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REGIONAL COMMISSION FOR FISHERIES (RECOFI)

Seventh Session
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Review of capture fishery statistics in the RECOFI region: trends and patterns

Executive Summary

This document updates information on catch trends as extracted from the RECOFI capture production database. Total catch in 2011 was the second ever, very close to the 2006 maximum. Differences in catch composition and trends between the two RECOFI statistical divisions are briefly discussed.

Most RECOFI Member Countries submit the annual catch data in a timely manner and with an acceptable species breakdown. However, further improvements could come from collaboration with the GCC database, greater focus on the priority species identified by the WGFM, and refinement of sampling schemes.

Catch trend of priority species was briefly described with consideration on the need of management actions.

GENERAL INFORMATION

1.   The RECOFI capture production database was established at the request of the Commission and it is managed on its behalf by the FAO Fisheries and Aquaculture Statistics and Information Service (FIPS). Its first issue was made available in August 2005 and the ninth annual issue has been released in March 2013, including data for a 26-year period (1986-2011). The RECOFI database can be downloaded and accessed through the new FishStatJ[1] software (also available on CD-ROM[2]), the old FishStat Plus[3] software (not working on latest versions of operating systems), or through the online query panel[4].

2.   The great majority of the eight RECOFI Members submit the *National Summary (NS1)* and/or the *STATLANT 51A (FAO-RECOFI)* questionnaires in a complete and timely manner, although there is still no or late reporting by a few countries. In these cases, FAO estimates missing data which are marked by an „F".

3.   Other sources are sometimes used to complement the national official data if they provide more reliable or detailed information. Usually, this mostly applies to tuna catches compiled by the Indian Ocean Tuna Commission (IOTC) but in March 2012 information extracted from the Gulf Cooperation Countries (GCC) landings database was also made available to FAO-FIPS.

4.   Data included in the GCC database allowed to revise catch statistics for some years in which Kuwait and the United Arab Emirates (UAE) had not submitted information to FAO and also to improve species breakdown. It would be very profitable if FAO-RECOFI and GCC could collaborate to avoid duplicated efforts by the two organizations in the compilation of catch statistics, also reducing the burden on national correspondents.

5.   After some major increases occurred in 1997, 2000 and 2004, the number of species items[5] with catch quantities included in the database seems to have reached a plateau (see Figure 1). For 2011 data, it was notable the improved species breakdown provided by Iraq. The percentage of unidentified catches - that are usually lumped together in the "Marine fishes nei" species item – further decreased in recent years and in 2011 it was around 5 percent of total catches, a low share in comparison to the whole Western Indian Ocean (Fishing Area 51) where "Marine fishes nei" was over 16 percent.
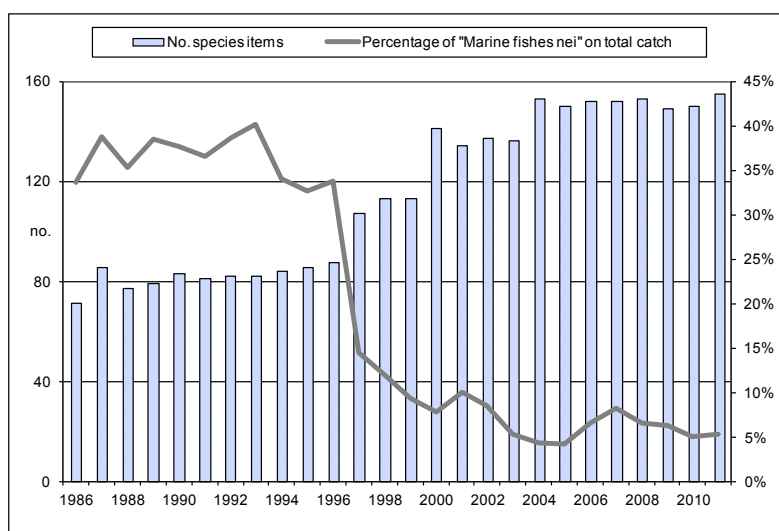

Figure 1. Species breakdown and unidentified catches in the RECOFI database

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[1] http://www.fao.org/fishery/statistics/software/fishstatj/en
[2] FishStatJ CD ROMs can be requested to <Fish-Statistics-Inquiries@fao.org>
[3] http://www.fao.org/fishery/statistics/software/fishstat/en
[4] http://www.fao.org/fishery/topic/16140/en
[5] "Species items" is the term used to identify the statistical taxonomic unit, which can correspond to species, genus, family or to higher taxonomic levels.

6. In order to ensure uniformity of data included in the RECOFI database, to facilitate analyses of catch trends by species and to establish data series that provide useful information for fishery management, Member Countries still reporting quite aggregated catch data should strengthen efforts to improve the species breakdown at which their national catches are registered and reported, focusing in particular on the 17 priority species/groups of species identified by the WGFM as supporting the main reference fisheries in the Commission area (see Appendix 1 in RECOFI/VI/2011/6).

