October 2007

Food and Agriculture Organization of the United Nations | Organisation des Nations Unies pour l'alimentation et l'agriculture | Organización de las Naciones Unidas para la Agricultura y la Alimentación

WESTERN CENTRAL ATLANTIC FISHERY COMMISSION (WECAFC)
Thirteenth Session

WECAFC LESSER ANTILLES FISHERIES COMMITTEE
Tenth Session

Cartagena de Indias, Colombia, 9–12 October 2007

FAO FISHERY STATISTICS PROGRAMME AND WECAFC

SUMMARY

This document describes the major points of the FAO fishery statistics programme run by the Fisheries and Aquaculture Information and Statistics Service (FIES). The relevance of the data compiled into the FAO fishery statistics databases to perform analyses of global and regional trends is underlined. The quality of the FAO statistics depends upon the accuracy and reliability of the data collected nationally and provided to FAO. It has been noted that in recent years reporting of fishery statistics to FAO by countries and territories in the WECAFC region worsened, and if this trend would not be soon modified it may cause an impoverishment of the fishery statistics available for the region. A brief overview of historical and present regional activities for fishery statistical development is also provided.

The FAO fishery statistics programme

1. The FAO Fisheries and Aquaculture Information and Statistics Service (FIES) collates annual global statistics on capture and aquaculture production, production and trade of fishery commodities, fish consumption, fishery fleets, and fishers. These statistics are generally submitted by national correspondents in the appropriate ministry through questionnaires that are also available in electronic format. Data reported by countries are carefully checked and, when the figures are questionable, the national correspondent is consulted for clarifications. The statistics made available by the national authorities can be complemented or replaced if better data from other origins are available (e.g. those compiled by the regional fishery bodies managing tuna resources). If a country does not report its catches, despite several reminders, or those provided are considered as not reliable, FAO estimates the missing data and marks them in the database with an 'F'. Ultimately, the quality of the FAO statistics is dependent upon the accuracy and reliability of the data collected nationally and provided to FAO.

2. The data compiled are stored in databases and disseminated through publications (FAO Yearbooks of Fishery Statistics) and electronic means (FISHSTAT+ and Online query panels) in which the entire data series are available (data since 1950 for the capture and aquaculture databases, since 1976 for the commodities database). Every year, FAO publishes three statistical yearbooks on capture, aquaculture and fishery commodities. In these publications the textual sections and names of species and products are trilingual (English, French and Spanish). In addition, a Fisheries Circular on consumption data is published yearly, although it is updated to the year before that of the yearbooks. The publication of the fleet and fishers yearbooks does not keep a regular calendar.

3. The databases on global and regional (Eastern Central Atlantic, Mediterranean and the Black Sea, Southeast Atlantic, and the Gulf area) capture production, quantities and values of aquaculture production, total fishery production (captures plus aquaculture), and fishery commodities production and trade can be consulted through the FISHSTAT+ software developed by FIES. The software, together with the relevant datasets, can be downloaded from a page[1] of the FAO Fisheries and Aquaculture Department web site. The major statistical databases can also be consulted online directly from another page[2] of the web site.

4. In addition to the collection and handling of data, FAO-FIES is also in charge of other activities in the fishery statistics sector:

- the production of manuals and computer programs on the collection of fishery statistics;
- contribution to the development and improvement of the national statistical systems; and
- establishment and harmonization of concepts, techniques, classifications and standards for the collection, processing and dissemination of the data.

5. Examples of manual and computer programs developed in recent years to facilitate the collection of fishery statistics are: "*Guidelines for the routine collection of capture fishery data*" (1999), FAO Fisheries Technical Paper no. 382, available in English, French and Spanish; "*Sample-based fishery surveys: A technical handbook"* (2002), FAO Fish. Tech. Pap. no. 425; and the software ARTFISH, designed to assist in the implementation of sample-based fishery surveys.

