CMS18), 1123(CMS23), 1126(CMS26)				
1127(CMS27), 2112(CMS8002), 2113 (CMS5001), 2146 (CMS46), 2149(CMS49)				

Table-5-2

2151(CMS51), 2166 (CMS 66), 2337(CMS137), 2350 (CMS 50), 31101(BCD1001)

CCG 2401(Newly Built)

* The CCG's new red bow number-vessels seemed to be repainted CMS & FLEC vessels, and newly built two vessels. They are not included in the statistics (black bow number-vessels) of Table-1 and Table-2.

Source: State Oceanic Administration (SOA) Homepage, http://www.soa.gov.cn/. Zhongguo Yuye Nianjian: China Fisheries Yearbook 2000-2011, Ministry of Agriculture, Beijing, Thanh Nien Daily, http://www.thanhniennews.com/. Philippine Daily Inquirer, http://globalnation.inquirer. net/. Vessels Data: Courtesy of Dr. Tran Truong Thuy, Diplomatic Academy of Vietnam, Kaijo Hoan Shinbun: Japan Coast Guard News, The Vessels Data offered by The Japan Coast Guard, Asahi Shimbun, Sankei Shinbun, Sekai No Kansen: Ships of the World, October Issue, no. 785 (2013), 16.

The number of deployed vessels in the sea area surrounding the Senkaku Islands is 21. It is equivalent to the number of deployed vessels in the sea area surrounding the Spratly Islands. But the total number of CMS, FLEC, and CCG vessels that entered the Japanese territorial waters and contiguous zone was 1,055 from 11 September 2012 to 11 September 2013, as I aforementioned.⁹³ This is not a small number. Further, we can easily understand the fact from the list of bow numbers of the vessels, that the same vessels cover different sea areas. Namely, FLEC 301, 302, 303, 310, 311, 46012, CMS 72, 84, and MSA 21 cover all of the sea areas of the Paracel Islands, Spratly Islands, and the Scarborough Shoal. FLEC 310 and CMS 83 cover both of the South and East China Seas.

If we exclude the vessels doubly counted in the South and East China Sea, the number of active vessels belonging to Chinese maritime law enforcement agencies in the blue water is about 81. These facts show us that the number of vessels is limited, especially vessels of more than 1,000 tons (displacement) such as FLEC 310 and CMS 83.⁹⁴ Many of the 81 Chinese maritime law enforcement agencies' vessels are less than 1,000 tons (displacement)⁹⁵.

4. Concluding remarks

Chinese diplomats always assert that the South China Sea Islands have belonged to China since ancient times, though the PRC's territory is not equivalent to many of the ancient Middle Kingdoms. The description of the uninhabited islands and rocks in the old map is not effective evidence for the territorial claim, either. If the offspring of the ancient Roman Empire, like the Italians and Romanians, could claim the whole of Europe and Northern Africa in the same way as the Chinese diplomats are claiming the islands, it would cause great disorder in the world.

The offspring of the ancient empires can be proud of their ancestors' history, however they cannot claim their ancestors' entire territories. They can claim the territories on the basis of modern international laws including the United Nations Convention on the Law of the Sea (UNCLOS) in 1982. If China has the confidence on legal grounds for their claims on the South and East China Seas, the Chinese government should bring suits against other claimants for settlements at the International Tribunal for the Law of the Sea (ITLOS).

We can safely say that the Chinese maritime offensive against ASEAN countries is a smart and sophisticated measure, because they aimed at the "weakest joint of the ASEAN's armor: the Philippines"⁹⁶, and China's neighbor, Vietnam, which cannot open war at sea, because it shares a land border and maritime border, the Gulf of Tonkin, with China. The Chinese government may also calculate that the activities of the Chinese maritime law enforcement agencies against the Philippines and Vietnam are not provocative enough to cause U.S. military intervention.

Some Chinese and ASEAN scholars told the author, recently,

The Chinese maritime law enforcement agencies cannot afford to patrol both the South and East China Sea perfectly, and the Chinese government considers the small nations, meaning the ASEAN members, as rather easy to communicate with and handle. If so, it is possible that the Chinese government will attach more importance on the maritime confrontation with Japan.⁹⁷

This prospect sounds like a Grimm story for Japan.

But the total number of the Chinese fishing boats is astronomical,⁹⁸ and if the CCG vessels concentrate their offensive on the East China Sea, many Chinese fishing boats in the South China Sea will be captured by the maritime law enforcement agencies of the ASEAN countries. Further, the Japan Coast Guard (Photo-6) has 117 Patrol Vessels including 13 Patrol Vessel Large with Helicopters (PLH), and 38 Patrol Vessel Larges (PL).⁹⁹ It is also said that China stresses shipbuilding and reinforcement of the CCG. The author can predict that all the neighboring countries will follow suit, and it will raise the risk of armed clashes between China and others at sea.¹⁰⁰ This is a typical security dilemma.



