Received: 13 November 2013
IOTC-2013-SC16-NR26

Indian Ocean Tuna Commission
Commission des Thons de l'Ocean Indien
iotc ctoi

NATIONAL REPORTS TO THE IOTC SCIENTIFIC COMMITTEE IN 2013

Sudan National Report to the Scientific Committee of the Indian Ocean Tuna Commission, 2013

Authors
Dr. Abdalla Nassir Elawad Abdalla

Director of Red Sea Fisheries Research Station- Port Sudan- Sudan

INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

In accordance with IOTC Resolution 10/02, final scientific data for the previous year was provided to the Secretariat by 30 June of the current year, **for all fleets other than longline** [e.g. for a National report submitted to the Secretariat in 2013 final data for the 2012 calendar year must be provided to the Secretariat by 30 June 2013)	NO 07/11/2013
In accordance with IOTC Resolution 10/02, provisional **longline data** for the previous year was provided to the Secretariat by 30 June of the current year [e.g. for a National report submitted to the Secretariat in 2013, preliminary data for the 2012 calendar year was provided to the Secretariat by 30 June 2013). **REMINDER:** Final longline data for the previous year is due to the Secretariat by 30 Dec of the current year [e.g. for a National report submitted to the Secretariat in 2013, final data for the 2012 calendar year must be provided to the Secretariat by 30 December 2013).	No
So, the reason behind that for the all the fleets and longline no regular data had been taken, the statistical data taken daily from the fish market in PortSudan, the weight of whole fish come from landing sites were measure without details in species wise. Also all fishing activates were artisanal fishery (small scale industry), no fishing activity in high sea by national fleets or foreign one.	

Executive Summary

The total annual fin fish production in Sudan is around 140000 tons from fresh water and 8000 tons from marine water (fully future operating estimate), marine resources divided into artisanal fishery (about 3000 tonnes), trawling (about 2000 tonnes), per sine fishery (about 2300 tonnes), shrimp from trawling (about 60 tonnes), shrimp from culture (about 6 tonnes), trochaus (about 724 tonnes), mother of pearl shell (about 12 tonnes) and sea cucumber (about 60 tonnes) Vine *et al*., (1980). Tuna fishes Not target to fish in Sudanese Red Sea coast, these retaining to limiting in fishing location and gear use by local fishers, most catch taken by hooks and line, seasonally foreign fleets come from Egypt under economic protocol, sign by Sudanese government and Egypt, use to fish in Sudanese trawling area (Southern area), also pure sine use by Egyptian vessels. But since 2010 this fishing activates was a stop. Since 2010 the only fishing activates running by local fishers with small fibber glass boat and wooding, no regular a statistical data had been taken for fish species or gear types. Only statistical data records taken from the fish market in Port Sudan, all tuna fishes record under name of mackerel fishes. Shark and other marine fish product were recorded also from the fish's local market. No statistical and regular data taken for marine mammal and sea bird.

Table of contents:

1. BACKGROUND/GENERAL FISHERY INFORMATION:

Sudan fishery in general depending on traditional fishery (Khalid, *etal* 2008), subjected to use the traditional gear in fishing activates in whole the coast (Reed, 1994). Fishers usually used to fish in limiting areas near their villages that set along the coast, they used a hooks and line for the coral reefs fishes and also they used a gills net, pure sine net for bottom fishes Mishrigi *et al.,* (1993). Mainly their fishing concentrating on coral area especially in the north area where coral reefs and inland distributed there near the coast, in south area they usually used the gill nets for bottom fishes and migration fishes (Fisheries Administration, 2012). Boats and fleets used here are small boats, lengths range between 7 meter to 8 meter for woods boat and fibber glass boats, for bigger one lunches their length range between 9 meter to 13 meter, this usually fish in south area for Trochaus and strombus fisheries. In 2012 the fishing activity can be summarize below, mainly activities in 2012 concentrated in traditional fishing activity, also Ornamental fishing activity appear, 6 companies starting since 2011 to fish Ornamental fish from the Sudanese coast.

Table (1) summarize the fishing activity in 2012.

Fish catch (tons)	No.of boat	No. Of lunches	No. Of fishers	Trochaus (ton)	Sea cucumber (ton)	No. Ornamental fish (live)
493	**326**	**37**	**844**	**165**	**5**	**11287**

2. FLEET STRUCTURE.

National fleets as I describe above are divided into two types, one are small wooding boats and fibber glass boats length range between 7 meter to 8 meter and width range between 1.5 meter to two meter. This as I describe above they used to fish in area of corals reefs using hooks and line, hooks used usually size 4 to 20 and some time they used gill nets length up to 100 meter and mesh size 3 to 5 inch . In 2012 about 400 fishing boats used to fish in the coast, duration of fishing trips range between one day to seven days for the long one, while for the lunches it could be take 21 days. Only fleets operating in the IOTC area of competence in Sudan by Egyptian vessels under protocol agreement between Sudan government and Egypt, they used to fish in limit area ranged between longitude 37^{o}- 42' to 38^{o} – 25' and latitude range between 18^{o} -52' to 18^{o} -1' Elawad (2009).

