


FISHERY COUNTRY PROFILE	Food and Agriculture Organization of the United Nations	FID/CP/BHR
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THE STATE OF BAHRAIN

STRUCTURE AND CHARACTERISTICS OF THE INDUSTRY

Marine fisheries

The fisheries of Bahrain are entirely artisanal in nature, following the prohibition on industrial shrimp trawling activities in 1998. Catches consist of both a wide variety of finfish species, together with the important shrimp fishery as well as the increasingly important portunid crab fishery. In 2001, shrimp catches were around 1 359 t (a decline from the 2 104 t taken in 2000) while crab catches continue to increase dramatically to over 2 550 t. The remainder of the total catch of 11 230 t were various finfish species, with rabbit fish, emperors and groupers being the most important component. An estimated 2 300 fishing boats operate in Bahrain waters. These are mainly fiberglass boats (85 percent), with the rest made of wood (15 percent). Most vessels are small with 71% being less 25.9 ft in length and only 6% being more than 36.0 ft.

Prior to 1998, up to nine steel hulled fish trawlers operated in Bahraini waters. These vessels were supposed to fish in waters deeper than 20 m. However, they often trawled in shallow water areas. This caused conflict with other fishermen. These fish trawlers were banned on 1 June 1998.

The main fishing gears used in Bahrain include shrimp trawls, gillnet, large wire traps (local name gargoor), small gargoor, and hook-and-line. Many boats use a combination of fishing gear. In 1998, there were 229 shrimp trawl boats, 213 gillnet boats, 119 large gargoor boats, 419 small gargoor boats, and 462 boats that used both large and small gargoor. This mix has not changed appreciably.

In Bahrain, the shallow inshore area is also fished by fixed stake nets (local name haddrah). The number of active haddrah is declining, from a high of 971 units in 1978 to 377 units in 1998, although only 73 haddrah were licensed.

The fishing sector is classified into full-time, part-time, occasional and recreational fishermen, with a total of 7 200 fishermen in these four categories. Of this number, around 82% are either full-time or part-time professional fishermen.

Total fish landings in Bahrain have more than doubled since 1980 (from 5 115 t in 1980 to 11 230 t in 2001). Landings peaked in 1996, at 12 940 t. However, the species mix has changed during this time, with declines in shrimp catches being offset but increases in the catch of crabs and finfish. Many fish species, as well as crabs, are now landed whereas in the past these species were discarded and this change in catch retention has influenced the landings mix significantly. Local landings for 2001 were composed primarily of shrimp (1 359 t), rabbitfish, *Chimaera monstrosa* (1 899 t), and crab (2 556 t). For certain preferred fish species, landings have declined over the last decade, in common with other areas of the Gulf. Landings of orange-spotted grouper (*Epinephelus coioides*) (local name hamoor) peaked in 1989 at 1 077 t, but fell to 794 t in 2001.

In 2001, landings were primarily from shrimp trawls (approx. 39%), wire traps (27%), and haddrah (17.5%). Gillnet and hook-and-line accounted for the remainder.

The shrimp fishery is traditionally the most important fishery in Bahrain. Over 90 percent of the shrimp catch is of *Penaeus semisulcatus*. Six other shrimp species are caught, but are of minor importance. Bahrain's shrimp fishery started in 1967, with the establishment of the Bahrain Fishing Company. Catches declined sharply in the 1978/79 season, resulting in the closure of this company. Industrial fishing was re-started in the 1980/81 shrimp season, with four steel-hulled vessels. The artisanal fishery started in 1971, and continues to this day. Artisanal boats initially pulled trawl nets by hand. By the 1990/91 season, 90 percent of these vessels used hydraulic winches. Fisheries models indicate that this fishery can support 73 full-time boats. However, by 1998, 402 shrimp fishing licenses were issued. In that year, there were 229 boats active in the shrimp trawl fishery.

In Bahrain, all commercial fishing is by one-day trips. Shrimp trawlers usually leave in the late afternoon and return the next morning. Fishing boats usually take day or overnight trips. Catch is landed and iced on deck.

