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

WCPFC-SC7-AR/CCM-19

PHILIPPINES

ANNUAL REPORT TO THE WESTERN and CENTRAL PACIFIC FISHERIES COMMISION (WCPFC)

PART1: INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

PHILIPPINE ANNUAL FISHERY REPORT UPDATE

July 2011

Scientific data was provided to the Commission in accordance with the decision relating to the provision of scientific data to the Commission by 30 April, 2011	No
If no, please indicate the reason(s) and intended actions:	There was a delay in the consultation process with different government agencies and also with the tuna industry.

PHILIPPINE ANNUAL FISHERY REPORT 2011

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Summary

The Philippines expresses its strong commitment to promote effective management in order to achieve the long-term conservation and sustainable use of highly migratory fish stocks in the western and central Pacific Ocean (WCPO) in accordance with the 1982 Law of the Sea Convention, the UN Fish Stocks Agreement, and the WCPF Convention. In giving effect to the provisions of the WCPF Convention, the Philippines upholds that conservation and management measures developed by the Commission, including CMM 2008-01 on the conservation and management of bigeye and yellowfin, would need to embody the principles and measures adopted under the Convention.

The ongoing research activities of the National Stock Assessment Program (NSAP) has continued to collect data on species composition, length frequency, vessel catch and effort information on key tuna landing sites around the country. The West Pacific East Asia Oceanic Fisheries Management Project (WPEA-OFMP) funded by UNEP-GEF-WCPFC which started in January 2010 will help strengthen national capacities and international cooperation on priority transboundary concerns relating to the conservation and management of highly migratory fish stocks in the West Pacific Ocean and East Asia (Indonesia, Philippines and Vietnam).

The Bureau of Fisheries and Aquatic Resources (BFAR) strongly encourage the tuna industry to continue supporting the catch documentation scheme which includes the catch and effort logsheet system for all purse seine and ringnet vessels. Aside from this BFAR also requires canneries to submit monthly cannery unloading data. All these efforts are geared towards improving tuna statistics/data gathering.

The Bureau regularly conducts observer training (twice in a year). There are currently 106 trained observers ready to board the vessels especially to those vessels intending to fish during the FAD closure period (1 July to 30 September 2010). The VMS has already been operationalized although on a limited scale but the Bureau is in close collaboration with the industry to increase coverage.

The provisional catch estimates for the three species of concern of the WCPFC in 2010 are as follows: skipjack – 228,178MT; yellowfin – 147,276MT and bigeye – 11,645MT (BAS, 2009). Although a much lower catch estimate was obtained during the 4th Annual Tuna Catch Estimates Review Workshop with the following breakdown: skipjack – 131,448MT; yellowfin – 75,638MT and bigeye – 4,432MT. The discrepancies between the two (2) estimates could be due to the difficulties in estimating the diverse municipal fisheries and could be explained as possible bias in the probability surveys due to very low coverage.

The Philippines, through the BFAR-NFRDI and other concerned agencies together with the tuna industry is doing a lot of efforts to improve data collection and to strengthen its national capacity and international cooperation on transboundary concerns in relation to the sustainable conservation and management of highly migratory fish stocks.

BACKGROUND

The Philippines is still one of the top fish producing countries in the world. Over 1.5 million people depend on the fishing industry for their livelihood. The Philippines is also considered a major tuna producer in the Western and Central Pacific Ocean (WCPO). The fishing industry's contribution to the country's Gross Domestic Products (GDP) in 2009 was 2.2% and 4.4% at current and constant prices, respectively *(Philippine Fisheries Profile, 2009)*.

Also in 2009, the foreign trade performance of the fishery industry gave a net surplus of 454 million dollars. With a total export value of 675 million US dollars and import value of 223 million US dollars. Tuna remained as the top export commodity with a collective volume of 103,947 MT for fresh/chilled/frozen, smoked/dried, and canned tuna products valued at US $326.941 million. Canned tuna, though, constitutes bulk of tuna products being exported. In general, tuna export fell by 2% in terms of volume and -13% in terms of value. Major markets for this commodity include USA, Japan and Hongkong. *(Philippine Fisheries Profile, 2009).*