Photo-6: PLH-31 Shikishima, Japan Coast Guard (Koichi Sato)

We should recall the successful Asian maritime security cooperation for the Information Sharing Centre of the Regional Cooperation Agreement on Combating Piracy and Armed Robbery against Ships in Asia (ReCAAP) in 2004.¹⁰¹ Let us stop the unproductive conflicts. Further, if the indiscriminate fishing and marine pollution continue, the South China Sea will be the Dead Sea. The oil deposit data in the South China Sea is also not so reliable, and it would cause escalated maritime conflicts with the ASEAN claimants. If so, the joint development and protection of fishery resources and the joint detection of oil & gas resources in the South China Sea are much more profitable than the monopolization of fishery and mineral resources to China.

If China stops the maritime offensive against the ASEAN claimants and Japan, and begins the cooperative activities described in the Declaration on the Conduct of Parties in the South China Sea (DOC),¹⁰² such as marine environmental protection, marine scientific research, safety of navigation and communications at sea, search and rescue operation, and combating transnational crime with other claimants, Japan and other external dialogue partners can extend technical and financial assistance to China.

Japan has the long experience of struggling with marine pollution. Marine and river pollution was prevalent in Japan from the 1950s to the 1970s. It took a long time to determine the causes and offenders of the pollution. The Japanese have succeeded to clean up the sea and rivers and prevent pollution, though the struggles of people suffering from the consumption of polluted fish and rice still continue in some coastal and riverside cities in Japan, like Minamata City in Kumamoto Prefecture and Toyama City in Toyama Prefecture.¹⁰³ Japan also has some experience and technology for marine fish farming.¹⁰⁴

Let us maintain peaceful and fertile seas for future generations of the East Asia!

[Acknowledgements]

This paper was presented at the 5th International Workshop, "The South China Sea: Cooperation for Regional Security and Development," 11-12 November 2013, Ha Noi, Viet Nam, organized by Diplomatic Academy of Vietnam & Vietnamese Lawyers Association.

I would like to express my gratitude to Dr. Tran Truong Thuy for the bow number data of Chinese maritime law enforcement agencies in the South China Sea, and to Professor Carlyle A. Thayer for the information on James Shoal Incident in March 2013. I would also like to thank the Japan Coast Guard for the photos of the Chinese maritime law enforcement agencies' vessels.

Notes

- 1 KOICHI SATO is a Professor of Asian Studies at J.F.Oberlin University. He obtained his PhD in International Studies, Waseda University, Tokyo, Japan. Concurrently, he serves as lecturer of Japan Maritime Self-Defense Force (JMSDF) Staff-College, Lecturer of National Institute for Defense Studies (NIDS), and Policy Adviser of Japan Coast Guard.
- 2 John Wilson Lewis & Xue Litai, *China's Strategic Seapower* (Stanford, Stanford University Press, 1994). Daniel Schaefer, "Why China Absolutely Needs the South China Sea for Itself Alone: A Prospective and Independent View from Outside", *The Third International Workshop The South China Sea: Cooperation for Regional Security and Development,* Conference Paper, (Hanoi, 4-5 November 2011): 1-15, http://www.nghiencuubiendong.vn (accessed March 28, 2012).
- 3 Lester R. Brown, Dare Ga Zhugoku Wo Yashinaunoka?: Who Will Feed China? Wake Up Call for the Small Planet (Translation, Tokyo, Daiyamondo, 1995: Washington, World watch Institute, 1995).
- 4 Ajia Doko Nenpo 1981: Annual Report of the Asian Countries 1981 (Chiba, Institute of Developing Economies: IDE, 1981), 105; Ajia Doko Nenpo 2011: Annual Report of the Asian Countries 2011 (Chiba, Institute of Developing Economies: IDE, 2011), 131.
- 5 Ajia Doko Nenpo 2005: Annual Report of the Asian Countries 2005 (Chiba, Institute of Developing Economies: IDE, 2005), 167; Ajia Doko Nenpo 2011: Annual Report of the Asian Countries 2011 (Institute of Developing Economies: IDE, 2011), 131.
- 6 Guo Wenlu & Huang Shuolin, Nanhai Zhengduan Yu Nanhai Yuyeziyuan Quyu Hezuoguanli Yanjiu: The Research of Conflict and Regional Cooperation for Fishery Resource in the South China Sea (Beijing, Haiyang Chubanshe, 2007), 91. These statistics only summed up the fish catches of Guangdong, Guangxi, and Hainan provinces. A Japanese scholar reported that the fish catch in the South China Sea was 5 million tons in 1989. Shigeo Hiramatsu, Zhugoku No Kaiyo Senryaku: Chinese Naval strategy (Tokyo, Keiso Shobo Publishing, 1993), 27.
- Wang Kuan-Hsiung, "Resolution to Fishery Disputes in the South China Sea through Regional Cooperation and Management", *The Third International Workshop – The South China Sea: Cooperation for Regional Security and Development*, Conference Paper, (Hanoi, 4-5 November 2011): 1-16, http://www.nghiencuubiendong.vn (accessed March 28, 2012).

