

The challenge of domesticating bluefin tuna (Project SELFDOTT)

*Continuing on the success of an 5th FP research programme (REPRODOTT), which was the first ever study of the reproductive biology of the Atlantic bluefin tuna in captivity, and which developed a hormonal method for the induction of spawning, the SELFDOTT project (From capture based to self sustained aquaculture and domestication of Bluefin tuna, *Thunnus thynnus*) is implementing the knowledge on the reproduction of bluefin tuna in captivity. It aims to establish the knowledge-base required for controlled development of eggs, larvae and suitable and environmentally performing feeds.*

Background

Tunas constitute the most valuable fishery worldwide, with global catches of 4 million mtn and a value of US\$ 6 billion. Fuelled by the increasing demand for this unique fish by the sashimi-sushi market in Japan, Europe and the United States, a "capture-based" aquaculture industry has developed in the Mediterranean Sea over the last decade, which involves the capture of migrating wild fish and their fattening in floating cages for periods ranging from 2 months to 2 years. The dramatic expansion of this industry is considered a threat to the now heavily over-fished wild stock.



In order to alleviate the pressure on the wild fishery of the bluefin tuna and aid in its conservation, the domestication of this fish and the development of a sustainable industry are necessary. This will allow the propagation of this species in captive conditions, through rearing of the larvae and production of fingerlings for further grow-out on suitable, scientifically formulated and environmentally performing feeds, as it is done successfully in the EU for species such as salmon, sea bass and sea bream. Therefore, there is a great interest in developing captive bluefin tuna broodstocks and larval rearing methods to support the sustainable development of an aquaculture industry. Studying the reproductive biology and larval rearing of this species in captivity would also result in a better understanding of its life history, which is necessary for management of the wild stocks.

The project

The SELFDOTT project was launched in January 2008 and is funded under the 7th FP Cooperation Work Programme: Food, Agriculture and Fisheries, and Biotechnology. It is coordinated by the IEO, Instituto Español de Oceanografía (SPAIN). The other members of the consortium include the Hellenic Centre for Marine Research (Greece); the Institut Français d'Exploitation de la Mer (France); the Heinrich-Heine University of Düsseldorf, (Germany); the National Centre for Mariculture, (Israel); the University of Cádiz, (Spain); the University of Bari, (Italy); the Malta Centre for Fisheries Sciences, (Malta); the Centre National pour la Recherche Scientifique, (France) and the Université de Montpellier II, (France). The tuna are maintained at the facilities of Tuna Graso, S.A., (Spain) and Malta Fish Farming (Malta), who are the industrial partners of the consortium with the Skretting Aquaculture Research Centre, one of the most important fish feed manufacturing company world-wide.

Highlights

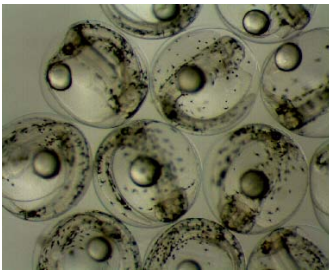


Wild juvenile and mature bluefin tuna are being reared in floating cages at El Gorguel (Spain) and Marxaslokk Bay (Malta). A third broodstock is placed in Vibo Marina (Italy) and belongs to a regional research consortium (ALLOTUNA) funded by European Union Structural Funds through the region of Puglia (Italy). The two projects have some common partners, and have signed a collaboration agreement.

Wild juveniles were captured alive by hook-and-line and adapted to captivity in floating cages in order to establish the knowledge-base required for the development of suitable and environmentally performing feeds, develop weaning feeds and develop formulated dry feed.

All the broodstocks are used to study gametogenesis, and the influence of diet on reproductive maturation and gamete quality. Mature fish have been induced to spawn using hormone implants and the eggs were collected using devices designed specifically for sea cages.

Beginning on June 29th 2009, a captive-reared broodstock of Atlantic bluefin tuna maintained at El Gorguel (Spain) began spawning after being implanted with a reproductive hormone delivery-system. The fish spawned daily afterwards, producing a total of 140 million eggs, with a daily maximum of 34 million eggs. Also, the Italian broodstock began spawning 3 days after hormone delivery system implantation (30th June), producing a total of 46 million eggs over the course of two weeks.



The eggs produced at the two sites were sent to research hatcheries in Spain, France, Italy, Malta, Greece and Israel to commence for the first time the research on the larval rearing of this magnificent and unique marine fish.

For more information, please visit the website:

<http://www.selfdott.org>

Or contact the project coordinator:

Dr. Fernando de la Gándara
Instituto Español de Oceanografía (IEO)
Crtra. de La Azohía s/n
30860 Puerto de Mazarrón (Spain)
E-mail: fernando@mu.ieo.es
Tel: +34 - 968 153964
Fax: +34 - 968153934



SELFDOTT