Chilled/frozen fish comprised the bulk of the total import in terms of value. Tuna, mackerel and sardines are the major import fish commodities in 2009 ws . Tuna has the largest import share of 34% with an import value of US $75.8 million. Chilled/frozen tuna were mostly supplied by Papua New Guinea 13 %; Taiwan (ROC) 11%; Japan 4.7%; Singapore, 1.5% and Marshall Island, 1.8%. *(Philippine Fisheries Profile, 2009).*

ANNUAL FISHERIES INFORMATION

A. FLEET STRUCTURE

The fishing sector consists of municipal and commercial components, with the former involving vessels less than 3 GT in size, and under the jurisdiction of the Local Government Units (LGUs). The number of municipal vessels is not well documented in most areas. The larger commercial vessels (> 3GT) are required to fish outside municipal waters, beyond 15km off the shoreline and are required to secure commercial fishing vessel license (CFVL) at the Bureau of Fisheries and Aquatic Resources which is subject to renewal every three (3) years. With the implementation of RA 9379 or the Handline Fishing Law, this gives a separate category for the handline vessels which were formerly considered under the municipal fishing vessels.

The Bureau of Fisheries and Aquatic Resources (BFAR) classification of registered Philippine vessels operating in the Western and Central Pacific Region is shown in Table 1.

Table 1. Classification of Philippine registered vessels in WCPFC.
Source: WCPFC Website, as of 12 April 2011

Type of Vessel	Number of Vessels Registered			
	<250 GT	> 250GT	>500GT	**Total**
Bunker			1	**1**
Fish Carrier	111	51	26	**188**
Fishing Vessel not specified	8	2	1	**11**
Handline	1			**1**
Longline	7	8	9	**24**
Multi-purpose Vessel	8			**8**
Purse Seine	66	36	28	**130**
Support Vessel	242	4	4	**250**
Total	**443**	**101**	**69**	**613**

B. ANNUAL TUNA CATCH IN THE PHILIPPINE EEZ

Since 1987, the official fishery statistics for the Philippines have been compiled by the Bureau of Agricultural Statistics (BAS), based on probability (stratified random sampling by data collectors) and non-probability surveys (interviews by regular BAS staff) surveys, supplemented by secondary data from administrative sources e.g. landings sites and ports (Vallesteros, 2002). Annual Fisheries Statistics for commercial, municipal, inland and aquaculture sectors are published for three year time frames, most recently for 2006-2008 inclusive (BAS, 2009), and include volume and value of production by province and by region, information on fish prices and foreign trade statistics.

Catch breakdown by the 31 main marine species is available[1]. Estimates of annual bigeye and yellowfin catches for the past years have been reported as a combined catch (yellowfin/bigeye tuna) but for 2005 BAS started to separate catches for these two species of tunas (Table 2). However, there is still a need to improve the identification of these two (2) species to accurately reflect the actual catch of yellowfin and bigeye.

The annual tuna catch estimates include all the tuna catch unloaded in Philippine ports regardless where they were caught and does not separate those catches from foreign waters or whether it is caught by foreign-flagged vessel.

Table 2. Total tuna catch, by species, for 2006-2010
Source: BAS Annual Fisheries Statistics; 2010 data are provisional

Year	Commercial			Municipal			TOTAL
	Skipjack	Yellowfin	Bigeye	Skipjack	Yellowfin	Bigeye	
2006	130,930	66,334	15,334	33,396	47,063	14,137	**307,193**
2007	152,098	82,660	17,325	33,766	51,832	16,891	**354,572**
2008	181,563	116,528	17,174	40,447	51,882	17,967	**425,561**
2009	201,262	91,440	3,701	50,262	60,997	2,034	**409,697**
2010	177,698	85,351	8,575	50,481	61,924	3,070	**387,099**

Note: The annual tuna catch estimates for 2006-2010 includes all the tuna catch unloaded in Philippine ports regardless where they were caught and does not separate those catches from foreign waters or caught by foreign-flagged vessel which may account for around 56,300MT for 2010.

BFAR launched the catch documentation scheme which requires purse seine and ringnet operators to submit monthly logsheets report and for the canneries to submit monthly cannery unloading data. BAS is also in the process of implementing the new statistical frames and methodologies in order to address the above issue. All these efforts are geared towards improvement of the country's catch estimates.