- 8 Zhongguo Yuye Nianjian: China Fisheries Yearbook 2012 (Beijing, Ministry of Agriculture 2012), 220, 239.
- 9 The Agriculture & Fishery Statistics 2011, Ministry of Agriculture, Japan: Japanese, http://www.maff. go.jp/j/tokei/kouthyou/kaimen_gyosei/ http://www.e-stat.go.jp/SGl/estat/List.do?lid=000001104479 (accessed November 26, 2013).
- 10 The Chinese fish catch of pelagic fishing in 2011 is 1.1 million tons. *Zhongguo Yuye Nianjian*: China Fisheries Yearbook 2012, op. cit., 216.
- 11 *Zhongguo Haiyang Fazhan Baogao 2009*: China's Ocean Development Report 2009 (Beijing, Haiyang Chubanshe, 2009), 286-287.
- 12 Zhongguo Haiyang Fazhan Baogao 2009, op. cit., 287-288.
- 13 Zhongguo Haiyang Fazhan Baogao 2009, op. cit., 290.
- 14 Zhongguo Haiyang Fazhan Baogao 2009, op. cit., 289. The Chinese reports never show us the numerical criterion of healthy, semi-healthy and un-healthy grades.
- 15 Zhongguo Haiyang Fazhan Baogao 2009, op. cit., 290.
- 16 Zhongguo Haiyang Fazhan Baogao 2012, op. cit., 176-177.
- 17 Figures were the author's calculation based on the data of books as follows; *JPEC Report: China's Oil Supply*, http://www.pecj.or.jp/Japanese/minireport/pdfH21_2011/2011-017.pdf (accessed May 3, 2012); Akira Ishi & Kazuhiko Fuji, *Sekai wo Ugokasu Sekiyu Senryaku*: Oil Strategy in the World (Tokyo, Chikuma Publishing, 2003), 129.
- 18 JPEC Report: China's Oil Supply, http://www.pecj.or.jp/Japanese/minireport/pdfH21_2011/2011-017. pdf (accessed May 3, 2012).
- 19 Guo Sizhi, "Sekiyu / Sekika Sangyo": Oil and Petroleum Chemical industries, ed. Tomoo Marukawa, *Zhugoku Sangyo Handobukku 2007-2008*: Chinese Industrial Handbook (Tokyo, Sososha Publishing, 2007): 37.
- 20 Dan, Hougun: Duan, Fengjun in Chinese, "Zhugoku No Kaiyo Kaihatsu Senryaku: China's Maritime development Strategy," *Gaiko*: Diplomacy 13 (May 2012): 82-83.
- 21 Dan, Hougun, "Zhugoku No Kaiyo Kaihatsu Senryaku: China's Maritime development Strategy," Gaiko: Diplomacy 13 (May 2012): 82-83.
- 22 Jia Chengzao, "Haiyang Youqi Ziyuan Yu Shengchan Qianjing: Prospect for Offshore Oil & Gas Resource and Production," Zhongguo Gongye Jingji Lianhehui: Chinese Industrial Economy Association, Zhongguo Haiyang Youqi Zhuangbei Fazhan Zhanlue Yantaohui Ziliaohuibian: Strategic Research Workshop for Chinese Offshore Oil & Gas Infrastructure (Wuxi, Zhongguo Gongye Jingji Lianhehui, December 2008): 34.
- 23 It is said that a report from the Ministry of Land and Resources of the People's Republic of China noted that the oil deposit in the South China Sea ranges from 168,000 million barrels to 220,000 million barrels, though the U.S. estimated deposit in the South China Sea is about 28,000 million barrels, and the confirmed deposit is just 7,000 million barrels. Another U.S. report (EIA) estimated the South China Sea contains approximately 11,000 million barrels of oil and 190 trillion cubic feet of natural gas in proved and probable reserves in 2013. Leszek Buszynski & Iskandar Sazlan, Maritime Claims and Energy Cooperation in the South China Sea, *Contemporary Southeast Asia*, 29, no. 1 (April

2007): 156. Erik Kreil, "Energy Issues in the South China Sea Region", eds. John C. Baker, and David G. Wiencek, *Cooperative Monitoring in the South China Sea: Satellite Imagery: Confidence Building Measures, and the Spratly Islands Disputes* (Westport, Prager, 2002), 42-43. U.S. Energy information Administration, *Countries South China Sea* as of 7 February 2013. http://www.eia.gov/countries/analysisbriefs/South_China_Sea/south_china_sea.pdf (accessed June 10, 2013).