7. Member Countries are also invited to ensure that the sampling scheme on which their data collection system is based would record only catch data by national vessels, possibly directly at the landing site. In systems based on market surveys - as for example in the UAE – it is probable that also catches by foreign vessels are recorded, resulting in possible double-counting of the regional catches and in an overestimation of the national capture production. In addition, catch statistics by single species should be always produced through careful identification and quantity measurements, rather than applying a fixed multiplier factor to all species as noted in recent submissions by some countries.

8. FAO-FIPS also manages the "ASFIS List of Species" which was established in 2000 "for fishery statistics purposes" as it was meant to include species items selected according to their interest or relation to fisheries and aquaculture. However, in the last years its scope broaden as a larger number of institutions adopted the List as their reference classification system for aquatic species and FAO received increasing requests to cover also species not directly related to fishery activities. Latest version[6] of the List released in April 2013 contained about 12,400 records, including 337 new records derived from a publication[7] on species in the RECOFI area.

CATCH TRENDS IN THE RECOFI AREA

9. In 2011, total capture production in the RECOFI area almost equalled the maximum ever reached in 2006 (Figure 2 and Table 1). Production by Iran exceeded 400,000 tonnes for the first time, whereas all other countries - with the only exclusion of Oman – decreased their catches in comparison to 2006. Oman showed the most stable trend in the last decade, with a very low coefficient of variation (0.06); at the other extreme, coefficient of variation was very high (0.69) for Iraq, probably due to the external factors which affected fisheries activities during the period.
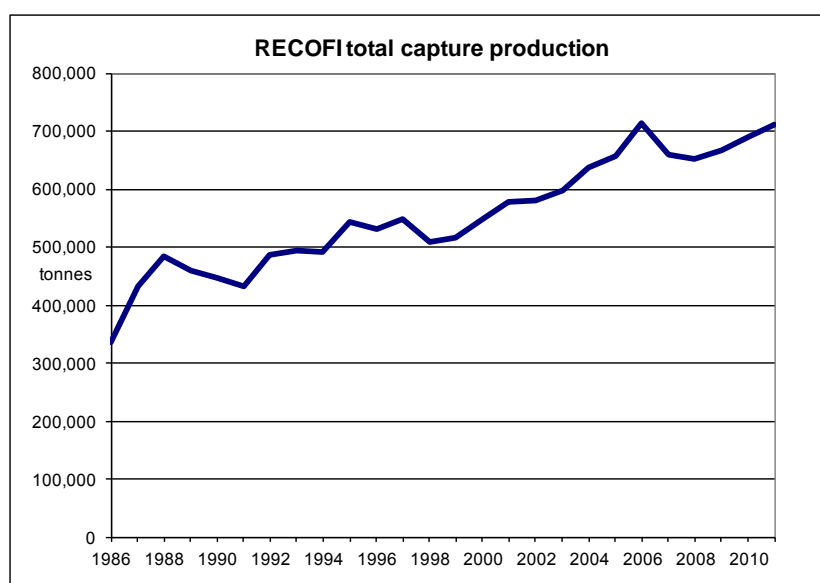
Figure 2. Trend of total capture production in the RECOFI area

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[6] Downloadable at http://www.fao.org/fishery/collection/asfis/en or accessible online at http://termportal.fao.org/faoas/main/start.do

[7] Valinassab, T., 2012. Checklist of the Persian Gulf, Oman Sea and Caspian Sea Fishes. Iranian Fisheries Research Organization Press, Tehran: 357 p.

Table 1. Capture production by country in the RECOFI area

Country	1986	1990	1994	1998	2002	2006	2008	2010	2011
Bahrain	8,057	8,105	7,628	9,849	11,204	15,594	14,175	13,490	9,915
Iran (Islamic Rep. of)	121,771	199,007	218,944	226,500	269,020	374,474	341,980	368,505	411,897
Iraq	5,000 F	3,754	4,221	13,463	14,100	12,775	4,594	7,118	1,647
Kuwait	7,630	4,454	7,752	7,798	5,360	5,635	3,979	4,500 F	4,500 F
Oman	96,353	119,783	118,572	106,171	142,669	147,668	151,910	163,927	158,566
Qatar	1,980	5,702	5,086	5,279	7,155	16,376	17,688	13,760	12,985
Saudi Arabia	16,057	11,355	20,271	25,979	33,223	42,045	43,509	39,084	37,420
United Arab Emirates	79,321	95,129	108,600	114,739	97,574	100,403	74,075	79,610	75,147
Total RECOFI area	336,169	447,289	491,074	509,778	580,305	714,970	651,910	689,994	712,077