6. FAO is well aware of the major problems encountered by many countries in the collection of fishery statistics, e.g. inadequate resources, lack of skilled personnel to collect and compile statistics, non-sustainability of development efforts. In particular, data collection on small-scale fisheries needs improvements, although it may be a very difficult task in some countries with many and remote landing places. Statistics from industrial fisheries and for valuable species (e.g. tunas) are usually more easily available also thanks to the work of regional bodies (e.g. ICCAT).

7. To address these and other issues related to trends in fisheries, in 2003 the 25th Session of the COFI adopted the "Strategy for Improving Information on Status and Trends of Capture Fisheries (STF)", later endorsed by the United Nations General Assembly (UNGA). Since November 2004, the FAO FishCode Strategy-STF Project is operational to support the implementation of the "Strategy" and undertakes activities to improve collection of information at the national or regional level (see project's activities in the WECAFC region in the section below on "Historical and present regional activities for fishery statistical development").

8. The activities in the field of data collection standardization are developed in cooperation with the Coordinating Working Party on Fishery Statistics (CWP), which includes the participation of the regional organizations that collect and disseminate fishery statistics. FIES provides the secretariat to this body since its creation in 1960 and sessions are convened approximately every two years to discuss subjects like classification of species, fishing gears and vessels, modifications to the fishing areas and to continuously review the general requirements of fishery statistics.

[1] http://www.fao.org/fi/statist/fisoft/fishplus.asp
[2] http://www.fao.org/fi/website/FIRetrieveAction.do?dom=topic&fid=16140

Reporting of fishery statistics to FAO by countries and territories of the WECAFC region

9. In accordance with Article XI of the FAO Constitution, *"...all Member Nations and Associate Members shall also communicate regularly to the Director-General statistical, technical and other information published or otherwise issued by, or readily available to, the government.*" In addition to member countries, also countries that are not members and some territories which are separated by the main body of the country provide statistics to FAO to allow that its compilations of global data are the most complete possible.

10. The plan and deadlines of the FAO yearly inquiry on global fishery statistics are as follows:

- End of April: dispatch of paper and electronic (if e-mail address available) questionnaires[3].
- 31st August: deadline to return data to FAO.
- Reminders and contacts with countries which have not submitted their data (in collaboration with FAO Representatives and Regional Offices).
- Beginning of March: updated global capture and aquaculture databases are made available on the web.
- Summer: publication of the FAO Yearbooks of Fishery Statistics.

11. The number of countries in the WECAFC region submitting annual capture fishery statistics to FAO, the quantities and percentages of capture statistics that had to be estimated by FAO, and their degree of breakdown by species can be considered as coarse indicators of the status of catch statistics data collection in the region. All these indicators have been showing a general decrease in the last year (2005) for which catch statistics are available.

12. The recent trend of submissions to FAO of capture data by countries and territories in the WECAFC region[4] is shown in Table 1. On average, 22 percent of countries and territories did not report data in the years considered. Although both the number of countries reporting within the deadline and in an electronic format had showed a positive trend in the previous years, in 2005 these numbers decreased as well as the overall number of countries reporting data.

Table 1. Number of recent submissions of capture statistics by countries and territories in the WECAFC region

	2000		**2003**	**2004**	**2005**
No. countries and territories submitting data	32		28	33	29
No. countries and territories not submitting data	7		11	6	10
No. countries and territories submitting data within the deadline	4		7	8	7
No. countries and territories submitting data in an electronic format (either FAO e-questionnaire or national format)	23		26	30	29

13. Worsening of the situation is more evident if we look at the percentages of capture statistics estimated by FAO (marked by an 'F' in the yearbook and database). Great increase of estimated catches in 2004 and 2005 is due to no reporting by a major South American fishing country for both years and by additional no reporting by minor fishing countries in 2005 (Table 2). Also the percentage of catches reported at the species level decreased in 2005 as well as other indicators of species breakdown in catch statistics (see Table 3).