- 24 Ran Yongping and Baodan, "Jiangyi Nanhai Kaizuan: Drilling in South China Sea will begin soon," *Renmin Ribao*, May 8, 2012. A Japanese oil specialist said that the CNOOC has already begun deepsea detection off the coasts of Nigeria and Angola. Interview with a Japanese oil specialist. June 7, 2013.
- 25 Lyle J. Goldstein, *Five Dragons Stirring Up the Sea*, Newport, Naval War College, 2010, www.usnwc. edu/Research.../China.../CMSI_No5_web1.pdf (accessed July 4 2012). Jiang Xun, "Zhonge Junyan Jianzhi Meiriyue Zhonggou Zuoxiang Shenlan: China-Russia Military Exercise against the United States, the Philippines, Japan, and Vietnam, China Aims at Blue Water" *Yazhouzhoukan*: Asiaweek, May 6 2012, 28-29. Zonghedian, Zhikuzuzhi Zhongguo Neibu Juili Lajin Nanzhongguohai Jushi: Think tanker told Chinese domestic competition makes South China Sea situation tense, *Nanyang Xingzhou Lianhezaobao*, April 24, 2012, http://www.zaobao.com/special/china/southchinasea/pages/ southchinasea120424a.shtml (accessed May 8, 2012).
- 26 Jiang Xun, "Yanhai Sansheng Shidian Lanse Jingji: Three Coastal States Try Blue Water Economy," Yazhouzhoukan: Asiaweek, (May 6, 2012): 28-29.
- 27 Information of China's maritime law enforcement agencies in this paper are basically cited by the materials as follows; He, Zhong Long, *Zhongguo Hai'an Jingweidui Zujian Yenjiu*: Research of the Build-up of the Chinese Coast Guard Agency (Beijing, Haiyang Chubanshe, 2007), 36-40. Liku, Yi (Lu, Yi in Chinese) 2011, "Zhugoku No Kosutogado Soshiki Wa Do Natteiruka: Report on the Chinese Coast guard Agencies," *Sekai No Kansen*: Ships of the World (September 2011): 90-95. Li Mingjiang & Zhang Hongzhou, "Restructuring China's Maritime Law Enforcement: Impact on Regional Security," *RSIS Commentaries*, No. 050/2013 (April 1, 2013): 1-2. Yu Jianbin, "Lixing Xunhang Xuanshi Zhuquan: Routine Patrol, Declare Soverignty," *Renmin Ribao*: People's Daily, March 21, 2012.
- 28 He 2007, op. cit., 37. Liku, op. cit., 92-93.
- 29 Yu Jianbin, "Lixing Xunhang Xuanshi Zhuquan, Renmin Ribao, 21 March 2012.
- 30 Liku 2011, 92-93.
- 31 Kathrin Hille, "Chinese navy on exercise near Senkakus," *Financial Times*, October 19, 2012, Hideo Nakaoka, "Zhugokukaigun Ga Higashishinakai De Enshu: Chinese Navy Exercise in East China Sea," *Asagumo Shinbun*, October 25, 2012.
- 32 Liku 2011, 93-94.
- 33 Benkan Bianjibu (editorial department), "Zheng Ming Shaojiang Zanshang Nanhai Weiquan De Yuchuan, Yuzhengchuan: Admiral Zheng Ming Praises the Fishing Boats and Fishery Law Enforcement Command Vessels which protect Chinese Interests," *Jianchuan Zhishi*: Ships Information (July 2012): 16.
- 34 Zhang Fumin and Tan Yusheng, "Zhong, Re, Han Qian Dunji Yuzheng Zhifachuan PK: Comparison of

the 1000 tons- class Law Enforcement Vessels PK of China, Japan and Korea," Jianchuan Zhishi (July 2012): 28.

- 35 He 2007, op. cit., 37. The present writer has the impression that 1000 members (crew) are too small for 1421 boats.
- 36 A PLA navy fleet conducted the patrol and training missions on the South China on 27 March 2013. The fleet patrolled the sea area surrounding the Mischief Reef (Meiji Reef in Chinese), and the PLA fleet commander Jiang Weilie visited the FLEC 45001, and was briefed by a captain on the vessel's law enforcement efforts. Xinhua, "Chinese naval fleet patrols Meiji Reef," http://eng.mod.gov.cn/ DefenseNews/2013-03/28/content 4439445.htm (accessed March 28, 2013).
- 37 He 2007, op. cit., 37-40.
- 38 Liku 2011, op. cit., 91.
- 39 Liku 2011, op. cit., 91-92. Most of the patrol boats belong to the CCG task force are less than 200 tons (displacement).
- 40 Qiu Guoyi, "Zhongguo Zaochuan Kanban: Newly Built Ships in China," *Jianchuan Zhishi*, February 2013, 95.
- 41 He 2007, op. cit., 38-39.
- 42 Liku 2011, op. cit., 94-95.
- 43 He 2007, op. cit., 37-38, Liku 2011, op. cit., 94.
- 44 Liku 2011, op. cit., 94.
- 45 Refer to the following section.
- 46 He 2007, op. cit..
- 47 Sun Anren, "Zhongyang Renming Zhongxin Zujiande Guojia Haiyangju Lingdao Bangzi: The CCP Central Committee nominated the leaders of SOA," http://www.soa.gov.cn/xw/hyyw_90/201303/ t20130318_24644.html (accessed August 19, 2013), Beijing (Beijing Branch), "Chugoku No Chian Bumon Senkaku Kanshi No Kanyo Tsuyomeru: Chinese Ministry of Public Security Stresses Its Commitment to Senkaku Island," *Asahi Shimbun* (20 March 2013).
- 48 Renminwang, "Liu Cigui Tongzhi Jianli," http://politics.people.com.cn/BIG5/shizheng /252/9667/9683/14040540.html (accessed September 8, 2013), Zhongguo Gongxhandang Xinwenwang, "Meng Hongwei," http://cpc.people.com.cn/gbzl/html/121000911.html (accessed September 1, 2013).
- 49 A well-informed person said that the CMS and the CCG were competing with each other for a higher budget until the merger, and the CCG always failed and complained about the budget amount. Interview with an Asian government official.
- 50 Li & Zhang 2013, op. cit., 2.
- 51 Li & Zhang 2013, op. cit., 2.
- 52 Cui Jingtao, "Zhongxin Zujian De Guojia Haiyangju Guapai Zhongguo Haijingju Tongshi Guapai: The China Coast Guard Signboard was put up beside the State Oceanic Administration signboard at the SOA Building", http://www.soa.gov.cn/xw/hyyw_90/201307/t20130722_26644.html (accessed August 20, 2013).
- 53 The Japan Coast Guard, a well-integrated maritime law enforcement agency is an exceptional case.

