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Abstract

The National Fisheries Research and Development Institute (NFRDI) has collected the PBF data from the domestic and distant-water fisheries. Additionally, biological sampling has been regularly carried out at designated domestic landing sites.

The annual total catch of fishes captured by the Korean distant-water longline ranged between 11,403 and 27,212 mt (averaged 17,818 mt) in the North Pacific Ocean area from 1995 to 2006. In 2006, the annual catch increased to 19,711 mt compared with recent years.

Major species caught by the longline in the North Pacific Ocean were bigeye tuna (57%) and yellowfin tuna (26%). In 2006, the annual catches of the two species were 11,152 mt and 5,079 mt, respectively, and catch of Pacific bluefin tuna was marginal. Contrastingly, most Pacific bluefin tuna produced in Korea was from the domestic purse seines targeting mackerels. In the Korean coastal sea areas, they are incidentally caught as by-catch and are mostly small individuals of 26-100 cm in fork length. The 40-50 cm FL size class dominated in 2006 whereas 50-60 cm FL class dominated in 2004 and 2005.

The annual catch of PBF by 33 purse seiners and 4 trawlers fluctuated between 594 and 591mt from 2001 to 2006. In 2006, the monthly catch was highest in April (248 mt, 30%) and August (285 mt, 34%).

Catches of PBF were mainly from the southern coastal waters of Korea near the Jeju and Tsushima Island. Distribution of Pacific bluefin tuna catch depends on the distribution of the fishery fleet's target species and the degree of biological interactions among bluefin tuna, mackerels and squids. In 2006, monthly distribution of PBF catch showed that major catches were taken around Jeju Island in, April and August which corresponded to the migration and wintering period.

NFRDI initiated the international fisheries observer program for distant-water fisheries since 2002. In 2006, nine observers were deployed on Korean fishing. To reduce numbers of seabird and sea turtle bycatch in tuna longline fishery, guidebooks and posters summarizing information of these species were distributed to fishing boats including the tuna longliners.

Introduction

Pacific bluefin tuna (PBF) are incidentally caught mainly by Korean domestic purse seine targeting mackerels as by-catch in the waters off Korea. PBF had been ignored among Korean fishermen because its catch was marginal. The PBF caught in Korean waters are mostly smaller than 1 m in fork length and most of them are exported to Japanese market for sashimi.

The Korean government initiated the fisheries observer program for both domestic and international distant-water fisheries in 1998 and 2002, respectively. In 2006, nine observers were dispatched for distant-water fisheries, and the number will be increased. National Fisheries Research and Development Institute (NFRDI) has collected the PBF data from the domestic and distant-water fisheries and is reconstructing a database system. This paper describes the recent trend of the Korean tuna fisheries in the North Pacific Ocean and update the statistics submitted in the previous national report for ISC6 (Koh, 2006).

Status of distant-water tuna longline fishery in the North Pacific Ocean

Annual catches of fishes captured in the North Pacific Ocean by the Korean distant-water longline ranged from 11,403 to 27,212 mt (averaged 17,818 mt) from 1995 to 2006 (Table 1). The catch in 2006 increased to 19,711 mt compared with recent years.

Korean distant-water tuna longline fishery are mainly targeting bigeye and yellowfin tunas. Major species were bigeye tuna (57%) and yellowfin tuna (26%) during 1995-2006. In 2006, bigeye and yellowfin catches were 11,152 mt and 5,079 mt, respectively, but catch of bluefin tuna was marginal.

Table 1. Estimated catches of Korea longline in the North Pacific Ocean by species (unit: mt)

