

TCP/TUN/3001 (A): Technical support for the promotion of aquaculture development and management of the European eel (*Anguilla anguilla*) in Tunisia

Valerio Crespi

Aquaculture Management and Conservation Service (FIMA)
FAO Department of Fisheries and Aquaculture, Rome, Italy
Valerio.Crespi@fao.org

INTRODUCTION

This article presents the activities undertaken by TCP/TUN/3001 (A): "Technical support for the promotion of aquaculture development and management of the European eel (*Anguilla anguilla*)" in Tunisia during the period from January 2004 to August 2006. The project was jointly implemented by FIMA, the FAO Representation in Tunisia and the Interprofessional association of fishing Products (GIPP) which provided staff to coordinate activities at the national level.

The European eel stock populating marine, brackish and freshwaters of Tunisia forms part of the Mediterranean population of this species whose area of reproduction is located in the Sargasso Sea, in the middle of the North Atlantic.

This species which is exploited in the Atlantic Sea from the north of Norway to Morocco and in all the Mediterranean countries is considered by the experts of the International Council for the Exploration of the Sea (ICES) and the European Inland Advisory Commission (EIFAC) Working Group on Eels, as an endangered species.

There are multiple factors threatening the status of this species. Fishing is often considered as one of the major factors. Studies carried out by various researcher teams of the main producer countries, however, showed that, in general, eels are mainly victims of shrinking natural habitats and pollution. When migrating both

upstream and downstream, migration through waterways is hindered by numerous man-made obstacles such as dykes and dams lacking "fish pass"; there is also particularly high mortality rate among the adult eels making their way to spawning grounds.

EEL EXPLOITATION IN TUNISIA

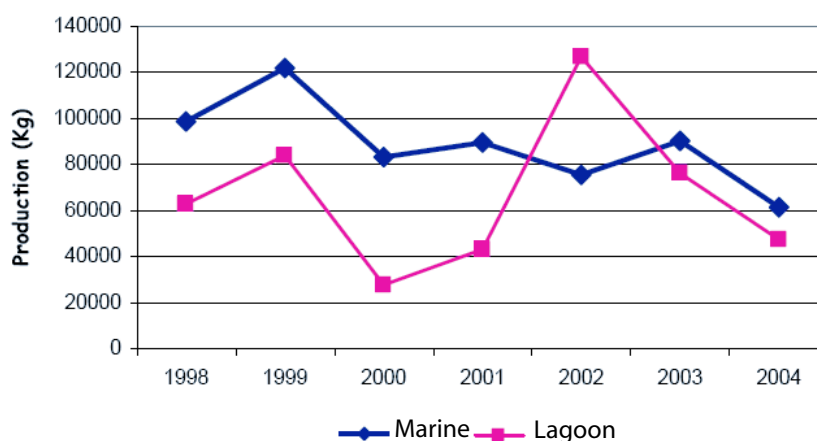
Tunisia, like other Maghreb countries, is a producer of eel and it has an important role to play in the restoration and conservation of the species. Eels are more abundant in the northern part of Tunisia where they frequent coastal waters, lagoons and river mouths.

The migratory season lasts from December until the beginning of June, although the elvers are present all-year round in some rivers (e.g. rivers of Mejerdah and Tinja). In the Tunisian legislation, it is not allowed to fish eel having a total length of less than 30 cm.

In Tunisia, eels are exploited in inland and coastal areas. Captured eels come mainly from lagoon and inland fisheries. The main fishing gears used in inland waters are gillnets and trammel nets. In the lagoons (Ichkeul, Ghar El Melh and lagoon of Tunis), fixed gears are usually employed; the most common are the fyke nets "capéchades" and the barriers "bordigues". They offer the advantage to keep fish caught alive that is particularly appreciated in the market of Northern European countries where captures are usually exported. Eel culture is not practiced in Tunisia and there is no eel aquaculture tradition in the country.

Total eel capture fisheries production in the country shows an average of 154 939 kg per year fluctuating between 108 384 and 205 606 kg during the period 1998-2004 (Figure 1).

Figure 1. Annual production of European eel in Tunisia (source: Direction Générale de la Pêche et de l'Aquaculture, 2007)



Captured eels coming from the northern part of Tunisia represent 51 percent of total captures, followed respectively by 31 percent from the east and only 18 percent from the south.

With regard to the seasonal production, landings of eel are distributed along all-year round with a peak during the winter season (November-February). Apart from this season, landings are rather irregular during the rest of the year.

THE PROJECT

The overall objective of the project was to assist the Tunisian government in achieving sustainable development of European eel fisheries and aquaculture in fresh and brackish waters, by setting-up the base for a national programme which would evaluate the status of such resources within the framework of the international management of the species. The project was based on two key components, namely: (i) the aquaculture component, i.e. grow-out of the European eel from wild glass eel stage to elver; and (ii) the stock assessment component which estimates the status of European eel in the Tunisian waters.

These two components are interdependent due to the fact that the elvers, produced through the aquaculture component, have been

released into the inland lakes/reservoirs in order to enhance the local eel population.

Three training missions were organized for the benefit of six national researchers. The first mission was organized by EUROEEL in Denmark and the Netherlands on eel aquaculture techniques, e.g. management of an eel nursery. The other two missions held in France were organized by IFREMER on glass eel stock assessment methodologies and silver eel stock assessment and fishing methods.