Many Asian countries are struggling with the coast guard's integration. Malaysia had begun to research and develop the Malaysian Maritime Enforcement Agency (MMEA) in 1999, and it took 13 years for the merger with the Malaysian Marine Police. Interview with a maritime specialist in Malaysia, March 5, 2013. Indonesia established the Maritime Security Coordinating Board (Bakorkamla: Badan Koordinasi Keamanan Laut Republik Indonesia) in 2005, and they are making an effort towards the integration of 12 maritime agencies. Interview with a maritime specialist in Indonesia, August 24, 2009, Ristian Atriandi Supriyanto & Siswanto Rusdi, "Maritime Security Agencies in Indonesia: More Not Merrier," *Nation*, January 7, 2013.

- 54 Reuter, Associated Press, "Xi to Viet leader: Peace in S. China Sea vital," *Straits Times*, 20 June 2013. A well-informed source said that the two leaders agreed to use a hotline for the treatment of typhoon-suffered Vietnamese fishing boats in Chinese harbors, in case of emergency evacuation.
- 55 Staff writers for Defense and Security issues, "China Threatened with Armed Vessel," *Mainichi Shinbun*, 27 July 2010.
- 56 Jin Quang, "Zhongguo Yuzheng Zhifachuan: Patrol Vessels of the Chinese Fisheries Law Enforcement Command," *Jianchuan Zhishi*, (July 2012): 22.
- 57 Interview with the Indonesian source, July 26, 2010.
- 58 Anpo Shuzaihan, "Zhugoku Busoukan De Ikaku: China Threatened with Armed Vessel," Mainichi Shinbun, 27 July 2010.
- 59 Okazaki Satoshi, "Minamishinakai Sarau Zhuugoku: China Deprives South China Sea," *Yomiuri Shinbun*, 3 January 2011, p.4. The PLA navy also dispatched a 200-metre landing ship to James Shoal some 80 kilometres from Malaysia in March 2013. Greg Torode, "PLA Navy amphibious task force reaches Malaysia 'to defend South China Sea'," *South China Morning Post*, March 27, 2013.
- 60 CMS 83 is 98mL×15.2mW, attached with a helicopter. Kong Queshi, "Zhongguo Haijian 83: CMS 83," *Jianchuan Zhishi*, November 2012, 23-26.
- 61 Okazaki Satoshi, "Minamishinakai Sarau Zhuugoku," Yomiuri Shinbun, 3 January 2011, p.4.
- 62 Okazaki Satoshi, op. cit. Dr. Tran Truong Thuy also pointed out that, "there were two (first) times that Chinese maritime surveillance vessels reportedly attempted to harass Malaysian exploration ships within Malaysian continental shelf since the second half of 2012." Tran Truong Thuy, "The South China Sea: Interests, policies, and Dynamics of Recent Developments", Center for Strategic & International Studies, Washington DC., (2013): 7.
- 63 Ian Storey, "Hardening Positions over Dangerous Grounds: Recent Developments in the South China Sea Dispute," http://csis.org/files/publication/110629_Storey_South_China_Sea_0.pdf (accessed August 21, 2013), 2.
- 64 Renato Cruz De Castro, "China's Realpolitik Approach in the South China Sea Dispute: The Case of the 2012 Scarborough Shoal Standoff," http://csis.org/files/attachments/130606_De castro_ ConferencePaper.pdf (accessed August 21, 2013).
- 65 De Castro, Renato Cruz 2013, op. cit., p.3. "Zhongguo Yuzheng Zhifachuan: Patrol Vessels of the Chinese Fisheries Law Enforcement Command," *Jianchuan Zhishi*, (July 2012), 22.
- 66 De Castro, Renato Cruz 2013, op. cit., Ellen Tordesillas, "China offers to remove BRP Sierra Madre from Ayungin shoal," http://www.ellentordesillas.com/2013/07/02/china-offers-to-remove-brp-

sierra-madre-from-ayungin-shoal/ (accessed July 16, 2013). The CMS and FLEC vessels were often accompanied by the Chinese fishing boats in the Philippine waters, though the vessels of Chinese maritime law enforcement agencies were not so often accompanied by the Chinese fishing boats in the Japanese waters. The Chinese government may recognize the sea-power gap between the Philippines and Japan.