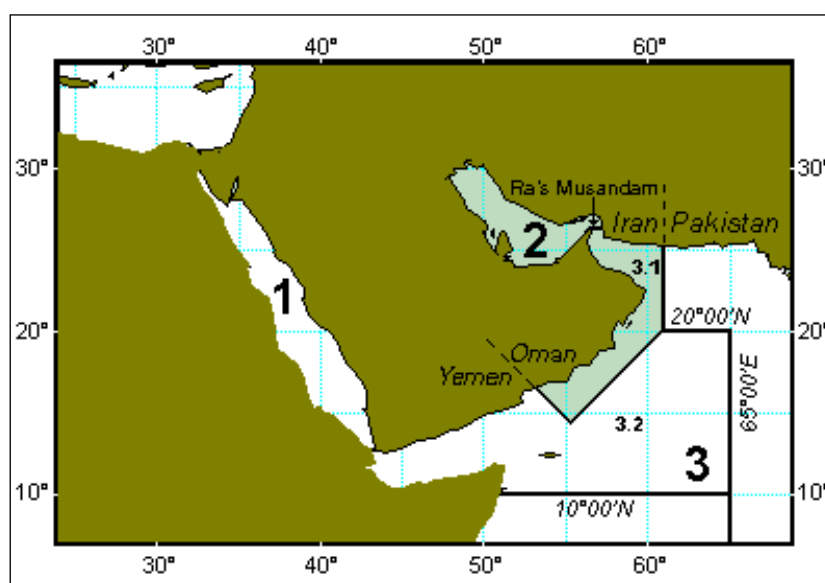Note: "F" indicates a total estimated by FAO

Figure 3. Map of the RECOFI statistical divisions

10.   Catch trends by the two statistical divisions ("51.2.0–Gulf" and "51.3.1–Oman Sea", see Figure 3) in which the RECOFI area is subdivided, showed several ups and downs since 1986 (Figure 4). Total catches in the Oman Sea grew considerably since 2008 and in 2011 they exceeded again those in the Gulf that have remained very stable since 2006. However, only two countries (i.e. Iran and Oman) are fishing in both RECOFI statistical divisions and fluctuations of Iranian catches in the two divisions strongly influence the trends of total capture production by RECOFI statistical division.
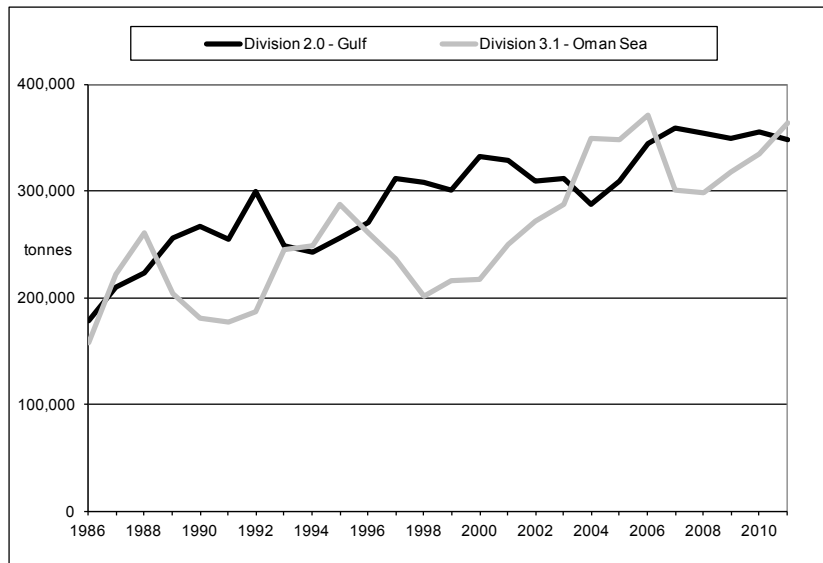
Figure 4. Trends of capture production by RECOFI statistical division

11.   The two divisions show different catch compositions as a consequence of their distinct morphological and oceanographic conditions. In Figure 5 are shown the trends by statistical division of the four major species groups since 1997, the year in which the unidentified catches decreased drastically (see Figure 1). In the Gulf, a shallow and semi-closed sea, coastal fishes and crustaceans are the main target and valuable species, whereas in the deeper and more open Oman Sea tunas and tuna-like species represent the bulk of the catches.
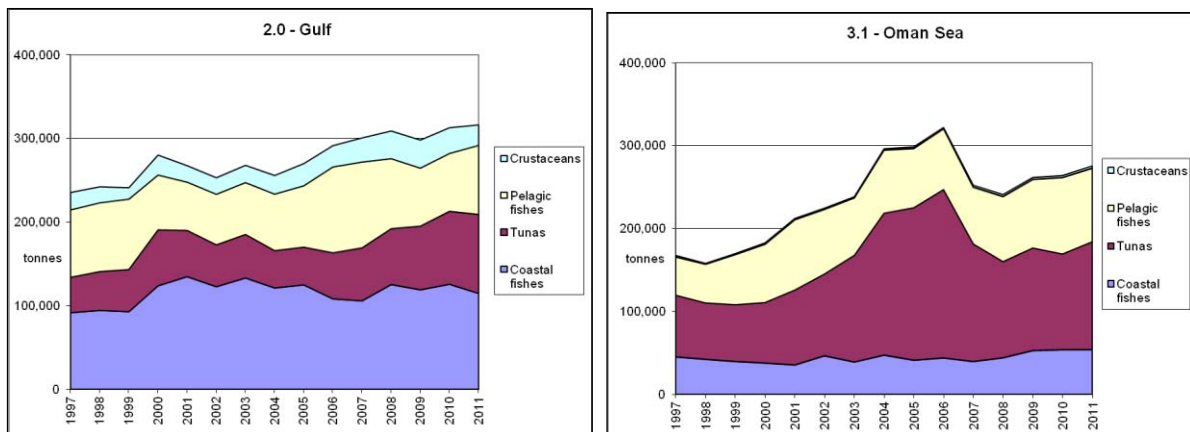
Figure 5. Catch composition in the two statistical divisions by major species groups