[3]Electronic questionnaires for each country can be also downloaded at ftp://ftp.fao.org/fi/STAT/e-questionnaires/

[4]Data considered include all countries and territories geographically in the WECAFC region, all catches by Brazil in fishing area "41-Southwest Atlantic", and also catches by other countries of the WECAFC region in area 41.

Table 2. Quantities and percentages of capture statistics estimated by FAO ('F')

	2000		2003	2004	2005
Catches not estimated	2,235,718		2,209,942	1,770,473	1,583,419
Catches estimated by FAO ('F')	38,753		27,696	376,368	405,019
Total catches	2,274,471		2,237,638	2,146,841	1,988,438
Catches not estimated	98.3%		98.8%	82.5%	79.6%
Catches estimated by FAO ('F')	1.7%		1.2%	17.5%	20.4%

Table 3. Level of species breakdown in reported catch statistics in recent years

Level of identification	2000		2003	2004	2005
Catches at species level	66.4%		64.9%	64.1%	61.8%
Catches at higher taxonomic levels	23.4%		24.6%	24.9%	27.0%
Catches as 'Marine fishes not identified'	10.2%		10.5%	11.0%	11.2%
Number of species items with catches in the database	224		206	221	213
Number of records (species item/country/area) with catches in the database	772		756	767	749

14. A correct identification of the landed species is the first step for the collection of sound catch statistics. The species identification is often a difficult task due to multispecies catches in tropical waters, the complexity of the taxonomy and lack of simplified species list at the national level, and lack of trained field enumerators. FAO provides two tools to facilitate the correct identification of the landed species and their reporting to national, regional and international institutions:

- the publications of the FAO Species Identification and Data Programme (SIDP)
- the "ASFIS List of Species for Fishery Statistics Purposes"

15. For the WECAFC region, in 2002 the SIDP produced a revised version of "*The living marine resources of the Western Central Atlantic*" in three volumes. This publication, as well as other field guides and species catalogues, can be downloaded from the SIDP web page[5].

16. The ASFIS list[6] is a species classification system to facilitate the submission of fishery statistics by national correspondents and the exchange of data between fishery organizations. In its last update (March 2007), the ASFIS list includes 10,685 species items. A total of 1,728 of these species items have statistics in either the capture and/or aquaculture databases. Each species item stored in a record has an ISSCAAP code, a taxonomic code, a 3-alpha code, a scientific name, taxonomic classification at family and at a higher taxonomic level. About 77% of the records have an English name, 40% a French name and 35% a Spanish name.

17. Another issue of particular relevance for the submission of fishery statistics in the WECAFC region is that of conversion factors. In fact, in this region several important commercial species (e.g. shrimps, spiny lobsters, conch, and sharks) are often recorded as processed volume and hence a conversion factor is required to establish the live weight equivalents (nominal catches) at the time of their capture. However, in the capture statistics submitted to FAO it is rarely mentioned if a conversion factor has been already applied or not, causing uncertainty and biases in trend analyses at the regional level in particular for important and overexploited species such as the Queen conch (*Strombus gigas*). The importance of the conversion factor issue was recognized at the FAO FishCode STF-OSPESCA[7] "Regional Workshop on the Improvement of Fishery Data and Information Collection Systems", held from 23 to 26 January 2006 in San Salvador, El Salvador. It was pointed out that

[5] http://www.fao.org/fi/website/FIRetrieveAction.do?dom=org&xml=sidp.xml
[6] http://www.fao.org/fi/statist/fisoft/asfis/asfis.asp
[7] Organización del Sector Pesquero y Acuícola del Istmo Centroamericano

precise conversion factors should be derived from sampling studies. As a follow-up to the Workshop, the FAO FishCode STF Project promoted a regional activity for the development of harmonized conversion factors for Queen conch product types (see further details in the "Historical and present regional activities for fishery statistical development" section).