- 67 Vicente Agdamag, Deputy Director of the national security council secretaria, "Speech during Air Symposium 2013, MOA," http://www.timawa.net/forum/index.php?topic=35095.0 (accessed August 11, 2013).
- 68 Joel Guinto & Daniel Ten Kate, "China to Build Structure on Disputed Shoal, Philippines Says," Bloomberg, September 3, 2013.
- 69 Frances Mangosing, "Talks underway to remove blocks put by China in Panatag Shoal Navy chief," *Philippine Daily Inquirer*, September 10, 2013.
- 70 Ron B. Lopez, "China hits PH claims in disputed shoal." Manila Bulletin, September 6, 2013.
- 71 ABS-CBN News, "Concrete blocks in Scarborough don't pose threats-PNoy," ABS-CBN News, http:// www.abs-cbnnews.com/print/335130 (accessed October 24, 2013).
- 72 Ellen Tordesillas, op. cit. The Philippines' stationing of marines seems to be AFP's response to the PLA navy's occupation of Mischief Reef in February 1995. Mischief Reef is also a part of Spratly Islands, and is beside the Ayungin Shoal.
- 73 Ellen Tordesillas, op. cit., "China sends big fishing fleet to disputed Spratlys," *Straits Times*, 8 May 2013.
- 74 Ellen Tordesillas, op. cit.
- 75 Ellen Tordesillas, op. cit.
- 76 Interview with the Vietnamese scholar, December 21, 2011. Tran Truong Thuy, "The South China Sea: Interests, policies, and Dynamics of Recent Developments", Center for Strategic & International Studies, Conference Paper to Managing Tensions in the South China Sea, (Washington DC., Center for Strategic & International Studies, 2013), 6-7.
- 77 Thayer, Carlyle A., "Will the Guidelines to Implement the DOC Lessen Tensions in the South China Sea? An Assessment of Developments Before and After Their Adoption", Conference Paper to 3rd International Workshop on the South China Sea co-sponsored by the Vietnam Lawyers' Association and the Diplomatic Academy of Vietnam, Hanoi, Vietnam, 3-5 November 2011.
- 78 Amer, Ramses, "China, Vietnam and the South China Sea Disputes: Assessing the Implications of the May-June 2011 Incidents", Conference Paper to 3rd International Workshop on the South China Sea co-sponsored by the Vietnam Lawyers' Association and the Diplomatic Academy of Vietnam, Hanoi, Vietnam, 3-5 November 2011.
- 79 Voice of Vietnam, "PetroVietnam protests Chinese ships' cutting of survey cable," Voice of Vietnam Online Newspaper, http://English.vov.vn/Utilities/PrintView.aspex?ID=251131 (accessed August 21, 2013).
- 80 "Zheng Ming Shaojiang Zanjiang Nanhai Weiqun De Yuchuan, Yuzhengchuan: Rear Admiral Zheng Ming praised the fishing vessels and FLEC vessels for their struggle to maintain the Chinese maritime interests in the South Sea," *Jianchuan Zhishi* (July 2012): 16-19.