12.   Tuna catches in the Gulf continued to increase reaching almost 95,000 tonnes in 2011, more than double of 1997 catches. On the other hand, crustacean catches decreased for both shrimps and crabs returning to the mid-2000s level. Total catches of emperors and groupers have remained stable around 49,000 tonnes per year, although figures for these valuable fishes are greatly affected by strong variations in catch statistics reported by the UAE. Indian oil sardine - mostly targeted by Iran – in 2011 marked the maximum ever at almost 29,000 tonnes.

13.   In the Oman Sea division, tuna catches increased in 2011 but remained still much lower than the 2006 peak over 200,000 tonnes. Continuous decrease of skipjack was partially compensated by growth of longtail tuna catches. Deep water fishing by Iran resumed in recent years and in 2011 almost 14,000 tonnes of lanternfishes were caught. Catches of hairtails (Trichiuridae) from both Iran and Oman also increased significantly.

CATCH TREND AND STOCK STATUS OF PRIORITY SPECIES

14.   The second meeting of the WGFM (Cairo, Egypt, 27-30 October 2008) identified the priority species which stocks support fisheries of common interest in the RECOFI area. This list of priority species was reviewed and updated at the sixth meeting of WGFM (Doha, Qatar, 5-8 November 2012).

15.   At the same time, the Regional Workshop on Stock Indicators and Stock Status Reporting held in the Islamic Republic of Iran in 2009 identified three broad objectives relating to fisheries sustainability as i) minimising the negative impacts of shrimp trawling; ii) maintaining stocks of coastal finfish at sustainable, healthy levels with grouper and emperor snapper as potential indicator species; and iii) maintaining the stock of narrow-barred Spanish mackerel (*Scomberomorus commerson*) at a sustainable, healthy level. The sixth meeting of WGFM for the first time reviewed fishery and resource status using the data in the RECOFI capture production database and those collected based on the Recommendation RECOFI/6/2011/1.

16.   This section provides the updates of catches of priority species and status of fishery and resources of priority concerns identified above. In principle, catch trend was based on the RECOFI capture production database and all the other graphs utilize the data collected through the minimum data reporting. Stacked bar graphs were used to indicate catch trend when portion of catch was reported in aggregation and could not be separated into species. Efforts and catch per unit effort (CPUE) were standardized with the average in the period where all comparable information would be available, unless otherwise indicated.

Shrimp catch and efforts

17.   Capture production of Green tiger prawn showed continuous decline since 2008 after a general increasing trend with a large fluctuation (Figure 6). Here, the catch reported under "Natantian decapods nei" by Islamic Republic of Iran, State of Kuwait, and Sultanate of Oman were assumed to be Green tiger prawn. Efforts in operation days of shrimp trawls of Kingdom of Bahrain and Kingdom of Saudi Arabia that accounted 53% of catch in 2011 indicated trends corresponding to catch at least for 2004 and after. Figure 7 showed the catch and CPUE trends (not standardized) of shrimp trawls of these two countries. Both showed drop in shrimp CPUE in 2011, while no common trends were observed for non-shrimp CPUE.
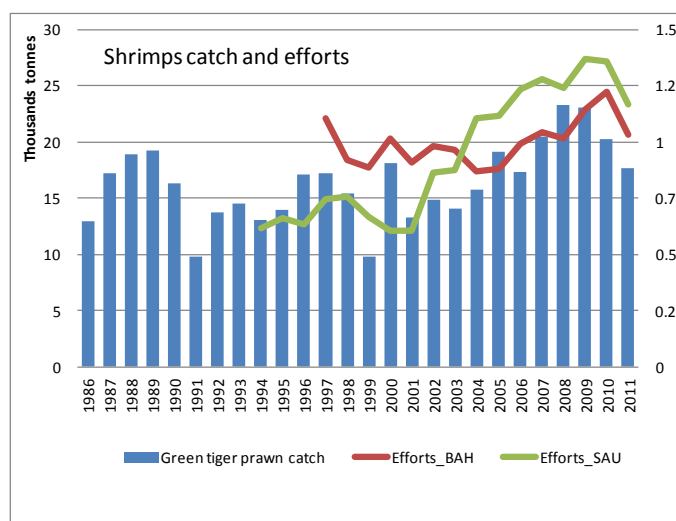