Environmental issues are of increasing concern to the Bahrain fishing industry, particularly increasing summer water temperatures (in both 1996 and 1998, summer water temperatures exceeded 36 C resulting in massive coral bleaching in Bahraini waters and by 1999, 99 percent of inshore and nearshore coral reefs had died), land reclamation and dredging. From 1991 to 1997, Bahrain increased in area from 695 km² to 706 km². This has resulted in destruction of areas of seabed and siltation of adjacent seabed areas.

An artificial reef development program has been undertaken by the Fisheries Directorate and has been succeeding in breeding juvenile fish in the reefs. A commercial pilot project is underway to locate artificial reefs in various areas in an effort to replace destroyed natural reef areas.

Aquaculture

Aquaculture is not a traditional activity in Bahrain. In 1979, FAO conducted an initial assessment of aquaculture in Bahrain. This led to construction of basic facilities and small-scale culture experiments in the 1980s. Since 52 percent of the freshwater produced in Bahrain (1997) was from desalinization plants, aquaculture has targeted marine fish species.

In 1993, the National Mariculture Center (NaMaC) was established. NaMaC is under the Directorate of Fisheries and Marine Resources (DFMR), Ministry of Works and Agriculture. Initial work focused on orange-spotted grouper (*E. coioides*), pearlspotted rabbitfish (*Siganus canaliculatus*) and yellow-finned black seabream (*Acanthopagrus latus*). More recently, mass culture of the sobaity bream, *Sparidentex hasta*, has been successful. In 1999, NaMaC produced 659 000 sobaity fry.

Attempts to produce golden trevally (*Gnathodon speciosus*), mullet (*Liza spp*) and shrimp (*Penaeus semisulcatus*) are planned.

Hatchery production has provided seed for (1) grow-out trials, (2) nutrition experiments, (3) fish stock enhancement, (4) a local private sector farm, and (5) export to neighboring countries (Oman, Kuwait, Saudi Arabia, United Arab Emirates). In 1998, a joint private/public sector project was initiated to support local grow-out trials. Fry feed is imported from Japan. Grow-out feed is imported from Saudi Arabia. In 2002, hatchery production was 560 000 fry of which 150 000 were released into the sea.

In 2001, aquaculture production reached 12.2 t or about 0.1% of total supply. Production from grow-out trials has been test-marketed locally. Results from rabbitfish and sobaity bream market studies indicate that the cultured product is acceptable to the public.

Catch utilization

Fish and shrimp landed is taken by fishermen or middlemen to the fish auction which is held each day between 0400 and 0600 hours at the Manama Central Market. Fish retailers purchase fish at this auction and transport the whole product to their shops for sale to the public. For the local market, fish and shrimp are sold primarily whole, fresh chilled. However, when there is a surplus, the product can be frozen or dried for later sale.

There are two major fish markets in Bahrain: Manama Central Market, and Jidhafs Market. In 2001, Manama Central Market accounted for 64.7 percent of the total landings, while Jidhafs Market accounted for 12.6 percent of total landings.

Most production is consumed locally although shrimp, crabs and finfish are exported to neighboring countries, particularly Saudi Arabia. There are also a small number of seafood processing companies in Bahrain that purchase surplus shrimp not destined for export.

State of the industry

Total landings and the number of fishing boats have increased steadily over the last 20 years. Much of the increase in landings has been from increased landings of secondary species. For some preferred species, such as orange-spotted grouper and shrimp, landings have declined significantly.

Fisheries regulations are codified in a 1981 Amiri Decree and various ministerial decrees. However, there is limited compliance with these regulations. For example, of the 377 haddrah, only 73 (19.4 percent) were licensed (in 1998). Driftnets are banned, but continue to be used routinely by fishermen. A Fisheries Enforcement Committee was established in 1997 to address the issue of illegal fishing, but this still remains a significant problem.

Environmental issues remain as a major issue for the fishing industry in Bahrain. Extensive land reclamation, dredging and destruction of reef areas have impacted significantly on fish stocks, in addition to over-exploitation. Recent attempts to address these issues through the construction of a system of artificial reefs have not been assessed.

