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IN THE NAME OF GOD

FISHERIES MONITORING, CONTROL AND SURVEILLANCE IN THE ISLAMIC REPUBLIC OF IRAN

by

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ABSTRACT

The monitoring and control system of fisheries resources in Iran has developed gradually, along with management of living aquatic resources in the waters under its jurisdiction, while the necessary information and regulations have been compiled to enforce it.

Management and conservation measures have been formulated to control exploitation. These management measures now include a monitoring, control and surveillance (MCS) system. Of course, taking into consideration obligation under the United Nation Convention on the Law of the Sea (UNCLOS) and other international agreement, additional elements have been incorporated into the framework of management measures. For example, data collection and data processing have been improved; more human resources and patrol vessels added; new methods of surveillance adopted, including monitoring control visual system (MCVS); international laws adapted as the main legislation (The Fisheries Act) was reviewed; a more comprehensive licensing policy formulated; resource surveys conducted for demersal species; and new technologies introduced for data collection and data processing.

INTRODUCTION

The Iranian Fisheries Company (hereinafter referred to as *Shilat*) is one of the subsidiaries supervised by the Ministry of Jehad-e-Sazandegi, which was established in 1978 after the Islamic Revolution. Shilat was previously a department of the Ministry of Agriculture.

Shilat has a board of directors, with the managing director selected by the Jehad Minister, to whom he reports. Shilat consists of two sections: Fishing and Fishing Harbours, and Aquaculture. The Fishing and Fishing Harbours section comprises several departments, including Fisheries Management, Resources Protection Division, Fishing Harbour, and Fishermen Training and Extension. The Aquaculture section has several departments, including Fish Aquaculture, Shrimp Aquaculture, Sea Ranching, Feeding and Health, and Aquatic Engineering. The Sea Ranching is predominantly in the Caspian area. Due to the nature of the migratory species living in the Caspian sea, like the sturgeon and bony fishes, and because of destruction and pollution of the rivers where these species spawn, more than 22 million sturgeon larvae and 140 million bony fish larvae have been raised and released into the Caspian Sea annually. The main species of bony fish released is a cyprinid whitefish, *Rutilus frisukulum.*

The Department of Fisheries Management, supervised by the Fishing and Fishing Harbours section, is responsible for managing marine fishing operations and related matters. This body sets regulations and collects all the data and statistics. The responsibility of the Department of

Resources Protection Division is to patrol resources, including prevention of fishing in closed spaces and times, controlling illegal fishing and implementing the fisheries regulation. The Department of Fishing Harbours is in charge of construction and management of these harbours, based on environmentally-friendly concepts, reflected in the regulations related to vessels berthing in the harbours. Until 1998, the Department of Fishery Industries regulated handling as a department of the section for Fishing and Fishing Harbours, addressing transportation, processing and storage in compliance with the health guidelines. However, due to the importance of the sector and the need to respect enhanced marketing, health and international regulations, this department went under the direct supervision of the managing director.

Along the Persian Gulf and Oman Sea, there are four regional directorates, which manage fisheries in the southern waters of Iran. In the Caspian area, there are three regional directorates that are engaged in fisheries management, aquaculture and sea ranching.

In the inland provinces, the fisheries directorates manage fisheries in inland waters and operates aquaculture of cold- and warm-water species. The bodies are organized according to the potential for fisheries in each area.

The Iranian Fisheries Research Centre (IFRC) is one of the bodies supervised by Shilat, and carries out research in aquatic sciences. This is one of the best nation-wide research organizations, and runs surveys according to operational requirements. The research includes stock assessments, biology of various species, different projects on hydrology, and studying species with aquaculture potential.

FISHING OPERATIONS

Iran – with a coastline of more than 1 800 km along the Persian Gulf and Oman Sea, and 900 km along the Caspian Sea, as well as many rivers and lakes – has a significant potential for harvesting aquatic species. Fisheries have not played an important role in the national economy, although a significant source of animal protein for the national population.

