Artificial propagation of *Scyllarides latus*(latreille,1803)under laboratory conditions

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Abstract

In this research, we did in vitro pilot study to breed slipper lobster Scyllarideslatus(latreille, 1803). This species of lobsters was chosen for its economic value All individuals were collected from sea water on Lattkia,syria coast, mothers put in acclimation tank (11/3/2019) with density about 3 ind./m^3 with temperatures similar to it's at the environment, the temperature were 24°c gradually rising to 31°c through 2-8 weeks with staying of the propagation typical conditions (salinity 37-39 ppt, 8-8.5 pH and 6-7 mg/l dissolved Oxygen). The water exchange rates were 30% daily and light period was determined as 14 hours light daily feeding. Mothers put in a propagation tank by average male: female, eggs release was observed during 48 hour, the tanks water was tested by microscope to check the presence of phyllosoma.

Keywords: *Scyllarideslatus, phyllosoma, Artificial propagation, slipper lobster*

I. Introduction

The slipper lobster *scyllarideslatus* (Latreille,1803) is located in the Mediterranean sea [1] and spread out of the Canria[2] and Atlantic coasts [3] up to Azores [4] and spread to depth between a few meters down to about 400 m. The Mediterranean lobsters are high value crustacean which were caught in trawel, and traps. The big important for Mediterranean lobster is a good candidate for marine culture because of high value and it has need less protein dietary requirements. Food conversion ratio disease resistance in original water conditions can be readily bred and are highly fecund. But the greatest problem in culturing them is the lengthy larval life which is more than other marine crustaceans.In many areas this resource as well as other large crustaceans has been in danger during the last years catching of slipper lobsters once quite common has now become occasional and the species is represented only by juvenile specimens this decline is probably due to different reasons the commercial importance that increased fishing pressure , the human modification of the coastal habitats and the lack of recruitment [5].In the last years the slipper lobsters behavior was carefully observed in artificial habitats. In few years ago there have been big advances in hatchery of several commercial important species of lobster [6] production of phyllosoma of lobster sea-cage culture of slipper lobster has been used in some parts of the world for on-growing of juveniles with mixed result due largely to reduced growth and increased mortality from poor water quality infection or increased aggressive encounters amongst individuals [7]. .Such research can be successful if properly designed artificial structures are supplied to the predator-sensitive early stages and if these early stages are appropriately conditioned to predator and substrate odors so that they respond correctly when released. This study reports the first successful spawning egg hatching and production phyllosoma larvae of Mediterranean slipper lobster *Scyllarideslatus* in Syrian laboratory

II. Materials and Methods

All mothers were collected from sea water on eastern coast of the Mediterranean Sea. Study area is located in Lattakia coast (Fig 1). The fishing was done in February and March 2019 by lobster cages from the rocky bottom at depth which was about 40-300 m [5] and fishing was done in the early morning.

Fig.1: Study area (Lattakia coast)

Lobster mothers were transported by special tanks with sea water specimens. The sea water was shacked until arrival to the laboratory.Lobsters were put in rearing tanks in the laboratory.Mothers'collection was done in association with some parameters measurement of sea environment (temperature and salinity, pH and dissolved oxygen).Tow rectangle tanks made of glass with dimensions 35×40×80 cm for each. The first one is for acclimation, the second for propagation in the laboratory ofzoobenthic animals in the institute. Each tank was providing with air device, a thermometer, a light device and filtering device

III. Results and Discussion

The results of this research were showed according to work steps as followed:

Discrimination between males and females:

It was done for all as followed:Sex was determined macroscopically by inspecting the position of sexual orifices and the conformation of the tip of the pereiopod, (a) the position of the sexual orifices is on the fifth pereiopod in males (b)instead of on the third in females and the fifth pereiopod has a clamp[8](fig 2).