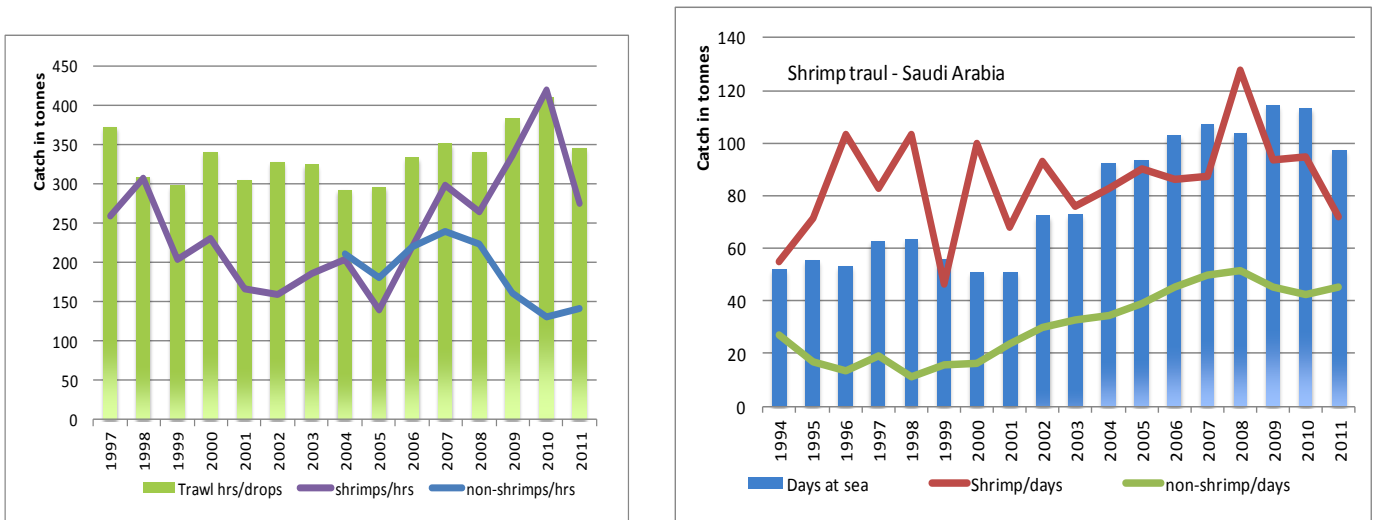Figure 6 Catch and effort trends of Green tiger prawn

Figure 7 Catch and CPUE trends (not standardized) of shrimp trawls in Bahrain (left) and Saudi Arabia
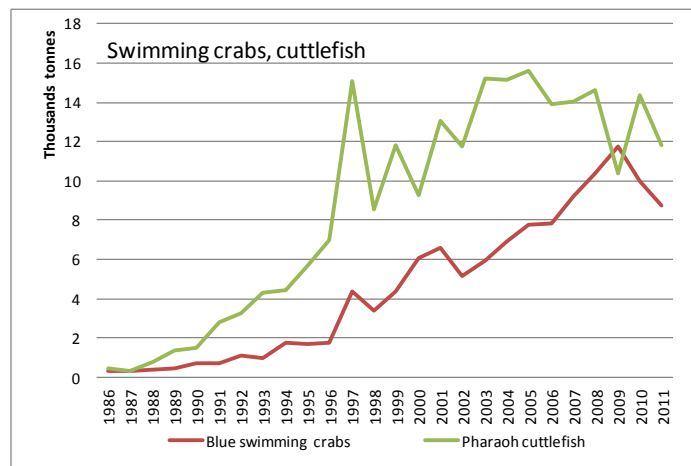
Swimming crabs and cuttlefish:

Figure 8. Catch trends of blue swimming crabs, and Pharaoh cuttlefish

18.   Blue swimming crabs catch declined substantially after the peal in 2009. While catch of cuttlefish still showed a general increasing trend, it stayed at the same level since 2003 with increased fluctuation since 2008 (Figure 8). Careful monitoring and management action may be required depending on other information, including catch rate in 2012 and 2013.

