



REPRODUCTION IN AQUARIUM OF NURSEHOUND, *Scyliorhinus stellaris* (Linnaeus 1758) AND JUVENILES HUSBANDRY

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ABSTRACT

Scyliorhinus stellaris (Linnaeus 1758) is a shark of the *Scyliorhinidae* family, close to the *Scyliorhinus canicula* (Linnaeus 1758), species frequently housed in public aquaria. Recently Mediterranean shark experts are investigating about the loss of fishing captures in the sea basin for *scyliorhinidae* (Dr. Susana pasc.com). Not many data about natural life are available concerning this species of shark. In 2003 a pregnant specimen of *Scyliorhinus stellaris*, 90cm long, was transferred to the Argentario Mediterranean Aquarium and placed, in a 20.000 l tank. Some juveniles born on 2004 and 2005 were transferred in the laboratory in order to study, age and let them free on 2004. Collect data about their need in term of feeding and growing in captivity during the first life years, could be useful for a mediterranean program of tagging and a population with conservative proposal for the nursery sites.

INTRODUCTION:

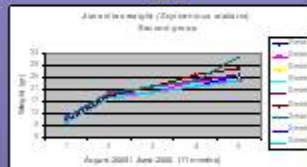
The Nursehound, *Scyliorhinus stellaris* (Linnaeus 1758) is a benthic shark. Its distribution is: Mediterranean sea, absent in the black sea and present in Atlantic ocean, from the lands and southern Scandinavia to Senegal. The maximum size attains 142 cm, but it is usually fished at 50-60 cm. It's bigger than small-spotted catshark *Scyliorhinus retifer* (Linnaeus 1758). It lives on rocky bottom between 20 and 40 m deep, until 100 m. It feeds of crustaceans, molluscs and little fishes, also other *scyliorhinidae*, like small-spotted catshark *Scyliorhinus retifer* (Linnaeus 1758) (Notarbartolo di Sciara et al 1998, Cortes E, 1999). Females mature at about 79cm and males at 77. About the conservation and exploitation status: IUCN, EU, Mediterranean, occasional rare and vulnerable species (Susana F. 2003). It's an easy species to maintain in public aquarium (Scott W.M. 2001). A mature female, transferred to the Argentario Aquarium on January 2003, in a tank with 3 other young not mature specimen of the same species, 2 females and 1 male, spawned along two years 42 eggs. Some of the eggs fertilized emitted juveniles, they were maintained in the laboratory to observe growing and to improve the staff shark husbandry. Some of them were tagged in the Aquarium for the National Elasmobranch Tagging program from Italian A.R.P.A.I (Dr. Susana manager), and let free on July 2004.

MATERIAL AND METHODS:

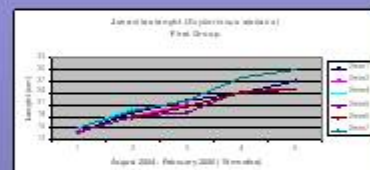
A pregnant female fished along the Argentario coast, was transferred on December 2003 in the pelagic tank (20.000 l) of Argentario Mediterranean Aquarium (pic 1,2). One month later it began to spawn eggs, 20 on 2004 and 22 on 2005, always between January and March. Before the summer 2004, all the fertilized eggs were transferred in the laboratory (pic 3). In late August 2004, 6 of the 20 eggs, emitted juveniles and all of them survived. In summer 2005, 22 fertilized eggs spawned in the pelagic tank, were transferred in the laboratory, 11 juveniles were emitted and 9 of them survived. Placed each one in a 10 l aquaria, one per aquarium, data about weight length and some water parameters like T, pH, salinity, nitrate and nitrite, were collected. Same husbandry protocol was followed and data collected for 19 months for the Group A (2004-2006) and along 11 months for the Group B (2005-2006). The analysis instrument were, marine thermometer, electronic pH-meter, refractometer for salinity and field Spectrophotometer Hanna C-200, for nitrate and nitrite. Two times per month water was changed of about 20% with natural and filtered seawater and flushed weekly with 10% of their weight for the first 3 months with seawater and since the 4th with anchovy; after 10-11 months weekly percentage increased to 15. In June 2004, 9 specimen (4, 2004 group and 5, 2005 group) were tagged following the protocol for the National Elasmobranch Tagging Program from A.R.P.A.I, Italian Agency for the Environment Protection, managed by Dr. Fabrizio Susana, and let free on July, the other maintained in the aquarium to control growing parameters. On June 2004 a second male, mature, was introduced in the pelagic tank.



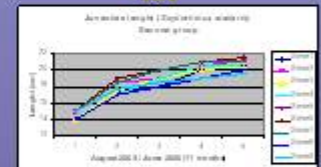
Tab.3



Tab.4



Tab.1



Tab.2

RESULTS AND CONCLUSIONS:

From 2004 to 2004, 42 eggs were spawned, 17 juveniles emitted in the laboratory 10 l aquaria, one per tank and 15 survived. Both the groups (A: First 2004-2006, B: Second 2005-2006) were controlled by a student of the Siena University preparing his marine biology degree. Data collected concerned growth information: like weight to total length, weight of food in g weekly distributed, some water parameters like T, pH, salinity, nitrate and nitrite. Concerning the total length: for the group A (Tab.1) the average at born was 14,3 cm, after 11 months 21,35 cm and after 19 months 24,75 cm, for the group B (Tab.2) the average at born was 14,35 cm, after 11 months 20,7 cm. About the weight: group A (Tab.3) from 11 g to 25,64 g after 9 months and 43 g after 19 months, group B (Tab.4) from 10,55 g to 24 g after 11 months. Juveniles were fished weekly with 10% of their weight increasing to 15% after 10-11 months. Data about seawater in aquaria for the group A: T min:14 - max:20, pH min:8 - max:8,5, salinity min:34 - max:42, nitrate: max:144, nitrite: max:0,11, group B: T min:18 max:21, pH min: 7,4 max: 8,4, salinity min: 34 max: 42, nitrate: max: 83,72 nitrite: max: 0,38.

Some specimen were tagged on June 2004 with a yellow filament with a code number useful if they will be fished and sent to the aquarium (pic 4,5,6). Other specimen will be let free in the aquarium so to be able to compare data with those let free on July 2004 (pic 7). In the program are concerned the coast guard and professional fishermen. The captivity reproduction and husbandry of nursehound seems to be not difficult in public aquaria with large tanks. To spawn each year fertilized eggs, could be useful for research about reproductive physiology of benthic sharks and to develop programs of tagging and repopulation in Mediterranean sea, where some conservation problems attend the nursehound population. The Argentario Aquarium staff (Micarelli and Spinetti) actually has a good husbandry for young and adult nursehound and will try to improve knowledge for the captivity reproduction.

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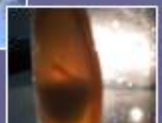
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Pic 1



Pic 2



Pic 3



Pic 4



Pic 5



Pic 6



Pic 7