Table 2: Number of vessels operating in Sudanese Red Sea coast, by gear types and vessels size.

Year	No. Of vessels	Gear type	Size m	Area of fishing
2005	20	Trawling	20-25	South
2008	16	Trawling	22-25	South
2009	15	Trawling	23-30	South
2002	8	Pure seine	22-30	South
2003	12	Pure seine	20-30	South
2004	14	Pure seine	20-27	South
2005	16	Pure seine	25-30	South
2009	8	Pure seine	*26-30*	South

Notes: now since 2010 the trawlers vessel from Egypt stopped working in the area of Sudan coast, for that the available data in till 2009. We mean by south the southern area of Sudan coast.

3. CATCH AND EFFORT (BY SPECIES AND GEAR).

Now all fishing activates in Sudanese Red Sea coast area done by traditional gear and small boats, running project a starting in 2012 with Norwegian institute of oceanography to assess and evaluating the marine living resources around the Sudanese coast, this project now do two phases of survey, they use a trap and gill nets for fishing. The project will continue to five years.

Table 3a. Showing the number of tuna species during the Norwegian survey period using gill net (2012).

Catch Species number	No. Trip	No. of specimen	Area name	Position
Lethrinus sp. (5) *Sphyraena qenie* (3)	1	8	Tala tala	18-55 38-08
S. commerson. (15) *T. albacares* (20)	2	35	Trinktat	18-55 37-41
Carangoides sp (12) +*Lethrinus sp*. (10)	3	22	Ashat	18-53 37-32
T. albacores	4	14	Agrap	18-29 38-29
Lasyan laysan (10)+ *T. albacores* (23)	5	33	Tawil area	37-35 23-16
S. commerson (25) +*T. albacores* (9)	6	34	Arkiyea	19-08 37-36
Gerres oyena (7) + *lethrinus sp* (10)	7	17	Doungnab bay	20-58 37-09

Table 3b. catch and effort for indusial fishery and tuna (bigeye and small eye Tuna) from Sudanese Red Sea coast 2013.

Year	No. of vessels	Industrial catch (tons) (Trawl +purse seine)	Tuna catch (tons)	Catch/vessel (for total industrial catch)	Catch/no.vessels (tuna catch ton/vessel)
2002	10	3594	160	359.4	16
2003	13	2237	100	172.07	7.6
2004	31	3758	170	121.22	5.4

2005	11	3666	155	333.27	14.09
2006	0.0	0.0	0.0	0.0	0.0
2007	0.0	0.0	0.0	0.0	0.0
2008	13	570	50	43.8	3.8
2009	12	800	60	66.6	5
2010	0.0	0.0	0.0	0.0	0.0
2011	0.0	0.0	0.0	0.0	0.0
2012	0.0	0.0	0.0	0.0	0.0
Mean	**15**	**2437.5**	**115.8**	**182.72**	**8.6**
%			**4.7**		

Table 3c. Show the catch and catch per unit effort for traditional and mackerel catch (*Scomberomous commerson* and *Gymnosarda unicolor*) in Sudanese Red Sea coast 2013.

Year	Number of boats(effort)	Coral reef fishes (ton)	Mackerel fishes (ton)	Catch/effort (coral reefs)	Catch/effort (mackerel)
2002	1000	4510	135.5	4.51	0.14
2003	600	4620	138.6	7.7	0.231
2004	700	4660	139.8	6.7	0.199
2005	650	5660	169.8	8.7	0.26
2006	750	6340	190.2	8.5	0.253
2007	800	3979	119.4	4.9	0.149
2008	900	3904	117.2	4.3	0.13
2009	775	3936	118	5.08	0.152
2010	950	3888	116.6	4.09	0.123
2011	1000	3800	75	3.8	0.075
2012	1100	3600	80.5	3.27	0.07
Optimum	832	4889	139.6	6.16	0.21
%			2.8		

4. RECREATIONAL FISHERY [Mandatory]

No of recreational fishing activities in the Convention Area.