Sardine and anchovies:

19.   Sardine and anchovies were reported in aggregation as „Clupeoidei" around 1990, but since mid 1990s the catch report of two species were well separated. While overall catch of this group has stayed at relatively constant level, marked and continuous decline of anchovies was noted with a concern (Figure 9). Since a general shift between anchovies and sardines was commonly observed in the history as well as world-wide, further investigation would be required to decide whether prompt management action would be needed or not.
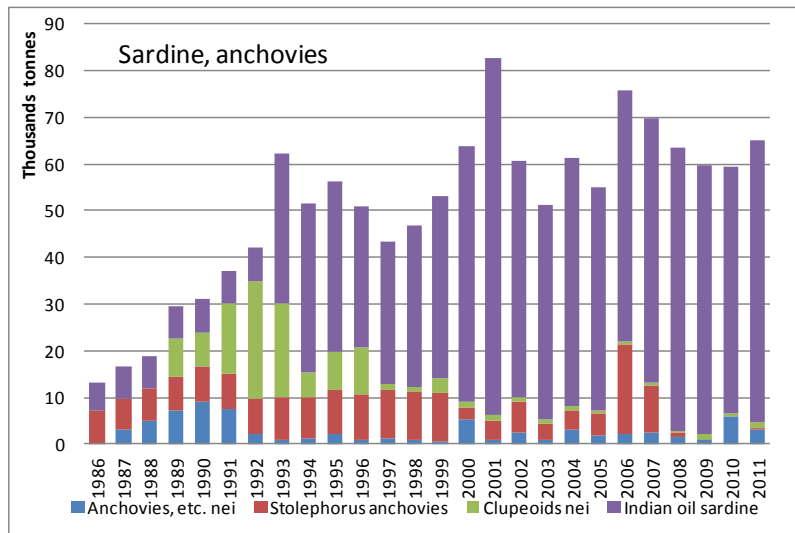
Figure 9. Catch trends of Stolephorus anchovies and Indian oil sardine

Emperors:

20.   In the case of Emperors, while three species were identified as the priority species, the majority of catch did not have species separation and was reported as „Lethrinidae‟. Recent catch of emperors as a whole has stayed relatively stable with some decline in the last three years (Figure 10). However, the CPUEs of those gears consistently harvesting emperors (Figure 11) showed continuous decline consistently, except that of handline by Kingdom of Bahrain. The occurrence of emperors in total Bahrain catch as well as in Saudi Arabia trap catch indicated the similar extent of decline. The annual decline rate could be a range of 3 to 17 % and when considering a general tendency of nominal CPUE to underestimate the extent of stock decline by not taking into account the improvement of fishing efficiency and impacts of increased targeting, this indicated the stock is in a status requiring immediate actions to prevent further stock decline.
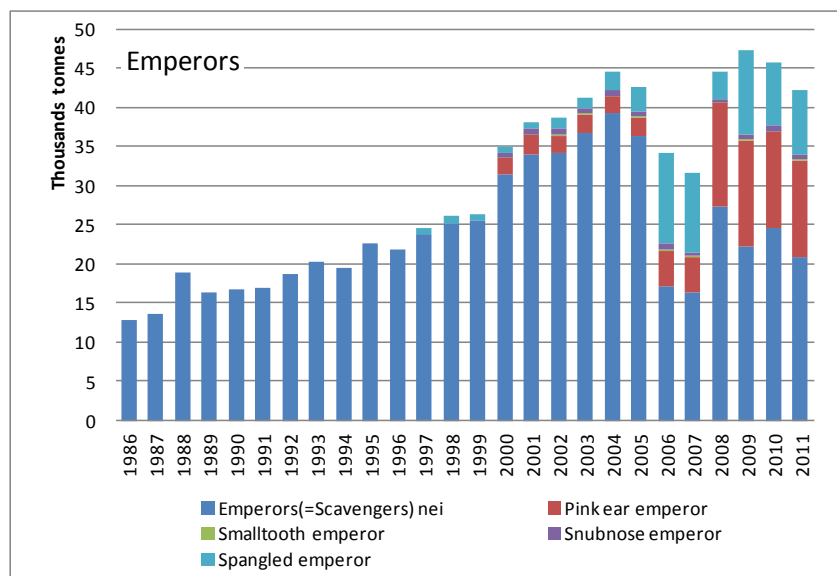
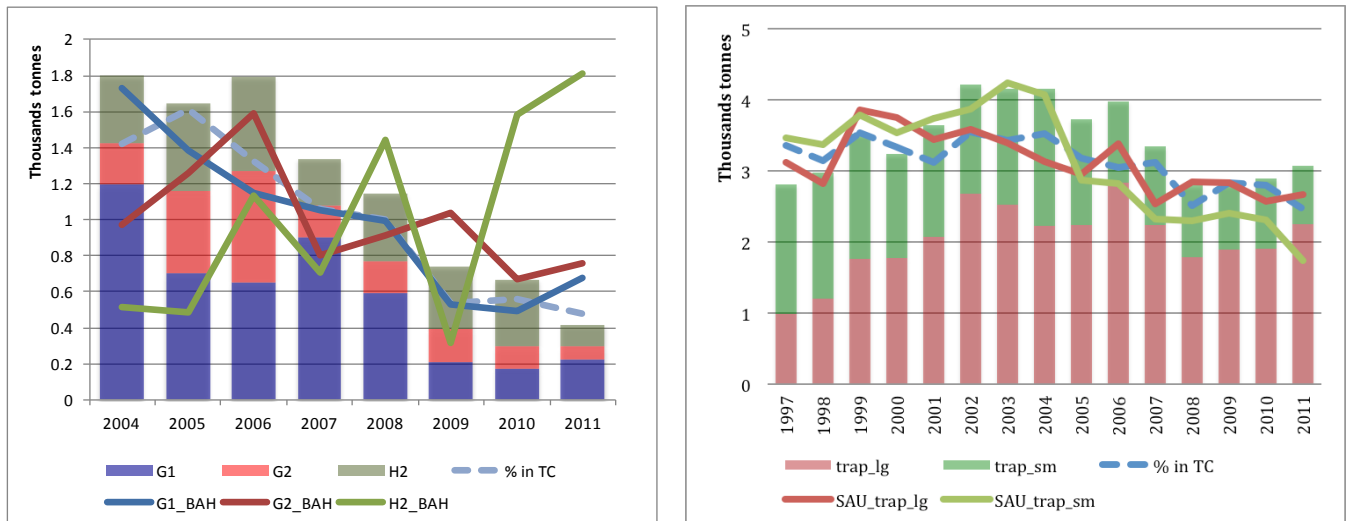