In 1998, the total production of fisheries was 400 000 t, of which 82.5% came from marine catch and 17.5% from aquaculture and inland waters. The major species harvested by Iranian vessels in the Caspian sea were sturgeon; bony fish, including whitefish (*Rutilus frisukulum*) and mullets; and finally *kilka* – caught by gillnet, beach seine and liftnet, respectively. Some 135 vessels have been engaged in kilka fishery and about 124 beach seine fishery cooperatives operated bony fish fishery. Total production of fisheries in this area has been nearly 100 000 t annually, of which more than 80 000 t has come from kilka fishery and the remainder from bony fish and sturgeon.

The total production from fisheries in the Persian Gulf and Oman Sea has been about 230 000 t/year. The major species of this region include demersals and large and small pelagics. The demersal species, with the exclusion of shrimp, are traditionally caught by gillnetting and trapping, locally called *gargoor*. However, both bottom trawling and gillnets have been used in the Oman Sea. The large pelagics were harvested in the Oman Sea using mainly gillnets and a few purse-seiners and longliners. The small pelagics were mostly sardines, distributed in the Persian Gulf and Oman Sea with a high annual fluctuation. The fishermen catch them by bag beach-seines. Shilat is now promoting sardine purse seining operated by small boats.

In the region of the Persian Gulf and Oman Sea, which produced about 52.5% of the total national catch, there were 80 industrial ships that, due to closing of bottom trawling for fish in the Persian Gulf, operated the same method in the Oman Sea. Meanwhile, a few of them were equipped with either purse-seine nets or longline sets.

Some 2 739 dhows and 6 463 small boats caught pelagic and demersal species in the Persian Gulf and Oman Sea, using mainly gillnet and traps. Some of them operated bottom trawls during the shrimp season in Bushehr and Hormozgan provinces.

Table 1. Type and number of different vessels operating in the Persian Gulf and the Oman Sea

Type	Number	Operational zone and gear
Industrial	80	Oman Sea beyond 7 n.mi., with bottom trawls, purse seines and longlines
Boat	6 463	Persian Gulf and Oman Sea, mostly coastal fishery using gillnets and shrimp trawls
Dhow	2 732	Persian Gulf and Oman Sea, with gillnets, traps (gargoor) and shrimp trawls

THE LEGAL FRAMEWORK FOR FISHERIES

The current legislation dates from 1995. Prior to that there were non-comprehensive regulations (Bill of penalties for illegal fishing in the Persian Gulf & Oman Sea, ratified in 1979 by the Council of the Revolution; Article 17 of Shilat's constitution, and Article 8 of the Law establishing Southern Shilat) that did not provide good protection for the national fisheries resource. Shilat therefore began to compile an integrated law to manage and protect fisheries and living aquatic resources in the waters under its jurisdiction. This resulted in the law of 1995, passed by Parliament, and subsequently an Act of protection and exploitation of fisheries resources, and also its enforceable bylaws and guidelines, were ratified.

According to this new law (Article 3), Shilat is responsible for managing and developing the exploitation of fisheries resources. Furthermore, according to Article 21 of Act, the police – as the judicial representative – carries out inspections.

In accordance with paragraph 3 of Article 3 of the Act, Shilat, in order to increase quality and quantity of sea foods, protect individual operators or companies active in fisheries, and to manage and develop exploitation of fisheries resource, is expected to take necessary measures related to fisheries management and requisite regulation, including protection of resources and sea ranching of stocks.

According to Article 6 of the Act, the exploitation of living aquatic resources under the jurisdiction of Iran is subject to possession of a valid licence from Shilat. Based on this Act and international convention, Shilat, is the competent authority to prevent illegal fishing in Iran's EEZ Shilat, by virtue of this Act, can control fishing zones and fishing effort. In this regard, two types of control are enforced: first, to ensure that no unauthorized vessel is fishing, and, second, to ensure that authorized vessels comply with the licence conditions and regulations imposed by Shilat.

MCS ACTIVITIES

MCS is mainly effected through the fishing and fishing harbours of Shilat. Data collection for monitoring of the fisheries resources is mainly done by this unit, which supported by IFRC.