The project provided the services of four international consultants with the following expertise, namely: (i) eel stock assessment; (ii) fishing technology (glass eel and silver eel); (iii) eel nursery technique (aquaculture); and (iv) eel stock assessment and experience in the Mediterranean Sea.

Through the support of FAO, an eel nursery was assembled by an Italian private company SCUBLA, in the area of Boumhel El Bassatine, just outside Tunis (Figure 2). National technicians have been trained by an international consultant/expert on eel aquaculture on the use of the nursery to produce eels from wild glass eel to elvers. The first production cycle was started at the end of the project.

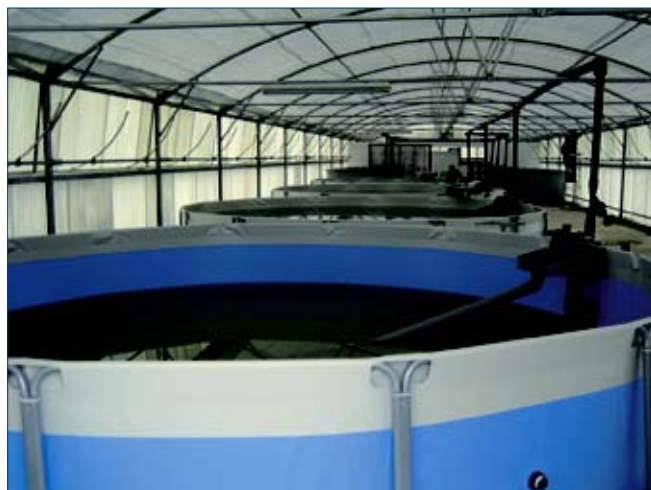
With regard to the stock assessment component, the required material was furnished by the project. Four fishing gears (“tezelles”, fixed trawls) have been manufactured by the “Institut Supérieur de Pêche et d’Aquaculture de Bizerte” (ISPAB) to be used in the selected rivers (Mejerdah and Tinja), to assess the quantity and size of silver eels moving towards the sea during their spawning migration (November-December).

A flat bottom boat in aluminum has been provided by the project along with a sieve device to assess the upstream migration of glass eels (June-July) in the two rivers.

CONCLUSIONS AND RECOMMENDATIONS

Tunisia has approached FAO for advice on best practices for a sustainable development of European eel fisheries and aquaculture. Throughout the execution of this project, Tunisia has acquired enough experience to implement a national strategy for the sustainable development of eel fisheries and aquaculture. As a follow up, Tunisia should take the responsibility to address the following priorities: (1) a recovery plan for the eel stock should be compiled and implemented as a matter of utmost urgency; (2) fishing and other anthropogenic mortality

Figure 2. Eel nursery in Boumhel El Bassatine, Tunisia



V. CRESPI, FAO

should be reduced to the lowest possible level; (3) monitoring of recruitment, stocks, fisheries and escapees should be sustained; (4) Tunisia should report annually on status and trend of local eel population, fisheries and aquaculture to the ICES/EIFAC Working Group.

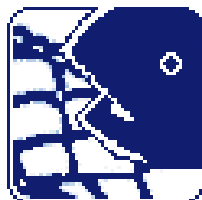


Project staff. From left: A. Dorgham (National Consultant - Aquaculture), V. Crespi (FAO Fishery Resources Officer), M. Nadhif (Director of GIPP), and M. El Manouchi (National Consultant - Fisheries)

The FAO Aquaculture Fact Sheet

The Fact Sheet collections produced by the FAO Fisheries and Aquaculture Department are continuously growing. Three collections have been produced and stored within the Aquaculture Gateway Page

<http://www.fao.org/fishery/aquaculture>



91 National Aquaculture Sector Overviews (NASO) have been published on the FAO website so far and are available at:

<http://www.fao.org/fishery/naso/search>

NASO collection provides a general overview of aquaculture aspects and related issues at the national level for FAO member countries. The NASOs contain detailed information on the history of aquaculture; human resources involved in the sector; main farming systems and cultured species contributing to national production; graphs showing reported production statistics; description of the main domestic markets and trade; and national development trends and issues.



In 2003, the FAO Fisheries and Aquaculture Department launched the Cultured Aquatic Species Information Programme (CASIP). The program consists of the preparation of a series of technical fact sheets on the most important commercially species produced by aquaculture. The cultured species fact sheets are written in simple technical language and focus on the practical aspects of aquaculture, from seed supply and the principal farming systems used worldwide to the raising, harvesting and marketing of farmed species. The main objective of this program is to improve the knowledge of marine and freshwater organisms of current and potential interest to aquaculture.

50 Fact Sheets have been published on the internet so far and are available at:

<http://www.fao.org/fishery/culturedspecies/search>



The third Fact Sheets collection is composed of the National Aquaculture Legislation Overviews (NALO). The NALOs consist of a series of country reports on aquaculture laws and regulations, prepared by the Fisheries and Aquaculture Department in collaboration with the Development Law Service.

42 NALOs have been published on the internet so far and are available at:

<http://www.fao.org/fishery/nalo/search>

The three above described fact sheet collections are being translated in five FAO official languages (Arabic, Chinese, English, French and Spanish) and many of them are already available in several languages.