Figure 10 Catch trends of Emperors

Figure 11 Catch and CPUE of emperors of selected gears:
Left graph showed trends of two types of gillnet (G1 and G2) and handline (H2) of Kingdom of Bahrain, and right graph showed those of traps in Kingdom of Saudi Arabia.

Groupers:

21.   Like the case of Emperors, catch groupers and hinds were in general reported without species level details. Big increase in 2000 was caused by a large increase of „Groupers, seabasses nei" figure of one country, and was considered as artificial, probably due to modification of national sampling and/ or classification scheme. This group showed continuous and substantial decline of catch until 2009 and then the catch was stabilized (Figure 12). Similar to the case of emperors, the CPUEs of the gears consistently harvesting groupers (Figure 13) showed general declining trend, together with the occurrence of groupers in total Bahrain catch as well as in Saudi Arabia trap catch. The annual decline rate could be a range of 4 to 20 %, which was considered to indicate the need of immediate actions to prevent further stock decline.
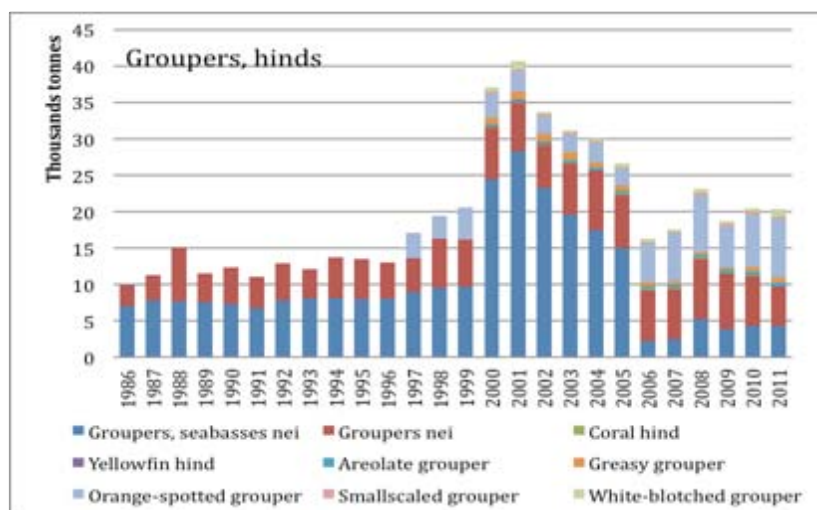

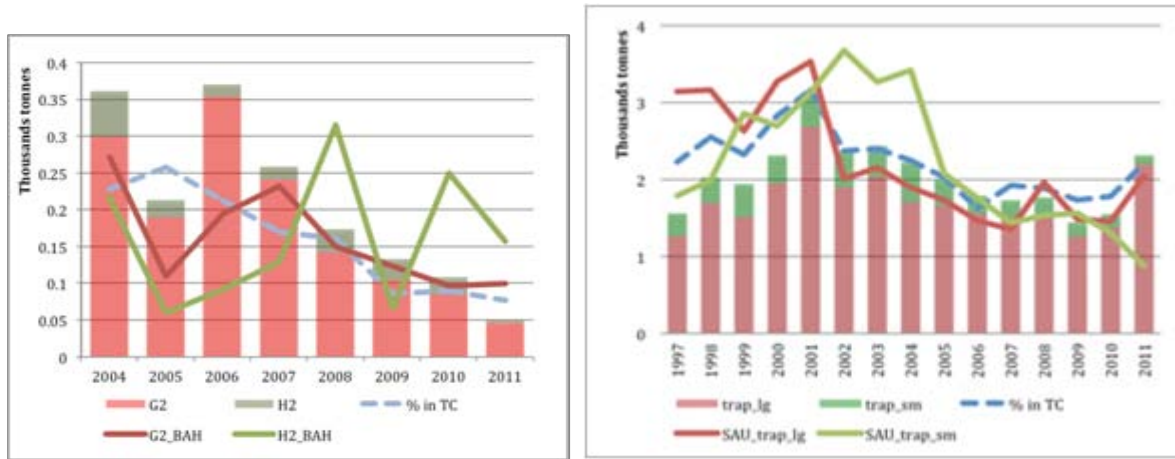Figure 12. Catch trends of Groupers and hinds