Species Year	Albacore	Yellowfin tuna	Bigeye tuna	Bluefin tuna	Blue Marlin	Stripe Marlin	Sword fish	White Marlin	Sailfish	Skipjack	Others	Total
1995	14	6,528	9,048	0	1	249	8	0	221	0	3,164	19,231
1996	158	4,913	3,903	0	8	348	12	0	244	0	1,817	11,403
1997	404	5,031	6,661	0	114	828	246	2	1,292	0	4,830	19,410
1998	218	3,544	13,991	0	265	519	123	11	382	0	8,159	27,212
1999	99	3,946	7,598	6	131	352	104	5	198	0	3,555	15,994
2000	15	4,091	6,212	19	76	436	161	1	127	2	5,282	16,423
2001	64	5,275	9,141	2	132	206	349	25	28	2	6,434	21,657
2002	113	2,893	9,814	0	121	153	350	1	123	0	1,815	15,383
2003	144	4,219	8,861	0	125	172	311	13	129	6	1,098	15,079
2004*	78	4,722	11,316	0	180	61	327	2	1	101	645	17,431
2005*	350	2,873	9,082	0	254	113	346	0	0	23	1,836	14,877
2006**	111	5,079	11,152	0	171	49	426	1	0	0	2,722	19,711

* 2004 and 2005 data were updated.

** 2006 data are preliminary estimates.

Status of Korean domestic fisheries for PBF

Catch and effort of the major fisheries

Most Pacific bluefin tuna was caught by the domestic purse seines as by-catch in Korean coastal waters. The annual catch of PBF by 33 purse seiners and 4 trawlers ranged from 591 to 995 mt during the 2001-2006 period (Table. 2). The average annual catch was 740mt.

Table 2. Annual catch of Pacific bluefin tuna by major domestic fisheries in Korea.

Year	Vessel active			Catch (mt)		
	Purse seine	Trawl	Total	Purse seine	Trawl	Total
2001	33	4	37	995	10	1,005
2002	33	4	37	674	1	675
2003	33	4	37	591	0	591
2004	33	4	37	636	0	636
2005	33	4	37	594	0	594
2006	33	4	37	949	0	949

Monthly catch of PBF from purse-seine fishery

PBF was caught by the purse seine fishery that targets mackerel in Korean coastal waters during all seasons. Although it was consistent annually from 2002 to 2006, monthly proportion of catch peaked twice: spring and autumn. For example, in 2006, monthly catch was high in April (248 mt, 30%) and August (285 mt, 34%) (Fig. 1). The two peak periods correspond to the migration period of mackerel, horse mackerel and squid in the Korean coastal waters. Catches during the winter were marginal. Distribution of PBF catch might be influenced by varying oceanic environmental condition.

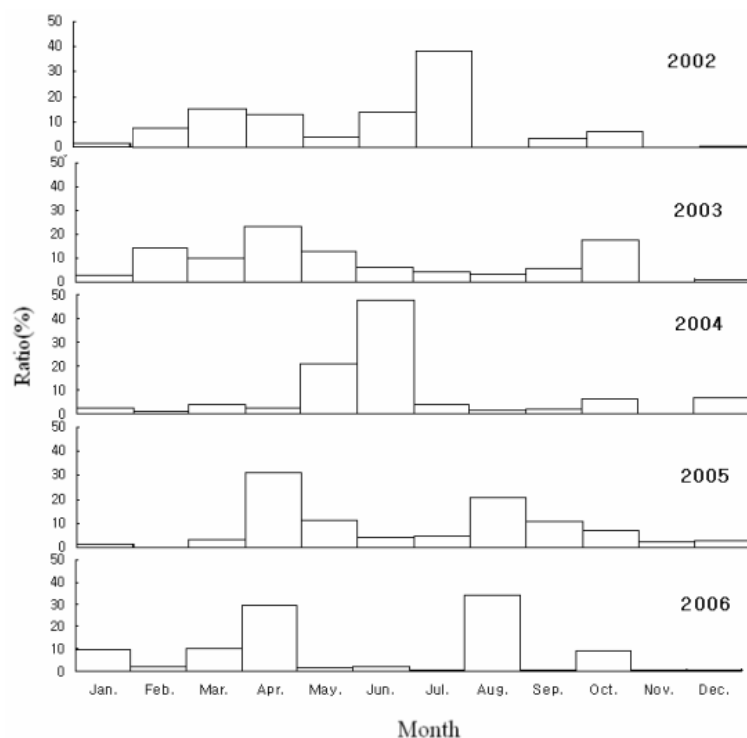


Fig. 1. Monthly proportion of catch of Pacific bluefin tuna caught by the purse seine off Korea from 2002 to 2006

Size composition of PBF

To monitor the size distribution of PBF caught by the purse seine, monthly sampling was undertaken at a landing port in Busan. The size ranged from 26 cm to 100 cm (Fig. 2). The size class of 40-50 cm FL was dominant in 2006 compared with 50-60 cm FL in 2004 and 2005. The sampling size needs to be increased.