Information that can be derived from the FAO fishery databases

18. The FAO is the only source of comprehensive global fishery statistics and most reviews of the state of world fisheries, past trends and future prospects rely on FAO statistics. FAO analyses these statistics in order to monitor many aspects of world fisheries and, on the basis of these analyses, FAO prepares advice on fisheries policy to member countries. There is a wide range of other users of FAO fishery statistics, including fisheries policy makers, managers, researchers, development agencies, industry representatives, trade organisations, governments, intergovernmental organisations, non-governmental organisations, journalists and consulting companies.

19. Status and trends analyses based on FAO fishery statistics are published every two years in issues of "*The State of World Fisheries and Aquaculture*[8]*"*. In addition, FAO-FIES promotes the use of the FAO fishery statistics that compiles to study various aspects of global fishery trends. In 1996 it published the FAO Fisheries Technical Paper "*Chronicles of marine fishery landings (1950-1994): trend analysis and fisheries potential*" (Grainger & Garcia, 1996), which included several analyses of trends based on the revised and extended backwards time series of global capture database. One of the analyses demonstrated that the majority of the world's major marine resources had passed through undeveloped, developing, mature and senescent phases and that in several fishing areas the maximum level of production had already been reached years ago. The same methodology was later applied to study the fishery development phases in a national context in a WECAFC country (Baisre, 2000[9]) and at the regional level (Garibaldi & Grainger, 2004[10]).

20. The compilation of the national fishery statistics into the FAO databases offers the possibility of analysing regional trends. Major trends of fish production and trade have been analysed in the document WECAFC/XIII/07/03 "*Status and trends of fisheries and aquaculture in WECAFC region*". The following figures include a few additional charts to show other examples of information that can be extracted from the FAO fishery statistics databases.

21. Figure 1 illustrates trends of marine capture and aquaculture production in the WECAFC region from 1970 to 2005. In recent years, total marine aquaculture production increased to about 250,000 and 270,000 tonnes in 2003 and 2004 respectively but decreased below 200,000 in 2005, a trend mostly affected by variations in Brazil and United States production. Marine capture production reached a historical maximum in 1984 and, in recent years, it has been decreasing from 2,285,000 tonnes in 2002 to 1,998,000 in 2005, an average percentage rate of -4.5 percent per year. Comparison between Figures 1 and 2 shows that major fluctuations for the whole WECAFC region total catches mainly coincide with those in the United States trend, mostly due to ups and downs in Gulf menhaden (*Brevoortia patronus*) catches. Trend of catches by WECAFC's South American countries and territories also shows various fluctuations with a peak in the mid 1980s but, contrary to those of the United States, catches remained stable in the last four years. Since 1980, total catches by Caribbean Islands and Central American countries had minor variations, fluctuating around an average of 150,000 and 300,000 tonnes respectively (Figure 2). Finally, Figure 3 shows the share of major species groups of 2002–2005 total catches in the WECAFC region. Over one-third of catches come from small pelagic clupeoid species and, by grouping even further the species categories in Figure 3, it can be

[8]SOFIA 2006 is available at http://www.fao.org/sof/sofia/index_en.htm

[9]Baisre, J.A. 2000. *Chronicles of Cuban marine fisheries (1935-1995): trend analysis and fisheries potential*. FAO Fisheries Technical Paper, no. 394. Rome, FAO. 26 p.

[10]Garibaldi, L. and R. Grainger, 2004. *Chronicles of catches from marine fisheries in the Eastern Central Atlantic for 1950-2000. In*: Chavance, P., M. Bâ, D. Gascuel, J.M. Vakily & D. Pauly (eds.), Pêcheries maritimes, écosystèmes & sociétés en Afrique de l'Ouest: Un demi-siècle de changement. Actes du symposium international, Dakar (Sénégal), 24-28 juin 2002. 99-112 p. Coll. Rapports de recherche halieutique ACP-UE. Office des publications officielles des Communautés européennes, Bruxelles.

noted that shares of coastal fishes and other species together amount to almost the same quantity, whereas valuable resources such tunas, crustaceans, and molluscs made up the remaining third.