The 4th Tuna Fisheries Catch Estimates Review Workshop last May 2011 was conducted to review and validate Philippine catch estimates by species and gear type. Data from different sources, namely, BFAR (NSAP, logsheets, cannery receipts), BAS, PFDA and industry were presented and reviewed. Table 3 provides a breakdown of catch by gear and species according to the process undertaken in the workshop with the current 2010 BAS estimates. After removing the foreign-flagged catch landed in the Philippines from the BAS estimate, there was a difference of around 119,000MT. The difference could be due to the difficulties in estimating the diverse municipal fisheries and could be explained as possible bias in the probability surveys due to very low coverage. The meeting also noted that the BAS estimates by

[1] Around 20% of the municipal catch and 6-8% of the commercial landings are not captured by these 30 species

species reconcile very well with the estimates from the workshop for Region 12. The workshop participants noted that while the industrial fleet estimates are now becoming more reliable, there is still a major problem in determining and validating the estimates of the small-scale municipal fisheries that needs to be resolved in the near future. For more details on the workshop outputs please refer to the workshop report posted in the WCPFC website.

Table 3. Reconciliation of 2010 Tuna Catch Estimates by Gear and Species with the 2010 BAS Total Tuna Catch Estimates (in MT)
Source: Fourth Philippine/WCPFC Annual Tuna Catch Estimates Review Workshop Report, May 2011

GEAR/SPECIES	SKJ	YFT	BET	TOTAL
PURSE SEINE	77,532	14,061	2,166	**93,759**
RINGNET	26,417	5,363	218	**31,997**
HANDLINE	131	11,314	284	**11,729**
HOOK-AND-LINE	25,200	43,400	1,400	**70,000**
OTHERS	2,167	1,500	365	**4,031**
TOTAL	**131,448**	**75,638**	**4,432**	**211,517**

Tuna catch breakdown by gear is not available from the present BAS national statistics publication. However, the WCPFC Tuna Fishery Yearbook has provided an estimated breakdown of catch by gear (Table 4).

No other fishing by foreign flag vessels is permitted in the Philippines EEZ, but a considerable amount of IUU fishing, based on the regularity of apprehensions of vessels illegally fishing in Philippine waters, would seem to occur, much of it involving tuna vessels. A desk study carried out in 1995 (PTRP, 1995) concluded that IUU longline catches of up to 10,000MT (40% yellowfin) may have been taken in some years.

Landings/ transshipments by foreign longline vessels are permitted in Davao (Toril) port, where around 3,500 - 5,500MT of mostly tuna is landed annually (Table 7). Over half is retained for processing and consumption, with the rest transshipped by air. Most of these retained catch do not pass the export quality standards and import permit is not necessary since the DA Secretary has signed a certificate of necessity. It is also assumed that all of this catch is taken outside Philippine waters.

Table 4. Estimated catch of oceanic tuna species, by gear type, for 2005 – 2009 in Western and Central Pacific Oceans (in MT)
Source: WCPFC Tuna Fishery Yearbook 2009

Year/Species	Handline (Small)	Handline (Large)	Longline	Purse Seine	Ringnet	Others	TOTAL
2005							
Skipjack	48,217		2,491	91,372	12,363	836	155,279
Yellowfin	51,295	12,990	3,470	36,280	5,979	1,775	111,789
Bigeye	3,078	670	729	6,719	336	167	11,699
Total	102,590	13,660	6,690	134,371	18,678	2,778	278,767
2006							
Skipjack	53,132		2,745	97,724	13,623	922	168,146
Yellowfin	56,524	14,498	3,824	44,420	6,175	1,956	127,397
Bigeye	3,391	555	804	5,923	823	184	11,680
Total	113,047	15,053	7,373	148,067	20,621	3,062	307,223
2007							
Skipjack	61,327		3,169	128,178	16,629	1,064	210,367
Yellowfin	65,241	16,853	4,414	39,308	6,652	2,257	134,725
Bigeye	3,914	521	927	3,418	713	213	9,706
Total	130,482	17,374	8,510	170,904	23,994	3,534	354,798
2008							
Skipjack	61,327	-	3,330	146,527	17,761	1,110	230,055
Yellowfin	65,241	15,712	5,052	43,787	8,421	7,915	146,128
Bigeye	3,914	637	643	3,762	322	210	9,488
Total	130,482	16,349	9,025	194,076	26,504	9,235	385,671
2009							
Skipjack	23,899	-	-	161,547	29,862	1,355	216,663
Yellowfin	43,172	7,768	484	43,204	7,347	1,327	103,302
Bigeye	2,929	330	59	4,356	291	15	7,980
Total	70,000	8,098	543	209,107	37,500	2,697	327,945