- 81 Hiramatsu, Shigeo, *Yomigaeru Chugoku Kaigun: Revival of the Chinese Navy* (Tokyo, Keiso Shobo Publishing, 1991), 60-62.
- 82 Besides the maritime incidents, the Chinese government told Exxon Mobil Corp. and BP Plc. to halt exploration in offshore areas that Vietnam considers part of its territory (Danniel Ten Kate & Nicole Gaouette, "Clinton signals U.S. role in China territorial disputes after ASEAN talks," *Bloomberg*, July 23, 2010).
- 83 Henshuubu (editorial department), "Seisakaiiki No Patororusen 3 Seki Ga Gouryu: Three Patrol Vessels for Paracel Sea Area Joined," Jinminmou, http://j.people.com.cn/94475/6617944.html and Zhugoku Tsushin, "Nansa kaiiki Deno Gyogyou Kansikatsudou No Reberu Takameru, Gyosen Hogo Kyouka: Higher Level Fishery Patrol in Spratly Sea Area for Protecting Chinese Fishing Boats," Zhugoku Tsushin:China News Service, http://www.china-news.co.jp/node/47316 (accessed August 24, 2013).
- 84 Shinkamou (Xinhua Net), "Zhugokugyosenhentai Ga Nansashoto Ni Tochaku, Gyosei310 Ga Goei Ni Ataru: Chinese Fishing Fleet arrived in the Spratly Sea Area, FLEC310 Escorted Them," Zhugokumou: China Net, http://Japanese.china.org.cn/politics/txt/2012-07/16/content_25917562.htm (accessed August 24, 2013).
- 85 Associated Press in Hanoi, "Vietnam accuses China over South China Sea 'trawler attack'", *The Guardian*, March 26, 2013. Trang Hanh, "Two Vietnamese fishing vessels attacked in Hoang Sa", *News VietNamNet.*, July 11, 2013.
- 86 Innocent passage is allowed to every foreign vessel in Japanese territorial waters, though the administrative activities such as territorial patrol, ship-visits, and inspections by Chinese vessels are an offense to Japanese sovereignty. Guoja Haiyang Ju: State Oceanic Administration, "Zhongguo Haijing Jianchuan Biandui Zai Diaoyudao Haiyu Xuanbu Zhuquan: China Coast Guard Flotilla Declares Chinese Sovereignty in the Sea Area of Senkaku Islands," Guoja Haiyang Ju, http://www.soa.gov. cn/xw/hyyw_90/201309/t20130914_27368.html (accessed September, 14 2013), Asahi Shumbun, "Zhugoku Nihon EEZ Nai De Kensa Ka: CCG inspected Chinese Fishing Boat in Japanese EEZ?" *Asahi Shimbun*, 22 November 2013. The CMS46 and CMS51 once entered the territorial waters surrounding the Senkaku Islands in December 2008. Yasuo Nakauchi, "Senkaku Shoto Wo Meguru Mondai: Issues of Senkaku Islands," *Rippo to Chosa* No. 311 (December 2010): 28.
- 87 Matsutani Kenji and Suzuki Yasuhiro, "Senkaku Kokuyuka 1 Nen Zhugoku Shinnyu 63 Nichi Kinkyuhasshin 3.5 Bai Ni: 1 year from Senkaku-Nationalization, 63 days of Illegal entrances to Japanese Territorial Sea, Air Scrambles in 2013 is 3.5 times of 2012," *Mainichi Shinbun*, September 11, 2013, http://mainichi.jp/select/news/20130911k000m040100000c.html (accessed September 11, 2013).
- 88 Sankei Shinbun, "Zhugoku Kosen 4 Seki Setsuzoku Suiiki Ni: Four Chinese Government Vessels in Japanese Contiguous Zone," *Sankei Shinbun*, 12 September 2013.
- 89 Sankei Shinbun, "Zhugokusen No Shinnyu Saicho 28 Jikancho: Illegal Entrance of Chinese Vessels Longest, More Than 28 Hours," *Sankei Shinbun*, 9 August 2013, Sankei Shinbun, "Zhugoku Kousen 4 Seki, Senkaku No Ryokai Shinnyu: Four Chinese Government Vessels, Illegally Enter the Japanese Territorial Waters surrounding Senkaku Islands," *Sankei Shinbun*, 11 August 2013, Sankei Shinbun,

"Zhugoku Kousen 4 Seki Ga Ryokai Shinnyu: Four Chinese Government Vessels Illegally Enter the Japanese Territorial Waters," *Sankei Shinbun*, 17 August 2013, Nakashinjo Makoto, "Semaru Zhugokusen, Join Himei, Sanpo Wo Kakomare 6 Jikan: "Chinese Vessels Closed In, Crew Give a Scream, 6 Hours Chasing from Three Sides," *Sankei Shinbun*, 17 May 2013, Mingpao, "Zhongguo Fanchuan Chuang Diaodao Haijing Shouhu Hang: Chinese Yacht Roaming around the Sea Area of Senkaku Islands, China Coast Guard Escorts," http://www.mingbaotor.com/htm/News/20130804/ taa1.htm?m=() (accessed August 5, 2013). Sankei Shinbun, "Senkaku Setsuzoku Suiiki Ni 19 Nichi Renzoku Zhugoku Kosen: Chinese Government Vessels Staying Around Senkaku Contiguous Zone for 19 Days," *Sankei Shinbun*, 5 August 2013, "Zhugoku No Bokenka Kataru: Chinese Adventurist Told," *Asahi Shimbun*, 10 August 2013.