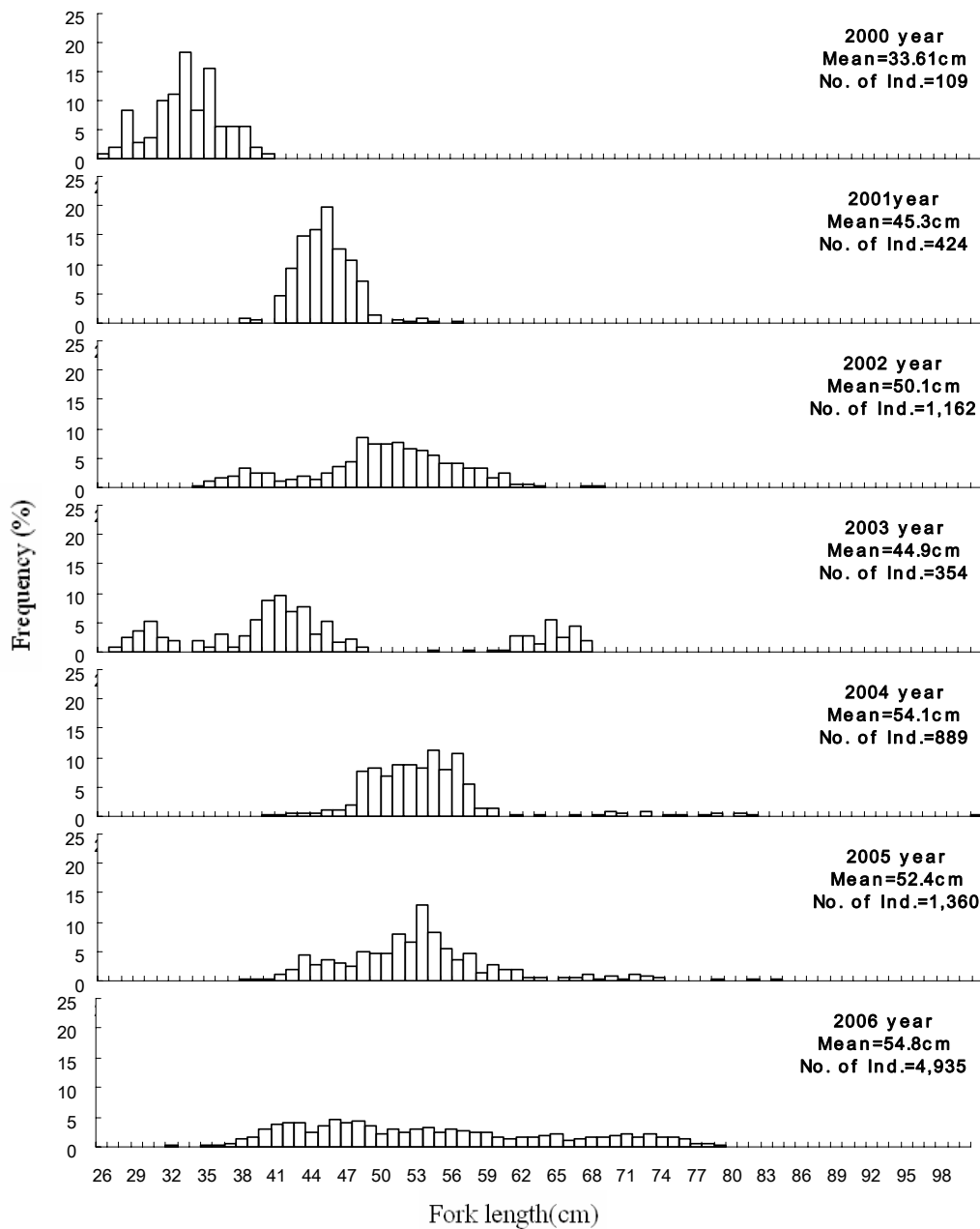


Fig. 2. Length-frequency distribution of Pacific bluefin tuna landed by the Korean domestic purse seine fishery from 2000-2006.