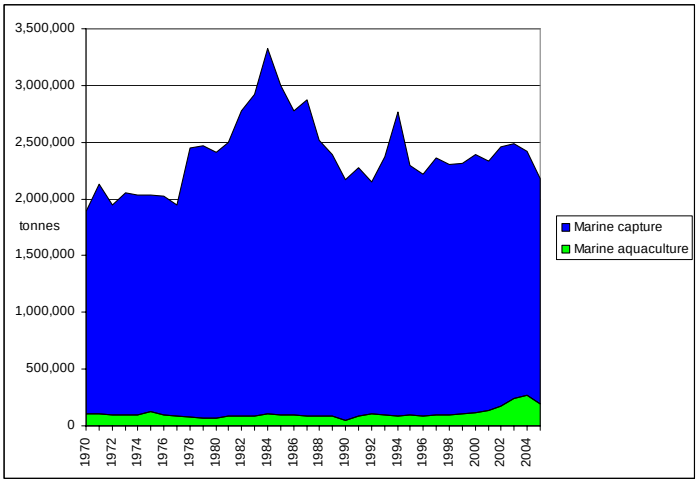

Figure 1. Capture and aquaculture production in the WECAFC region (1970-2005)

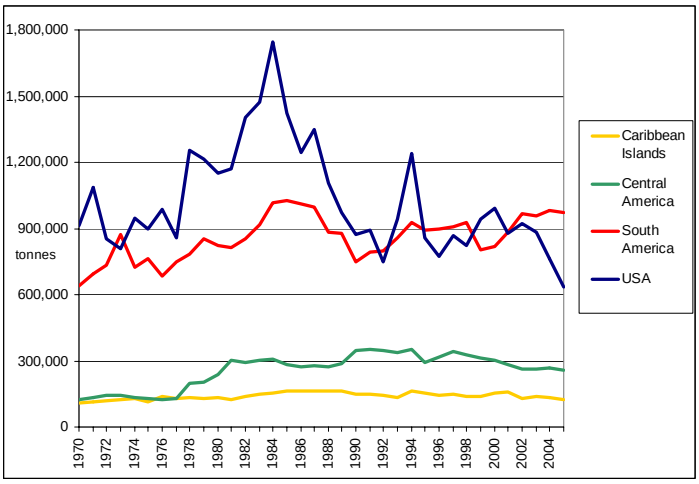

Figure 2. Trend of capture production by groups of countries

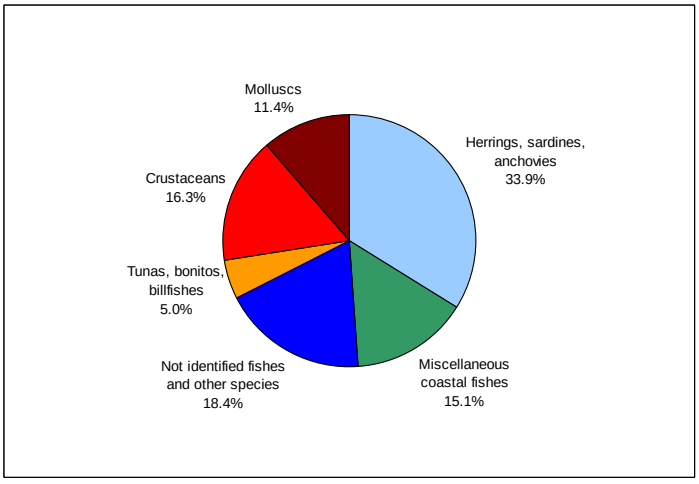

Figure 3. Shares of major species groups of 2002-2005 total catches

Historical and present regional activities for fishery statistical development

22. At the establishment of WECAFC in November 1973, high consideration was given to the statistical issue as the first item in the list of the Commission's terms of reference: *"a) to promote and assist in the collection of national statistics and biological data relating to fisheries in general and the shrimp fisheries in particular; and to provide for the compilation and dissemination of these data on a regional basis."*