- 90 Chinese media also reported on 3 July 2013 and described a "confrontation" between USNS Impeccable and CMS 5001 (a 1470 ton unarmed patrol vessel). It occurred on 21 June, close to the Chunxiao gas field in the East China Sea. James Hardy, "China plays up CMS 'confrontation' with US surveillance ship," *Jane's Defence Weekly*, July 10, 2013, 5. It means that the U.S. navy also closely watches the behaviors of the PLA navy and the Chinese maritime law enforcement agencies. Another issue concerning the Japan-U.S. Alliance's is the Chinese submarine activity in the East China Sea.
- 91 China.org.cn, "Heavy patrol ship to monitor fishing near Diaoyu Islands," China.org.cn, http://www. china.org.cn/china/2013-01/29/content_27825355.html (accessed September 15, 2013), Bloomberg News, "Vietnamese Lodges China Protest Over Claims of Attack on fishermen," *Bloomberg News*, July 18, 2013.
- 92 AFP, Xinhua, and China Daily / Asia News Network, "China sends big fishing fleet to disputed Spratlys," *Straits Times*, May 8, 2013, Nikko Dizon, "Chinese ships still in Ayungin Shoal," *Philippine Daily Inquirer*, July 12, 2013, Renato Cruz De Castro, "China's Realpolitik Approach in the South China Sea Dispute: The Case of the 2012 Scarborough Shoal Standoff," http://csis.org/files/ attachments/130606_De castro_ConferencePaper.pdf (accessed August 21, 2013).
- 93 The total figure of illegal entrances into Japanese territorial waters by the vessels of Chinese maritime law enforcement agencies from September 2012 to March 2013 was 109, and some CMS and FLEC vessels have entered the contiguous zone of the Senkaku Islands intermittently. Kageyama Tetsuya, "Senkaku Shoto Zhugoku Kousen Niyoru Ryokai Shinpan Ha 109 Seki Kokuyuka Iko: 109 Chinese Government Vessels Illegally Entered the Japanese Territorial Waters after Nationalization," *Mainichi Shinbun*, March 19, 2013 http://mainichi.jp/select/news/20130320k0000m010049000c.html (accessed April 6, 2013).
- 94 FLEC 310 (displacement: 2,580 tons, size:108mL×14mW, speed: 22 knots, weapons: 2 helicopters, 2 machine guns [14.5mm caliber]), CMS 83 (displacement: 3420 tons, size: 98mL×15.2mW×7.8mD, speed:18 Knots, no weapons), Liku, Yi: Lu, Yi in Chinese, 2011, "Zhugoku No Kosutogado Soshiki Wa Do Natteiruka: Report on the Chinese Coast guard Agencies," *Sekai No Kansen*, (September 2011), 94, "Zhongguo Haijian 83: CMS 83," *Jianchuan Zhishi*, November 2012, 23.
- 95 We cannot know the number, though I guess about a half of the vessels are less than 1,000 tons (displacement).
- 96 An ASEAN scholar's comment on the Mischief Reef Incident at the International conference,

November12, 1995.

- 97 Interview with the Chinese and ASEAN scholars, August and September 2013.
- 98 Total number of the fishing boats in China is 696,186, and the number whose provinces face the South China Sea (Fujian, Guandong, Guanxi, Hainan) was 183,999 in 2011. *Zhongguo Yuye Nianjian*: China Fisheries Yearbook 2012 (Beijing, Ministry of Agriculture, 2012), 258.
- 99 Japan Coast Guard, Kaijo Hoan Repoto 2013: The Japan Coast Guard Report 2013 (Tokyo, Japan Coast Guard, 2013), 122. The gross tonnage; PLHs (more than 3,000 tons), the PLs (more than 1,000 tons). Kakitani, Tetsuya, Kaijo Hoan Cho No Subete: All the Details of the Japan Coast Guard, (Tokyo, Soft Bank Creative Publishing, 2012), 30-45.
- 100 The Japanese government already donated three patrol boats to Indonesia in 2007, and promised a donation of 10 patrol boats to the Philippines in July 2013. The Vietnamese government is currently considering the plan. Sasaki Manabu, "Betonamu Kaigun Ichibu Wo Kaiho Ni: A Part of Vietnamese Navy Will Be Its Coast Guard," *Asahi Shimbun*, September 1, 2013. The Japanese government welcomes the development and cooperation of the "Coast Guard Agencies" in the Asian countries, though their skirmishes are not welcomed.
- 101 ReCAAP Information Sharing Centre (ISC), *Annual Research Report* 2007, ReCAAP Information Sharing Centre (ISC) (Singapore, ReCAAP Information Sharing Centre (ISC), 2007).
- 102 ASEAN Secretariat, Declaration on the Conduct of Parties in the South China Sea, 4 November 2002. Phnom Penh, Handbook of Selected ASEAN Political Documents: Third Edition, (Jakarta, ASEAN Secretariat, 2006), 129-135.
- 103 Minamata disease in Minamata City is a kind of Methyl mercury poisoning by polluted fish, and Itai-Itai disease in Toyama City was caused by cadmium in the river water and rice grown on the polluted land. Minamata Disease Municipal Museum, "Learning Minamata disease with children," http://www. minamata195651.jp/pdf/English/manabu_all_en.pdf (accessed June 12 June 2012), Toyama Prefectural Itai-itai Disease Museum, "About the Itai-ital Disease," http://itaiitai-dis.jp/lang/English/disease/index. html (accessed July 8, 2012).
- 104 Kinki University succeeded in blue-fin tuna farming. Fisheries Laboratory, Kinki University, "Completely farm-raised bluefin tuna," *Fisheries Laboratory, Kinki University*, http://www.flku.jp/ English/aquaculture/tuna (accessed September 18, 2013).