C. ANNUAL CATCHES IN THE CONVENTION AREA

In addition to the estimated catch by Philippine vessels in the EEZ (see above), to this must be added catches by Philippines flag vessels taken outside the EEZ and elsewhere in the Convention area. The extra - EEZ catches are assumed to include those made by purse seine and ring net vessels in adjacent areas and based in overseas ports, and catches by the wide-ranging handline vessels. BFAR has already required fishing vessels such as purse seine and ringnet to adopt the logsheet system to address the above issue.

The fisheries data collection system records all catch landed by Philippine registered vessels including those fish caught outside Philippine waters (e.g. PNG, PIN waters). It is believed that up to 80,000MT of catch are taken outside the Philippine EEZ. This primarily includes catch by small purse seiners and ring netters and landing their catch in Philippine ports.

Purse seine catches in the PNG EEZ

Data on the catch by Philippine flag purse seine vessels fishing in Papua New Guinea PNG waters are available from the SPC Regional Database, and are summarized for the period 2006-2010 below.

Table 5. Catch by Philippine flag purse seine vessels in PNG waters, 2006-2010.
Source: SPC Regional Tuna Fishery Database

Year	No. of Vessels	Catch (in MT)			
		Skipjack	Yellowfin	Bigeye	Total
2006	11	26,025	6,758	1,435	34,218
2007	12	21,562	11,792	864	34,218
2008	14	29,551	19,951	374	49,876
2009	25	37,811	21,823	1,693	61,327
2010	22	46,147	25,728	1,556	73,431

DISPOSAL OF CATCH

Most of the **municipal** tuna catch (115,457MT of oceanic tunas in 2010) is landed as wet fish in thousands of landing sites all over the Philippines. Much of the municipal catch is processed by drying, salting, smoking etc. No data are available on the disposal of the municipal catch after landing, but little of the municipal tuna catch would enter large scale commercial processing, the exception being large handline-caught tuna exported as sashimi and marketed either frozen or smoked, mostly in General Santos City and possibly small amounts of tuna sold as wet fish direct to canneries.

The **commercial** domestic tuna catch of oceanic tunas (271,557 in 2010) is increasingly directed towards processing by domestic canneries, based in the Philippines and elsewhere, with lesser amounts to frozen smoked operations. The estimated 200,000MT annual output of the 7 canneries is mostly supplied by landings from Philippine purse seiners and ring netters, both local vessels and via carriers from overseas operations. Overseas operations also supply canneries in PNG (~50,000MT p.a.); some tuna is imported to supplement cannery supply.

Official figures for **exports of tuna products** for the period 2006-2010 are tabulated below. The first category includes chilled sashimi quality fish, frozen whole fish for canning and presumably frozen smoked tuna. The volume of canned exports is somehow fluctuating.

Table 6. Tuna exports by commodity, 2006 –2010
Source: NSO data, in BAS Fisheries Statistics for 2006 – 2010

Tuna commodity, by volume (MT)	2006	2007	2008	2009	2010
Fresh/chilled/frozen	24,406	26,854	32,365	23,504	33,688
Dried/smoked	42	0.4	17		
Canned	45,611	48,284	76,910	83,604	76,801
TOTAL VALUE (million USD)	136.05	218.55	395.94	346.40	359.38

ONSHORE DEVELOPMENTS

A. HARBOR INFRASTRUCTURE

The General Santos Fish Port Complex (GSFPC), the country's major tuna unloading port, with 143,139 MT total tuna unloadings in 2010, has undergone expansion and improvement. Major components of the said expansion/improvement project includes construction of deep wharves, cold storage and processing area, port handling

equipment, power substation, waste water treatment plant, water supply system and other ancillary facilities. GSFPC port facilities have already met international standards for HACCP GMP-SSOP and accredited by the European Union (EU), Japan and United States. Six other major fish ports in the country are proposed for rehabilitation in the near future. The Navotas Fish Port Complex, in Metro Manila is the second largest tuna landings are recorded with unloadings of around 10,000 MT annually. Rehabilitation project for NFPC includes upgrading of port facilities *(such as roads, electrical and power system, landing quay and west breakwater)*, construction of cold storage and processing plant, and waste water treatment facilities.