Spatial distribution of PBF catch

PBF catches were high in the southern waters of Korea near the Jeju and Tsushima Island which is the main fishing ground of the Korean domestic purse seine fishery (Fig. 3). Occasional catch was taken in the Yellow Sea. The catch distribution was similar between 2005 and 2006.

In 2006, monthly distribution of PBF catch showed that most catches were from waters around Jeju Island in January, April and August (Fig. 4-2). In 2005, high catches were recorded in January, march-April, August (Fig. 4-1). We speculate that distribution of Pacific bluefin tuna catch depends on the distribution of target species of the fishery fleet, the degree of association among bluefin tuna, mackerel and oceanographic condition.

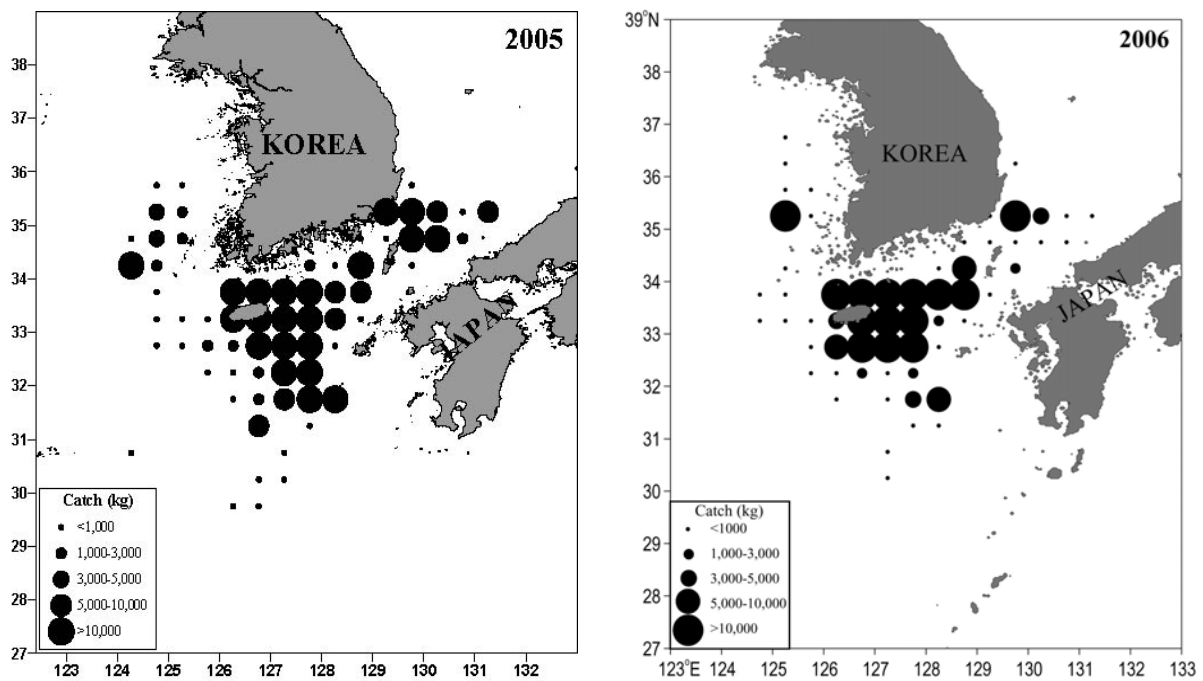


Fig. 3. Catch distribution of Pacific bluefin tuna by the Korean domestic purse seine fishery in 2005 and 2006.