Department of Fisheries Management collects the catch, effort data, and area of fishing, by sampling. It also collects catch and effort data of trawlers, purse seiners and longliners fishing in the Oman Sea, using complete enumeration through the implementation of logbook systems. Because of extensive management needs for shrimp fisheries, complete enumeration is used for collecting catch and effort data during the shrimp seasons.

Fisheries resource monitoring is carried out by the IFRC, which also collects biological data to estimate resource yields and also to determine other management measures.

The point where the monitoring results are translated into plans, policies and regulation is coordinated by the Resource Protection Division, of the department of Fishing and Fishing Harbours.

Monitoring

Monitoring involves the collection of data on biological, economic and social aspects of the fisheries, and information on the fishers, vessels and gear. The data collected are used to monitor changes in catch rates, catch composition, fish size and population structure of the fish species to observe effects of the fishing pressure on the fishing stocks. The data-gathering operation includes the collection and analysis of resource assessment data to identify fishing trends and patterns, which in turn provide input into the planning exercise.

Type of data collected

Biological data, a primary prerequisite for fish stock assessment, are collected on both a routine and an as-needed basis. These data are backed up with biological surveys conducted on quite a regular basis. Most of the assessment is done using a holistic model approach, where a sample-based data collection programme provides most of the input data. Data collection for use in the analytical model, however, are not well covered, mainly because it is more complicated, requiring time-series length-frequency data for growth parameters and mortality rates determination, except for some species. Apart from catch and effort data, other types of data collected cover fisheries, vessels and gear.

Collection of biological data

Biological data are collected by various methods. Catch and effort data are collected by sample-based method, as well as by census for some species, like shrimps. Other biological data, such as length-frequency and other growth parameter are not collected on a routine basis, but regular surveys are conducted to capture these data sets. Stock assessment data collection is also done by IFRC, where biologists conduct fisheries resource assessment research using research vessels in the coastal and other zones of the Persian Gulf and Oman Sea. Assessment of the demersal and pelagic fish stocks are done using the bottom trawl swept area method and acoustic methods, respectively.

Sample-based data collection is done routinely. Data collected includes catches and effort, such as number of trips, hauls, etc. A complete enumeration (census-type) system of data collection is also done for the big trawlers and deep-sea vessels, to ensure that the Fisheries Management Department can make more effective plans and strategies for the management and the development of the fisheries. The logbook records for every trip provide catch data on major species caught, detailed effort data, fishing area, and some cost and earning data for socio-economic purposes. However, not all data are collected on a routine and regular basis. Useful information within the fishing community, which is important for fisheries management, at times are not easily obtained. They are normally obtained through dialogue and meetings with the fishing community itself.

Control

Control of the fisheries and the fishers is through implementation of a comprehensive licensing policy, which is supported by effective legislation. Various measures have been taken to ensure control over the fishing effort. These measures, which are clearly defined, also provide clear guidelines for the fishing community on what they can and can not do, thus giving transparency in fisheries management.

The main measures enforcing the comprehensive licensing policy are.

(i) ***Licensing of all vessels in operation*** Successful applicants for new fishing vessels are given permits to build. Upon completion and satisfactory fulfilment of the requisite, conditions, new vessel licences are issued for the vessel and the gear.

(ii) ***Zoning of the fishing areas*** Zoning is implemented to ensure that the resources are exploited in a responsible manner, while minimizing or preventing conflicts over the utilization of the fisheries resources.

(iii) ***Control of fishing units*** To control the fishing fleet, each fishing vessel is assigned an identification number or code number, except for trawlers which are identified by name. The number or name is carved into or welded permanently on the hull. The code numbering system identifies the State issuing the licence.

RESOURCES PROTECTION DIVISION

This department is the body responsible for surveillance of fishing operations. Due to the great extent of the coastline, and lack of berthing facilities along the coast, it is impossible to provide all possible protection methods. However, two main methods are currently used to protect fisheries resources: direct methods and indirect methods.

In the direct method, the surveillance personnel directly control the fishing operation and consequently prevent any illegal action, using Sea Surveillance, Land Surveillance, Air Surveillance, and Remote Control.