B. PROCESSING PLANTS

There are currently 7 tuna canneries in the Philippines, 6 in General Santos and 1 in Zamboanga.

There are two Philippine-owned and operated canneries in Papua New Guinea one in Madang and another one in Lae processing around 50,000MT per year.

Most of the handline catch supply fresh and frozen sashimi grade to the export processors and some to the domestic market. There are more than 15 frozen tuna processors in the Philippines, 80% of which are located in General Santos City and supports about 3,000 jobs. Majority of its production is exported to US and European countries.

STATUS of TUNA FISHERY DATA COLLECTION SYSTEMS

A. LOGSHEETS DATA COLLECTION & VERIFICATION

Since 2008, the Bureau of Fisheries and Aquatic Resources (BFAR) launched the catch documentation scheme which includes the catch and effort logsheet system for the purse seine and ringnet vessels. Aside from this BFAR also requires canneries to submit monthly cannery unloading data. TUFMAN Database and PECAN Database systems are being utilized to process the data collected from logsheets and cannery receipts, respectively. All these efforts are geared towards improving tuna statistics/data gathering.

B. OSERVER PROGRAM and Vessel Monitoring System (VMS)

The BFAR regularly conducts observer training, twice in a year to recruit new observers. There are currently 106 trained observers ready to board the vessels especially to those vessels intending to fish during the FAD closure period (1 July to 30 September 2011). Last 2010 a total of 48 observers have been deployed covering 117 purse seine and ringnet fishing vessels operating in Celebes Sea, Sulu Sea, South China Sea and the Eastern Pacific Seaboard. There was also observer coverage to those vessels fishing in the PNG EEZ, provided by PNG NFA.

The Bureau of Fisheries and Aquatic Resources (BFAR) has operationalized the national VMS but on a limited scale at the moment. The Bureau is continually in close collaboration with the private sector to increase VMS coverage.

C. PORT SAMPLING PROGRAM

The National Stock Assessment Program (NSAP) has continued to collect port sampling data in major tuna landing sites (e.g. species composition, length frequency

and vessel catch and effort information). Increased port sampling coverage was realized through the West Pacific East Asia Oceanic Fisheries Management Project (WPEA-OFMP) which started last year.

D. UNLOADING / TRANSHIPMENT

- **Transshipment** by foreign vessels is permitted in only one port in the Philippines - Davao (Toril), as noted earlier. Table 7 below lists the details of these unloading.

Table 7. Vessel Arrivals and Unloading Volumes by Foreign Vessels, Davao Fish Port
Source: PFDA, 2010

Year	Port Calls	Volume of Unloadings (MT)	Transhipped (MT)	Retained (MT)
2006	974	5,811	2,901	2,910
2007	762	5,928	2,478	3,450
2008	504	3,916	1,552	2,364
2009	420	2,978	1,166	1,812
2010	396	3,514	1,387	2,127

E. OTHERS

There is a Fishery Improvement and MSC-Certification of the Artisanal Hand-Lining Fishery for *Yellowfin Tuna* in the Gulf of Lagonoy and Mindoro Island in the Philippines a project jointly implemented by WWF and Blueyou Consultancy supported by Coop / Bell Seafood (Switzerland) and Seafresh (Netherlands) in Partnership with the German Development Bank DEG aims to realize a better managed fishery rewarded by the Marine Stewardship Council (MSC) within the 4 year period. The long term goal of this initiative is to secure the global market opportunities of artisanal tuna handline fisheries in the Philippines.

RESEARCH ACTIVITIES COVERING TARGET & NON-TARGET SPECIES

The West Pacific East Asia Oceanic Fisheries Management Project (WPEA-OFMP) officially started its activities in January 2010. The objectives of this project is to strengthen national capacities and international cooperation on priority transboundary concerns relating to the conservation and management of highly migratory fish stocks in the West Pacific Ocean and East Asia (Indonesia, Philippines and Vietnam). The project includes the following components: catch monitoring, data enhancement, fishery assessment, policy & institutional strengthening and fishery management.