Figure 13 Catch and CPUE of groupers of selected gears:

Left graph showed trends of gillnet (G2) and handline (H2) of Kingdom of Bahrain, and right graph showed those of traps in Kingdom of Saudi Arabia.
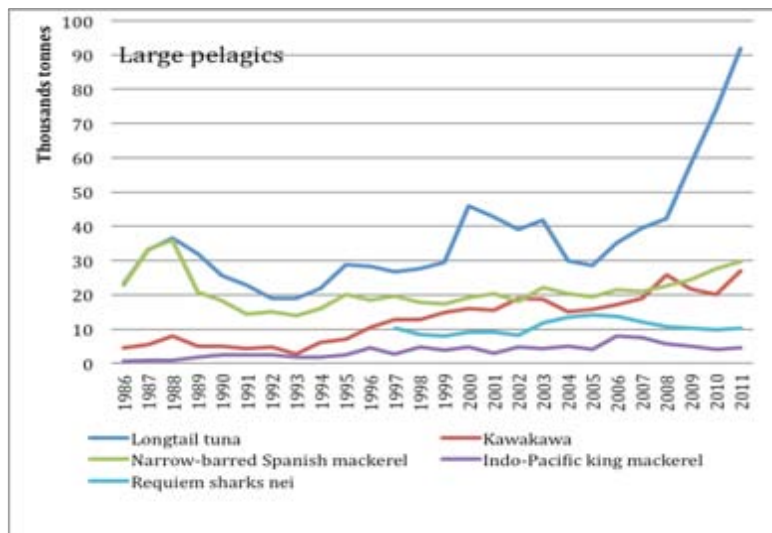
Large pelagics:

Figure 14. Catch trends of large pelagic, i.e. narrow-barred Spanish mackerel, longtail tuna and Requiem sharks nei.

22.   There were general increasing trend in capture productions of narrow-barred Spanish mackerel, Indo-Pacific king mackerel and Requiem sharks (Figure 14). Longtail tuna catch showed substantial increase since 2005 and kawakawa catch showed gradual but consistent increase. Due to migratory nature of these species, it is difficult to judge about their stock statuses, however it may not be recommendable to increase effort targeting on these species.

Other priority species:

23.   Catches of bulger and white-spotted spinefoot have remained relatively stable, while Indian mackerel have shown a continuous increase with large fluctuation (Figure 15). Catch of golden trevally indicated a declining trend after its peak of 2002 that would require further careful monitoring and investigation.
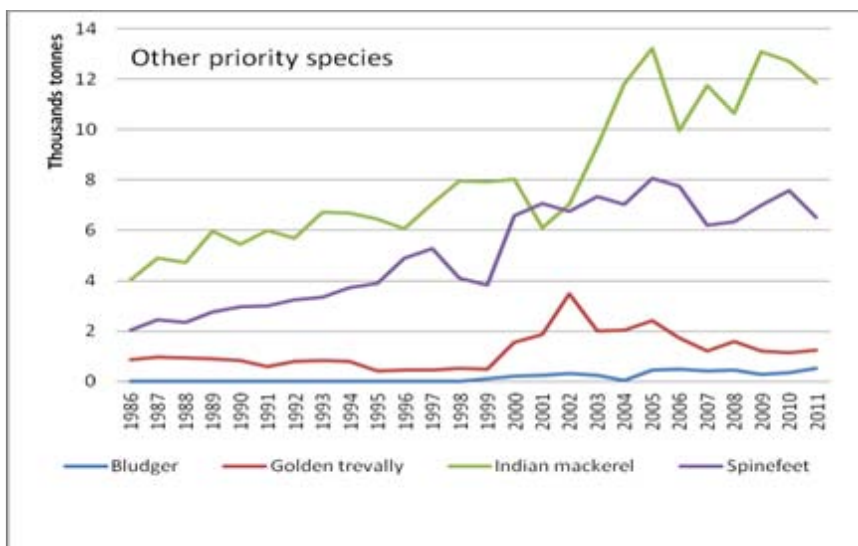
Figure 15. Catch trends of bulger, golden trevally, Indian mackerel and White-spotted spinefoot