5. ECOSYSTEM AND BYCATCH ISSUES.

In till now the Sudanese red Sea coast was virgin (UNIDO, 2009)., not facing a heavy fishing activities and the fishing area which about 9800 km 2 is still not fully exploited, but excepted risk facing this fishery will coming from petrol terminal, which now oil spill from tanker destroyed and polluting the rearing fish

grounds. Various studies were conducted on marine fisheries of Sudan; that aim to promote fisheries activities. Currently under the supporting and financial from Norway government, mapping of the living marine resources in the Sudanese Red Sea coast will be done. For by catch issue, it is recognized that the high percentage from the trawling fishery represented by discard or by-catch fishes which reach 63% 0f total catch in 2005 from Egyptian trawlers. Action done to reduced the by catch is that in local law made in 2007 to fixed the shot time from 2 hours to one hour, and determined the total couta by season for any trawlers and reducing the number of operating trawler from 25 t0 16 per year.

5.1 Sharks.

The absent of well a statistic records made the evaluation quantity under real estimate. So require needs to evaluate the stock assessment of shark's fishery in Sudan. This made the situation more difficult to know how the sharks fishery going. El hassan (2002) mentioned that there are twenty three species of shark representing seven families and three species of batoids representing three families. Most of the sharks were Carcharhinus and Sphyrna. Recently some efforts have been made to conserve and manage sharks fishery. The important one is that in 2008s the government of the Red Sea State had been setup the renew marine resources law, this law facilitate the proper way to manage the endangers species including sharks fishery, which had been banning to fished by local fishermen, and also the gears and equipment sustain in sharks fishing been restricted. Also this law contains in their paragraphs more efficient punishment for whom practicing illegal shark fishing. All these precautionary management had been made to conserve the shark's species.

Table 4: Total number and weight of sharks, in Sudanese Red Sea coast.

Year	Fish production (tons)	Shark production (tons)	Percentage
2001	369	11	2.9%
2003	371	25	6.7
2008	387952	16337	4.2%
2009	579199	23404	4%
2010	476	14	2.9%
2011	536801	1257	3.3
2012	**436**	**26.1**	**5.9**

Table 4: Total number of sharks, by species, released/discarded by the national fleet in the IOTC area of competence (for the most recent five years at a minimum, e.g. 2008–2012). No data.

5.2 Seabirds

Five species of sea birds is recognized around the Sudanese Red Sea coast (Elsheikh, 2007). These were: white –cheeked Terns *Sterna repress*, the Greater Crested Terns *Sterna bergii*, the Bridled Terns *Sterna anaethetus fukgula*, the Brown Noddy *Anous stolidus* and the Lesser Crested Tern *Sterna bengalensis* . seabirds in Sudan not facing any kinds of fishing as by catch or targeted.

5.3 Marine Turtles

From data records and studies it is recognized that in Sudanese Red Sea coast there are 7 species from marine turtles, distributed from the southern area to the north area PERSGA (2001). , these concentrated in Dongnab bay and Magrsam inland (north area), for species mentions, these are: *Dermochelys coriacea*, *Caretta caretta*, *Eretmochelys imbricate and Chelonia mydas*,

5.4Other ecologically related species (e.g. marine mammals, whale sharks) no data.

Table 5. Observed annual catches of species of special interest by species. **No data.**

6. NATIONAL DATA COLLECTION AND PROCESSING SYSTEMS.

6.1. Logsheet data collection and verification (including date commenced and status of implementation)
For the trawler vessels and local boats log sheets data collection was design to fit by observers, these include type of gears fishing, area, position, catch amount and depth.

6.2. Vessel Monitoring System (including date commenced and status of implementation)
Vessel monitoring system is ready, but not implementing, no vessel operating now in the Sudan areas.

6.3. Observer programme (including date commenced and status; number of observer, include percentage coverage by gear type) **now no observer programme implemented.**

Table 6. Annual observer coverage by operation, e.g. longline hooks, purse seine sets (for the most recent five years at a minimum, e.g. 2008–2012 or to the extent available).**[no data**

Figure 4. Map showing the spatial distribution of observer coverage. **No data.**