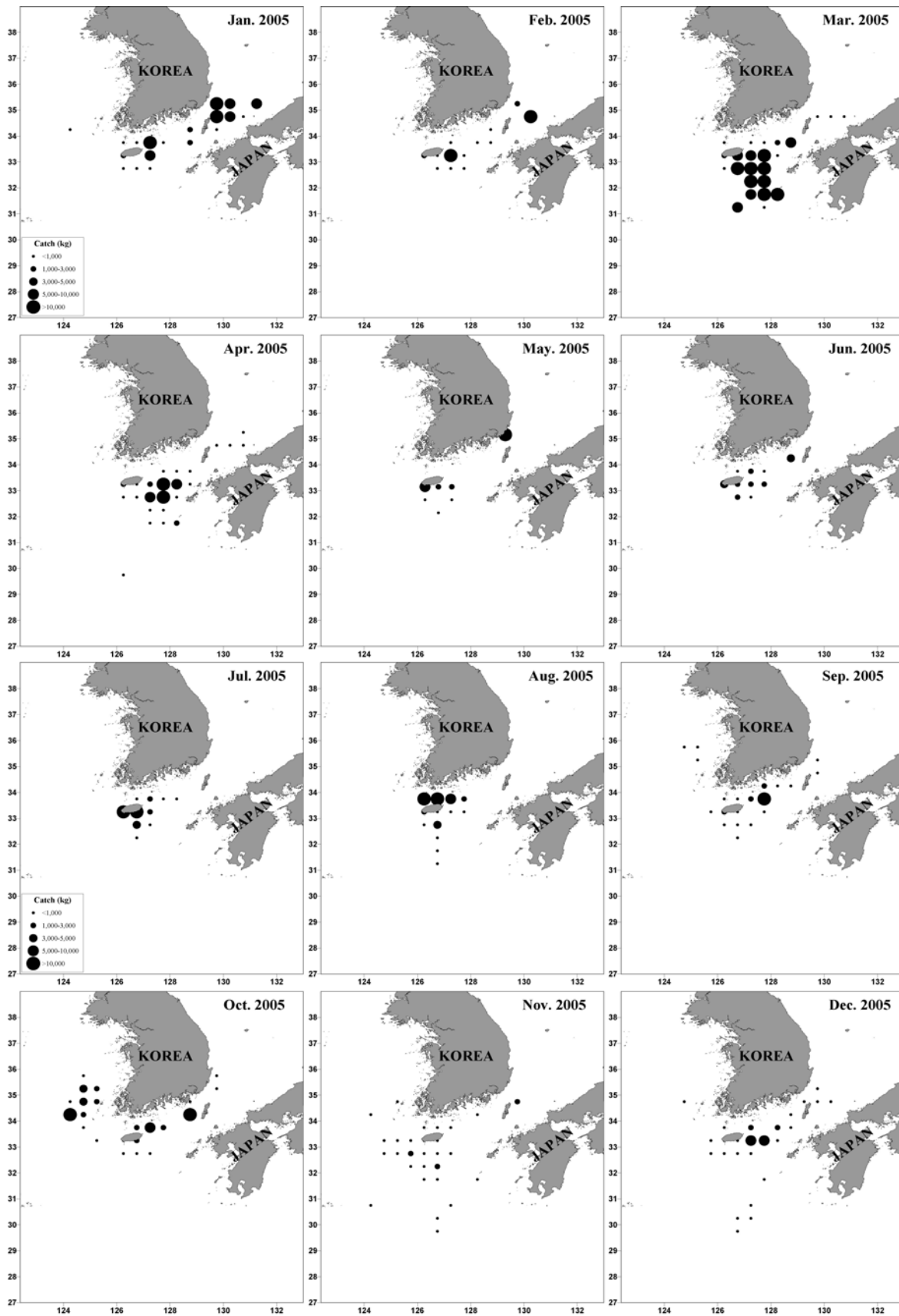


Fig.4-1. Monthly catch distribution of Pacific bluefin tuna by the purse seine fishery in 2005.