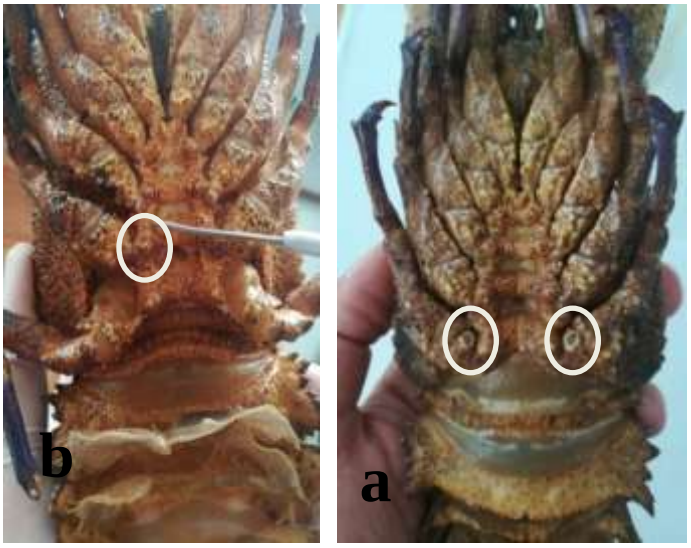


Fig.2: The position of sexual orifices

Acclimation stage:

Mothers were put in an acclimation tank in the laboratory under temperatures conditions were similar to temperature of the environment which was about 24°c. The temperature degree was gradually measuredthrough 2-8 weeks in tanks till getting wanted degree for gonad growth and propagation (29°c). This process was called acclimation of study Individualsand exposure for similar conditions for propagation under natural conditions [9]. It is known that acclimation stage should be increased when mothers are taken under improper environmental conditions and poor nourishing condition.

Propagation conditions:

This study depended on conditions previously used in similar studies where salinity ranged between 37-39 ppt, 8-8.5 pH and 6-7 mg/l dissolved Oxygen [9] and light period was about 14 hours light and 10 hours dark.

Mothers feeding in tanks:

Food used in feeding the mothers included pieces ofMollusks and fish which formed 25% of biomass body weight of live lobster in the tank. The food was put in two stages: the first one in morning and the second one at night. The first stage contained more food that was much concentrated than the second stage because of slow eating.

Cleaning mothers tanks:

Uneaten food was removed away before adding the new meal. Then, the water was filtered for five minutes by filtering system.

Changing water tank:

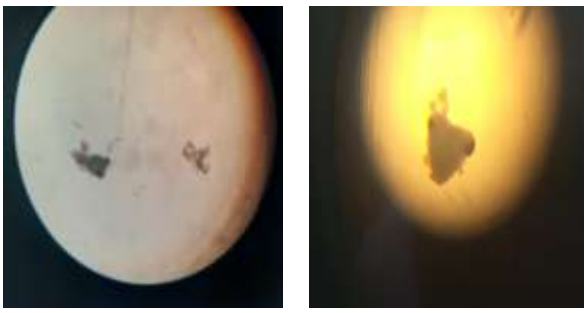
10-30% of the water inside the tank was daily exchanged. The added sea water was filtered by plankton net to block similar strange speciesto study group. However, the whole water was changed every week [10].The way of preparing mothers for propagation was followed:

Mothers were put in water tank since 11/3/2019 under 24°c temperature. Then the temperature was increased 0.5°c weekly till reaching 29°c. After that, it was fixed for two weeks. By that time, mature mothers that were ready for propagation were noted by seen female clean the abdominal area by its clamps on fifth pereiopod and at male we notes exit of semen from the sexual orifices is on the fifth pereiopod . Therefore, one female was put for every male in the propagation tank after 24 hours of peeling process. Eggs were release after 48 hours of placing in the propagation tank.

Testing the Water of tank:

Propagation process was confirmed by filtering the water of propagation tank through plankton net had 20 µ meshes. TheFiltrate was put onPetri dish to be investigated by 1oox microscope two stages were distinguished (a) mature egg, (b) fertilized egg, also we saw in inspected water two stages(c) Naupliosoma and (d) phyllosoma (fig,3)

b. Fertilized egg a. Mature egg



d. Phyllosoma c. Naupliosoma

Fig.3: eggs and larva stages

Conclusion

It was concluded from the previous study and associated virtual study results that the best period for collecting mothers were from June to August of *scyllarideslatus* in Syrian coast.Successful spawning of the *scyllarideslatus* under laboratory conditions and its economic importance and being on the IUCN Red list of threatened species make its breeding and hatching in private or government farms and sent these results to economic event owners to invest in this field.

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