



RECOFI Technical Workshop on Spatial Planning for Marine Capture Fisheries and Aquaculture Doha, Qatar 24–28 October 2010



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**RECOFI regional spatial planning
for marine capture fisheries and
aquaculture**

State of Kuwait

By
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24 – 28 October 2010, Doha, Qatar

Part 1. Geography



State of Kuwait Marine Environment

Kuwait's marine waters cover approximately 2,540 square nautical miles (8,700 km²).

The coastal line extends from the northern bank of Warba and Bubiyan islands to the South Al-Khiran. The marine waters of Kuwait are characterized by a diversity of species of fin fish and shrimp.

Part 2. Marine capture fisheries profile

Status of fisheries

345 species of fish representing 94 families recorded, of which, 44 species are commercially important

Target species

Fin fishes:

Local stocks: Biah, Maid (*Liza* spp.), Sha'm (*Acanthopagrus latus*), Nuwaibi (*Otolithes ruber*)

Shared stocks: Zobaidi (*Pampus argenteus*), Subur (*Tenualosa ilisha*), Hamoor (*Ephinephelus coioides*), Naqrur (*Pomadasys argenteus*), Kan'ad (*Scomberomorus commerson*), Khobat (*Scomberomorus guttatus*)

Shrimp: 3 important species: *Penaeus semisulcatus*, *Metapenaeus affinis* and *Parapenaeopsis stylifera*

Part 2. Marine capture fisheries profile -Continued.....

- **Number of vessels:**

124 Wooden dhow boats, 732 Fiberglass speed boats, 35 Industrial Shrimp trawlers

- **Main fishing gears:**

Shrimp trawlers, Gill nets, Gargoor and Hadhra

- **Recent trends of catches and landings:**

- Annual average landings of fin fish 5000 tonnes and shrimp 1700 tonnes during 1997 to 2007

- In 2007, total capture fish production was 4373 tonnes (2833 tonnes of finfish and 1540 tonnes of shrimp)

Marine capture fisheries profile

Continued

- **Monitoring, control and surveillance systems**

Marine Control Division of PAAFR (Public Authority of Agriculture Affairs and Fish Resources) is entrusted with Monitoring Control and Surveillance

- **Responsible management authority**

Public Authority of Agriculture Affairs and Fish Resources

- **Management options (input/output controls)**

Input: Licensed fishing vessels are permitted;
124 **Wooden dhow boats**, 732 **Fiberglass speed boats**, 35 **Industrial Shrimp trawlers**.

Output: Annual catch about 5000 tonnes of finfish and 1700 tonnes of shrimp

Part 3. Aquaculture country profile

Status of aquaculture

- Human resources

121 field workers are involved in Aquaculture activities

- Geographic distribution of farming systems and characteristics

Tilapia (*Oreochromis niloticus*) culture is carried out in 56 agriculture farms. PAAFR is establishing a new hatchery at Al-Wafra and provides feed on subsidy basis.

Gilthead seabream (*Sparus auratus*), European seabass (*Dicentrarchus labrex*) and Sobaity seabream (*Sparidentex hasta*) culture are carried out in marine cages at Kuwait Bay by 'Bubiyah Fisheries Company'. Now the cages from Kuwait Bay are going to be shifted to a newly identified site at Al-Khiran area at Kuwait.

Part 3. Aquaculture country profile

continued.....

- Main cultured species
- **Tilapia** (*Oreochromis niloticus*)
- **Gilthead seabream** (*Sparus auratus*), **European seabass** (*Dicentrarchus labrex*) and **Sobaity seabream**, (*Sparidentex hasta*)

Kuwait Aquaculture Production

Year	Tilapia (<i>Oreochromis niloticus</i>)	Sobity Seabream (<i>Sparidentex hasta</i>)	Gilthead Seabream (<i>Sparus aurata</i>)	Total
2000	110	-	350	
2001	120	-	75	
2002	428	-	140	
2003	202	-	164	
2004	160	40	-	
2005	185	142	-	327
2006	557	11	-	568
2007	293	13	42	348
2008	274	35	-	309

Aquaculture country profile Continued

- **Market and trade**

As the production is very less, there is no specific market system for aquaculture productions in Kuwait. However, high quality of farm fresh tilapia is sold for 3.42 US\$ to 5.13 US\$/kg. This relates mainly to farm-gate purchases and sales to restaurants

- **Institutional framework**

Aquaculture activities are administered and promoted by the Aquaculture division of the Fisheries Department, PAAFR.