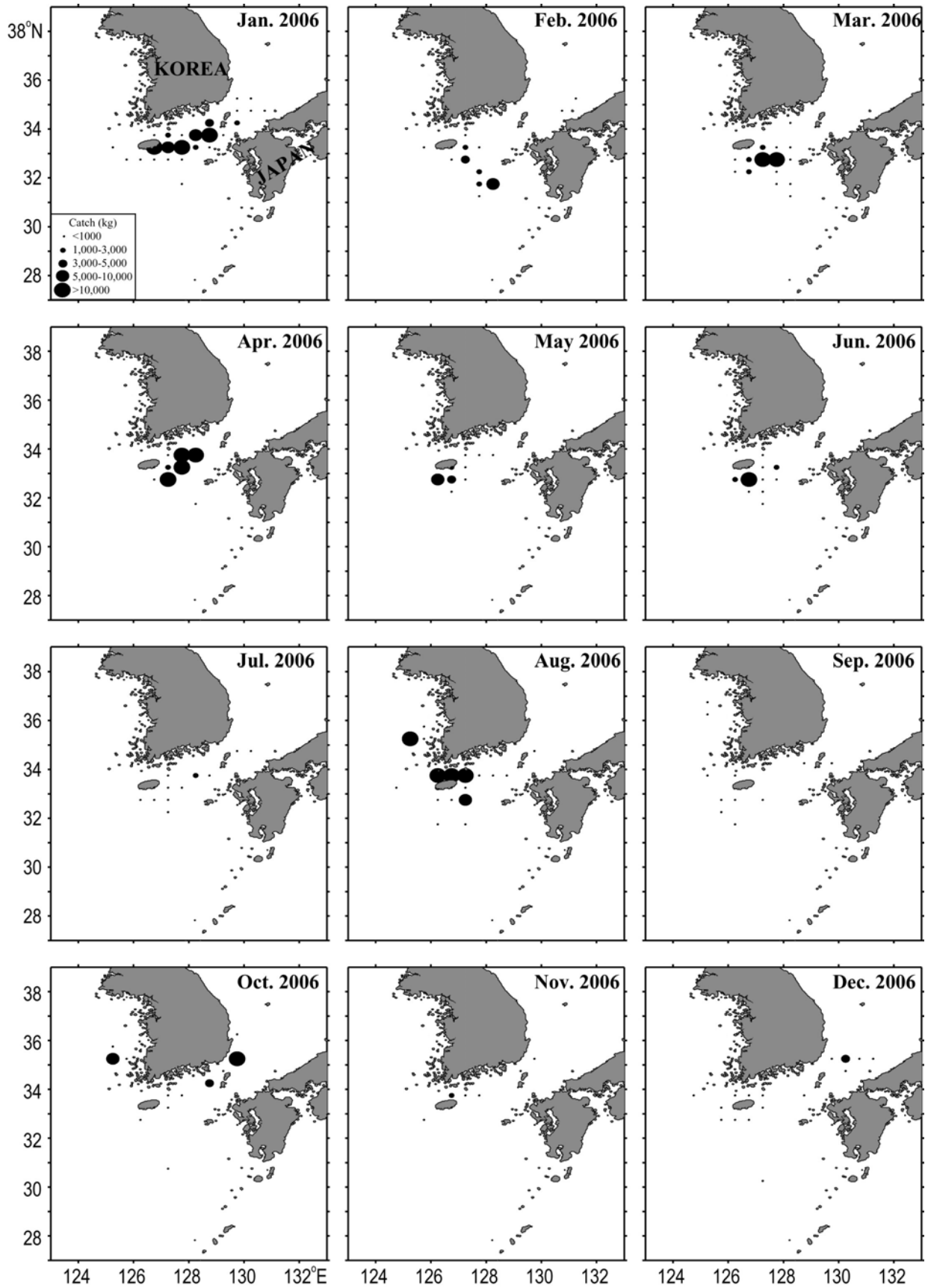


Fig.4-2. Monthly catch distribution of Pacific bluefin tuna by the purse seine fishery in 2006.

Research activities

The fisheries statistics data collection and compilation have been carried out by NFRDI. Additionally, biological sampling has been regularly made at domestic landing sites.

NFRDI reconstructs the related database system for easy manipulation and analysis of fisheries data. Old data files will be verified and corrected. NFRDI initiated the international fisheries observer program for distant-water fisheries including tuna fisheries in 2002. In 2006, nine observers were deployed on Korean fishing vessels to monitor catch of target and by-catch species. To reduce mortality of seabird and sea turtle caused by tuna longline vessels, guidebooks and posters containing the information of these species were distributed to fishing boats including the tuna longliners.

Reference

Koh, J., K.-S Hwang and D. Y. Moon, 2006. Korean National Report. ISC/06/Plenary/12. 9pp.