6.4. Port sampling programme [including date commenced and status of implementation] **no data.**

Table 7. Number of individuals measured, by species and gear] **no data.**

6.4. Unloading/Transhipment [including date commenced and status of implementation]**no data.**

7. NATIONAL RESEARCH PROGRAMS:

Several plans and studies have been done in the Sudanese Red Sea coast to promote fishing activities and fisheries sectors, some of these done by government institutes, international organization and some by individual researchers. In 2010 the Fisheries Administration has re-established the fishers cooperatives societies, about 20 cooperatives fishing societies covering all the coast community. Through these societies provision of fishing materials and camps for better fishing The European Commission (2009), supported fisheries sectors around the Sudanese Red Sea Coast by technical assistance in establishing fishery forum to manage the marine resources. UNIDO (2010) is starting to create micro business support services in the new larger centers fishing sites, that now are build in Souakin, Mohemmed Qual and Oseff. In 2007 local regulation has been setup to organize trawling fishing, ceiling maximum catch for operation trawl vessels (1500 tons annually) and for per seine vessels 1500 to 2000 tons of sardine fishes. In addition, the production of shell fish and sea cucumber, roughly estimate the total production to be around 5000 tons to 6000 tons. In 2008 a local marine law had been setup, updated from the 1956 law. This law organizes marketing system and handling fishes in the State, prohibiting illegal fishing and listing the endangered marine fishes. Many studies and reports have been done around the coast to identify the commercial marine resources, these are: comprehensive studies from 1998 to now on the biology and ecology of marine fishes conducted by the researchers of the Red Sea Fisheries Research Station, and guides of commercial Sudanese marine fishes were prepared and ready for publication. Various studies were conducted on marine fisheries of Sudan; that aim to promote fisheries activities. Currently under the supporting and financial from Norway government, mapping of the living marine resources in the Sudanese Red Sea coast will be done, during November 2012 and June 2013. This will be guiding to decision maker to able them to mange and prober use of marine resources. Generally we can say that the effort of institutes government

and, organization support the fisheries activities and rising awareness among fishes community in the whole coast.

Table 8. Summary table of national research programs.

Project title	period	Counties involved	Budget total	Funding source	objectives	Short description
Biological study on commercial fishes	2010-2015	Sudan	150000 Sudanese pound	S	Basic data on commercial fishes	Study the food habits, ageing, spawning season and distribution.
Mapping of the living marine resources	2012-2016	Norway and Canada	1000000 $	Aid	Collecting data on ecology and biology.	Made fishing samples by traps, gill nets and hooks.

8. IMPLEMENTATION OF SCIENTIFIC COMMITTEE RECOMMENDATIONS AND RESOLUTIONS OF THE IOTC RELEVANT TO THE SC. [Mandatory]

Table 9. Respond with progress made to recommendations of the SC and specific Resolutions relevant to the work of the Scientific Committee [to be updated annually to include most recent Conservation and Management Measures adopted by the Commission].

Res. No.	Resolution	Scientific requirement	CPC progress
05/05	Concerning the conservation of sharks caught in association with fisheries managed by IOTC	Paragraphs 1–12	
10/02	Mandatory statistical requirements for IOTC members and cooperating non contracting parties	Paragraphs 1–7	
10/06	On reducing the incidental bycatch of seabirds in longline fisheries. **Reminder**: Resolution 12/06 will supersede Resolution 10/06 on 1 July 2014	Paragraphs 3–7	
11/04	On a regional observer scheme	Paragraph 9	
13/03	On the recording of catch and effort by fishing vessels in the IOTC area of competence	Paragraphs 1–11	
12/04	On the conservation of marine turtles	Paragraphs 3, 4, 6–10	
12/09	On the conservation of thresher sharks (family alopiidae) caught in association with fisheries in the IOTC area of competence	Paragraphs 4–8	

9. LITERATURE CITED [Mandatory]

Abu Gideiri, Y. B. (1997). The state of marine environment in the Red Sea and Gulf of Aden. Report to BERSGA.

Branford, J. R. (1980). Penaeid shrimps in the Tokar Delta Region of the Red Sea in "proceedings of symposium on the coastal and marine environment of the Red Sea, Gulf of Aden and tropical western Indian Ocean. Volume 2. University of Khartoum, Sudan.

Elawad, A. N. (2009). Some characteristics of trawling fishery in Sudanese Red Sea Coast. Ph.D. thesis. Sudan Academy of Sciences. Khartoum. Sudan.

Elnaiem, G. A. and Elawad, A. N. (2008). Sudan Marine Fish production and Export. " The Proceedings of the First Scientific Conference. Ministry of sciences and technology. Pp. 150-153, friendship hall. Khartoum. Sudan.

Fisheries Administration (2011). Report of the Marine Fisheries Administration, Ministry of Animal Resources, PortSudan, Sudan.

Khalid, A. Farah, O. M. and Ali, S. M. (2008). Aquatic Resources of Sudan Possibility of their Utilization. Animal Resources Research Corporation, the Proceedings of the First Scientific Conference. Friendship Hall. P p. 141-148. Khartoum. Sudan.

Mishrigi, Y. S. Ali, M. S. Abdalla, A. A. (1993). Identification study for Sudan Red Sea fisheries. Ministry of Economic Planning and Investment project. Report. Sudan.

PERSGA (2001). Reports Country, Red Sea and Gulf of Aden, Jeddah, Saudi Arabia, pp. 205.Jedda. KSA.

Reed, W. (1964). Red Sea Fisheries of Sudan. Sudan. Pp. 116.

UNIDO project (2009). Recovery of Coastal Livelihoods in the Red Sea State of Sudan through the Modernization of Artisanal Fisheries and the Creation of New Market Opportunities, Market Assessment and Recommendations. portSudan. Sudan.