The Fisheries Department regulates the aquaculture activities which include identification of suitable fishes and allotment of suitable sites to the aqua-farmers, issuing license for aquaculture farming, granting subsidies to the farmers and Bubiyan Fisheries Company.

- **Applied research, education and training**

Research on aquaculture development is mainly entrusted with KISR (Kuwait Institute for Scientific Research). The need based research projects including selection of suitable species, growth studies and disease control are carried out by the 'Mariculture and Fisheries Department' of KISR.

Issues, Trends and development

Aquaculture production has wide scope for future development in Kuwait.

The country's natural fish stocks are under biological stress and the capture fish production is showing declining trend in recent year. Hence, aquaculture activities are becoming more popular with Government's support.

The recent developments including the Government's tilapia hatchery unit at Al-Wafra are the fruitful indications for the future development of aquaculture production in Kuwait.

New site has been identified at Al-Kiran Marie area, the southern coast of Kuwait whereby the Bubiyan Fishing Company and other companies are likely to establish the cages for marine fish production in large scale.

The aquaculture production is expected to flourish with the concerted support of Government and fulfill the future demand for fish supply in Kuwait.

Case studies

Continued

- **Benefits of GIS, remote sensing and/or mapping to solving the problem or aim of the case study.**
- **GIS, remote sensing and /or mapping of spatial planning for capture fisheries and aquaculture would be very useful for augmenting future aquaculture production in Kuwait.**
- **At present the aquaculture production is very limited due to scarcity in timely available of fish seeds, feed and suitable locations and technology.**
- **This type of Workshop conducted by FAO/ RECOFI on spatial planning using GIS/ Remote Sensing for Marine Capture Fisheries and Aquaculture would be very useful for the RECOFI member countries mainly for State of Kuwait.**

Part 5. Challenges and major issues

Challenges, issues and opportunities for developing a GIS and Remote sensing infrastructure to support the spatial planning strategy at national and regional level

Kuwait is susceptible for various man-made stressors which cause major obstacles for the aquaculture development. These include oil reserves and oil industry related pollutants; desalination plants; accidental and intentional oil spills; exotic species invasions; sea constructions and coast line alteration; modifications of coastal hydrodynamics water quality deterioration.

The increase of nutrients due to domestic sewage and industrial effluent discharge could be more responsible for eutrophication and fish kills which frequently appeared along the coasts of Kuwait. Kuwait experienced its first major fish killing due to abnormal algal bloom during September and October in 1991. About 130 tonnes of wild mullets (*Liza klunzingeri*) and 100 tonnes of cultured Sea bream (*Sparus auratus*) were killed. The causative species of this fish kill was reported to be *Karenia selliformis*. Similarly in 2001 major fish kill was occurred in which about 3000 tons of Mulletts (*Liza klunzingeri*) were killed in Kuwait waters.

Challenges and major issues

Continued

Kuwait undergoes massive construction activities. With intensive dredging and reclamation of coastal areas, marine habitats and coastal ecosystems are facing serious environmental challenges.

Most of the area of Kuwait Bay's southern shoreline has been modified. More than 623 hectares of land reclaimed and more than 210 hectares of area dredged (Bishop, 1999).

These man-made stress is not only destroys important nursery habitats but it restricts the Kuwait Bay's ability to provide ecosystem services, such as food production, nutrient removal, recycling, and oxidation and breakdown of organic compounds. As the cage culture system is located in the Kuwait Bay, the impacts of these man-made influence on the aquaculture system may not be ruled out.

● Initiatives:

In order to protect the Kuwait Bay with due consideration of its nursery habitat, commercial fish catch activities are prohibited in the Kuwait Bay and the 3 mile zone from Kuwait coastal line.

Now the Public Authority for Agriculture Affairs and Fish Resources has intended to relocate cage culture activities from Kuwait Bay to a new site at Al-Kiran Marine Area in Kuwait.