The Philippine Government through the Bureau of Fisheries and Aquatic Resources and National Fisheries Research and Development Institute (BFAR-NFRDI) in collaboration with the SOCKSARGEN Federation of Fishing and Allied Industries Inc., started to conduct gonadal maturity studies for one (1) year period on major tuna species, namely, yellowfin, bigeye and skipjack. Sampling activities for this project started August 2010 and will end July 2011.

A new Fisheries Administrative Order (FAO) No. 236: Rules and Regulation on the Operation of Purse Seine and Ringnet Vessels using Fish Aggregating Devices (FADs) locally known as Payaos during the FAD Closure Period as Compatible Measure to WCPFC

CMM 2008-01 was issued last May 31, 2010 to reduce fishing mortality of bigeye and yellowfin tuna. In order to improve this compatible measure, all purse seine and ringnet catcher vessels shall have observers on board, who shall gather data and recommend further improvements during the aforementioned period.

There are two (2) on-going tuna related research projects funded by the Department of Science and Technology (DOST-Philippines), namely, *i)* Genetic Stock Structures of Yellowfin (*Thunnus albacares*) and bigeye (*Thunnus obesus*) tunas in the Philippines which aims to produce an accurate reference estimate of landed yellowfin and bigeye tunas in the Philippines using genetic markers; determine the genetic structure of yellowfin and bigeye tunas in the Philippines, in the Coral Triangle Region and in the greater Western and Central Pacific Ocean; and correlate genetic structure of yellowfin tuna from bigeye tuna with other data generated by the program including stock assessment and biological data; and *ii)* Technical Assessment of the Effects of Mesh Size and Net Depth of the Catch Composition and Size Structure of Tunas in the Surrounding Nets which aims to assess the size structure and maturity stages of tuna and small pelagic fish captured by surrounding nets; conduct a hydroacoustics assessment of the temporal change in the biomass and size of aggregated fish around payao; determine depth distribution of aggregated fish during capture with ringnet and evaluate the effect of technical modifications of ringnet on the catch composition. This project is also expected to generate selectivity curves of different tuna species, seasonal dynamics of associated fish in payaos and depth setting of ring net to minimize capture of juvenile tunas.

There is another UNDP-GEF funded project which started last year entitled Sulu Celebes Sea Sustainable Fisheries Management Project. This project aims to improve the condition of fisheries and their habitats in the Sulu-Celebes Sea to a sustainable level through an integrated, collaborative and sustainable tri-national management (Indonesia, Malaysia, Philippines).

REFERENCES

BAS (2009) Fisheries Statistics of the Philippines. 2006-2008. Volume 17. Fisheries Statistics Division, BAS, Dept, of Agriculture, Quezon City, Philippines. 382p.

Barut, N. and E. Garvilles. 2010. Philippine Fishery Report Update. National Fisheries Research and Development Institute, Bureau of Fisheries and Aquatic Resources. 6th Meeting of the WCPFC Scientific Committee (WCPFC-SC6), 10-19 August 2010, Nukualofa, Tonga.

Barut, N. and E. Garvilles. 2009. Philippine Fishery Report Update. National Fisheries Research and Development Institute, Bureau of Fisheries and Aquatic Resources. 5th Meeting of the WCPFC Scientific Committee (WCPFC-SC5), 10-21 August 2009, Port Vila, Vanuatu.

BFAR (2010) Philippine Fisheries Profile, 2009. Fisheries Policy and Economics Division, BFAR, Dept, of Agriculture, Quezon City, Philippines. 70 p.

Itano, D. and P. Williams (2009). Review of bigeye and yellowfin tuna catches landed in Palawan, Philippines. WCPFC. 56pp.

Lewis, A.D. (2004) Review of tuna fisheries and the tuna fishery statistical system in the Philippines. OFP, SPC, Noumea, New Caledonia

PTRP (1995) Distant Water Fishing Nation (DWFN) activity in the Philippines EEZ - a review. Desk study by OFP/SPC for the Philippines Tuna Research Project (PTRP), 55pp.

Vallesteros, C.C. (2002) Data systems for fisheries. Paper presented at the 12th Agricultural Policy Forum ("Agricultural Statistics"), Makati City, January 2002.

WCPFC Tuna Fishery Yearbook 2009. T.A.Lawson (ed.), OFP, SPC, Noumea.

WCPFC. Fourth Philippine/WCPFC Annual Tuna Fisheries Catch Estimates Review Workshop Report. 16-17 May 2011, Quezon City, Philippines.