23. The Commission established a Working Party on Fishery Statistics and it held four sessions between 1978 and 1986. At the Sixth WECAFC Session (Mexico, D.F., Mexico, 27–31 July 1987), the Commission decided to set up a new Working Party on Fishery Planning and Economics and abolished the Working Party on Fishery Statistics, with the understanding that the statistical inputs required for the new Working Party and for the Working Party on Assessment of Marine Fishery Resources would be provided directly by the Secretariat.

24. In March 2003, FAO and the CARICOM Fisheries Unit (CFU) jointly organized a workshop on "Fisheries Statistics and Data Management" in order to provide fishery data managers with training to improve their collecting, processing, storage and reporting capabilities of information on the status and trends of their marine capture fisheries. The participants received step-by-step guidance on the methodological and operational concepts contained in the FAO Fisheries Technical Paper No. 425, *Sample-based fishery surveys: A technical handbook* (2002).

25. Presently, FAO activities for fishery statistical development in the WECAFC region are implemented through the FAO FishCode Strategy-STF Project. In January 2006, it organized in collaboration with OSPESCA a "Regional Workshop on the Improvement of Fishery Data and Information Collection Systems" (San Salvador, El Salvador), which was attended by 10 Central American and Caribbean countries. The Workshop examined the situation of fishery statistics data collection in the participating countries and provided separate recommendations on what should be done to improve data collection for industrial and artisanal fisheries[11]. Follow-up to the Workshop were two activities run by the STF Project in collaboration with OSPESCA: a) Increasing the profile of artisanal fisheries in the national policies of Nicaragua; and b) Improvement of information on status and trends of Queen conch (*Strombus gigas*) capture fishery in the Central American and Caribbean region. The project in Nicaragua aims at improving the information on the role of artisanal fisheries in food security and poverty alleviation and to mainstream artisanal fisheries into national policies related to development, food security and poverty reduction.

26. Data series for Queen conch catches need to be revised as reported data referred to different kinds of product. A first step on this revision of national data is to obtain reliable and standardized conversion factors to raise product weights to live weight equivalents. In the framework of the Queen conch project, a Workshop attended by five Central American countries and the Dominican Republic was organized in February 2007 in Panama City, Panama. The Workshop provided a good overview of the Queen conch fishery in the participating countries. A preliminary conversion factor to calculate the weight of the animal without the shell from the cleaned fillet was derived from data made available by the national experts. It was decided to carry out field surveys in two countries in order to establish the conversion factors still missing. The field survey work has already produced valuable results in one of the countries involved. It is believed that once the field work will be completed, the conversion factors for different processing grades of Queen conch obtained for Central American countries may be compared with those applied in other WECAFC regions, aiming at the establishment of common conversion factors throughout the whole region.

[11]The Workshop report including also a volume on national reports is available at ftp://ftp.fao.org/FI/DOCUMENT/fishcode/stf/Workshop_23-1-06/ReportOSPESCA_FAO_es.pdf

Suggested action by the Commission

27. The Commission is invited to comment upon the apparently worsening situation regarding the collection and reporting of fishery statistics in some countries of the region, despite the adoption of the Strategy-STF in 2003. The Fisheries Department of FAO is interested to establish whether this is due to a deterioration of the national data collection schemes, financial limitations, change of the national institution in charge of fishery statistics, scarce recognition of the importance of fishery statistics as support to sustainable management of fisheries, or if lack of reporting to FAO is simply due to problems in communication and how this can be improved.

28. Delegates are also invited to convey their opinion on the major issues in the field of fishery statistics at the regional level (e.g. conversion factors) on which FAO and WECAFC may consider taking initiatives.