Sea surveillance is the most common method used to control fishing operations. More than 80% of surveillance and monitoring falls in this category.

Land surveillance is more common in the Caspian area and is mostly applicable to the rivers through which the various fish migrate. In this method, the fishing gear are controlled on the quays.

Air surveillance in the Caspian area is carried out to protect sturgeon.

Due to the extensive coastline of the Persian Gulf and Oman Sea, and the large number of fishing vessels operating in these areas, the Department of Fisheries Resources Protection plans to operate a remote control system in the near future to make control of fishing vessels easier.

Violations

According to the Act of protection and exploitation of fisheries resources, the following violations are subject to penalty:

(i) Unauthorized fishing.

(ii) Illegal transhipment from licensed vessel to non-licensed one.

(iii) Selling or buying illegal fishing gear.

(iv) Changing routes, creating physical obstacles and building establishments on the rivers that are supposed to be the route for migration of fish or have been set aside as the sites for natural propagation.

(v) Causing any pollution, releasing any contagious disease or discharging industrial effluent which may damage the resources.

(vi) Fishing in a closed season or place.

(vii) Fishing banned species.

(viii) Fishing without a licence.

(ix) Industrial fishing in coastal waters.

(x) Fishing with illegal gear or having such gear on board illegally.

(xi) Mis-reporting of catch or not providing necessary data.

(xii) Lack of compliance with regulations related to vessel marks, letters and numbers required to track or identify the vessel.

(xiii) Fishing, processing, distribution, transaction, transportation, storage, importing and exporting of sturgeon fish and caviar without possessing the requisite licence from Shilat.

(xiv) Ignoring the content of the fishing licence.

(xv) Transfer of a fishing licence to others without reporting to Shilat.

(xvi) Ignoring health and quality control regulations.

Penalties

According to Article 22 of the Act of protection and exploitation of fisheries resources, and Articles 47 to 49 of it enforceable by law, the offenders are subject to one or more of the following penalties:

(i) Fines.

(ii) Confiscation of catch.

(iii) Confiscation of fishing vessel.

(iv) Confiscation of fishing gear and other equipment on board.

(v) Closure of the polluting unit.

(vi) Imprisonment.

(vii) Suspension of fishing licence for three months.

(viii) Loss of fishing licence.

Concerning penalties (i) - (vi), on the basis of Shilat's request and complaint, the judicial authority imposes the order, whereas penalties (vii) and (viii) can be imposed by Shilat itself without court proceedings.

SEA RANCHING

Shilat has already begun to rebuild sturgeon and bony fish resources following the decline in stocks and destruction of spawning grounds.

At present, about 20 million larvae of various species of sturgeon and 140 million larvae of bony fish are raised annually and released into the Caspian Sea, which comes under the responsibility of the Aquaculture Deputy.

According to estimates, about 95% of the catch of bony fish in the Caspian Sea originates from fish released from Shilat hatcheries.

One of the major concerns of Shilat is to rebuild resources in the northern and southern waters, where resources are under pressure due to increasing fishing effort.

CONCLUSION

As noted earlier, the monitoring and control system of fisheries resources in Iran has developed gradually, along with management of living aquatic resources in the waters under its jurisdiction, while necessary information and regulations have been compiled to enforce it. As the number of stakeholders has increased in parallel with fishing effort, protection of fisheries resources has

become more critical, and therefore Shilat has adopted more effective methods to carry out surveillance and patrol operations more properly.

Various regulation and guidelines have been adopted to upgrade the effectiveness of control systems. Currently, the monitoring and control system for fisheries resources enjoys strong instruments and regulations. However, no one can claim that this system is complete and assuring all that is necessary for wise management of fisheries and resources protection. A lot of work remains to make this system effective and to justify it economically. The fisheries resources in the north and south waters of the Caspian are common to many countries. No doubt, without regional coordination, all the measures taken by Iran to develop management and protection of fisheries resources will be ineffective. In other words, to develop MCS effectively, regional coordination is a necessity.