Economic role of the fishery industry

The commercial fisheries sector is small and contributes only 0.4% to GDP. However, the sector is important from a socio-economic viewpoint in that it provides the main economic activity and employment for numerous coastal villages.

In addition, the recreational fishing sector in Bahrain is developing. There are about 1000 pleasure craft at the three main boat marinas in Bahrain, about 80 percent of which are used for recreational fishing.

In addition, there are about 800 recreational fishing boats moored at various village landing sites around Bahrain. These marina- and village-based boats support several thousand recreational fishermen.

DEVELOPMENT PROSPECTS

Bahrain's fishery is at maturity. For certain species it is in decline or has almost collapsed. The combination of habitat destruction and over-exploitation makes for very limited development prospects for the wild fishery.

Aquaculture may have some potential, but a limitation on suitable marine, coastal or land-based sites may inhibit the significant growth of this industry.

Fisheries management

Fisheries regulations are codified in a 1981 Amiri Decree and various ministerial decrees. However, this basic fisheries law has not been updated to take into account recent developments and challenges facing the industry.

Although total landings have increased, catches of certain preferred species have declined dramatically in the last ten years. The increased landings have mainly resulted from the landing of previously discarded species, such as crabs and a continued increase in fishing capacity.

Fisheries regulations are in-place, but compliance has been limited. Illegal fishing methods are commonly being used. Also, there is a growing and uncontrolled recreational fishing sector that is in direct competition with commercial fishermen.

Demand

Production from Bahrain's fisheries has not kept pace with increasing population and imports have grown more slowly than demand (rising from 1 448 t in 1990 to 3 573 t in 2001). As a result of these factors, per caput supply has halved since 1985, from 27.2 kg per caput (1985) to 13.4 kg per caput (2001).

The government controls the local seafood market in Bahrain. Exports of seafood are allowed only when there are adequate supplies to meet local demand. Export certificates are only issued when there are such surpluses. These permits are specified for fish, crabs, shrimp, lobsters, cuttlefish and oysters.

With the dramatic declines in landings of certain preferred fish species, the economics of fish culture for these local species are improving. As pricing improves, the economic viability of systems being developed by the NaMaC may be soon realized.

RESEARCH

Directorate of Fisheries and Marine Resources (DFMR) is responsible for assessment and management of fisheries in Bahrain. It routinely collects landing and market data for the Fisheries Database. It also collects shrimp trawler trip data for the Bahrain Shrimp Fishery Monitoring System database. In addition,

it executes surveys and studies as necessary, such as participation in the global Reef Check program.

The DFMR's objectives are to develop the sector, protect fish and marine resources, and introduce commercial mariculture to Bahrain. The DFMR also conducts surveys and produces statistical reports which reflect the status of the Bahraini fisheries. As such, it is involved in a diverse range of activities. Research mobilizes around 70% of the time of its graduate staff.

It has 15 scientists, of whom are 12 nationals (2 Ph.D., 3 MS, 7BS) and 3 expatriates. Its financial resources (1999) amount to about BD 370 000 (US\$ 0.98 million) with all coming from the national budget; 83% go to staff costs and 17% to operating and capital costs (US\$ 11 100 per graduate staff member).

Research activities cover mariculture as well as marine environmental issues. They involve collaboration with Japan, which provides some expatriates and training for nationals.

National Mariculture Center (NaMaC) is developing appropriate culture technology for key species of fish. As part of this work, various microorganisms, hatchery, grow-out, nutrition and fish disease studies are conducted.

Other agencies that are periodically involved in marine resource research include the University of Bahrain, the Bahrain Center for Studies and Research, and the Environmental Affairs Directorate.

AID

There is no direct foreign assistance for Bahrain fisheries. From the mid-1980s to the mid-1990s, Bahrain hosted foreign experts from Japan to assist in developing mariculture in Bahrain. During this same period, UNDP provided support for development of the National Mariculture Center in Bahrain.

In the past, there have been various aid programs to assist local fishermen. These have included training, equipment subsidies, equipment repair and bank loans. In 1999, the Government initiated a new loan program for fishermen.