International Journal of Sciences: Basic and Applied Research (IJSBAR)

ISSN 2307-4531
(Print & Online)

http://gssrr.org/index.php?journal=JournalOfBasicAndApplied

The Spiny Lobster, *Palinurus mauritanicus* (Gruvel, 1911) from Algerian West Coasts: A Species to Protect.

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Abstract

The study of the biometric characteristics of the pink lobster, *Palinurus mauritanicus* allowed us to define some parameters related to reproduction and growth of a noble little-known species in the Mediterranean, which is not protected in Algeria, and tends to be scarce. To avoid future a pronounced decline in the fishable stock and allow a rational balance of specimens attending island fishing areas; our recommendations are based on observations made during sampling process that are resumed as follows: prohibit throughout the year capture of berried females, and returned them to water in case of accidental trawl capture, closing the lobster fishing during periods of reproduction and egg maturation (July, August and September) also prohibit the use of traps made of chlorinated polyvinyl and prefer selective gears.

Keywords: Pink lobster; *Palinurus mauritanicus*; protected species; berried females; Reproduction; Growth; Mediterranean; Algerian west coast.

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1. Introduction

Palinurus mauritancus (Fig. 1) is a noble species of high commercial value, highly prized with restaurants and hotels. Once abundant in the catches of trawlers but its stock tends this last decades to dwindle as a result of abusive fisheries [1]. This decopod lives on mud, rocks and coral formations [2].

This type of favorable substrate is observed in Algeria particularly in the western region, where we note the presence of this species on the Dendrophyllum formations which extend from a depth of 280 to 440m from the Moroccan border to Habibas islands.

Currently, some captured specimens are collected in fisheries of Beni Saf, Bouzedjar and Oran (Fig. 1) to be transported to fishponds where they stay for about a month, time to build up a stock composed of at least 100 specimens which will be sold mainly to prestigious restaurants and hotels [3]. Based on this observations established at the aquarium Beni Saf, we were interested in this case for two fundamental reasons: The samples studied come from island areas (Ile Plane - Habibas islands - Ile Rachgoun) which represent the ideal habitat for pink spiny lobster, so that [4] reports that more than 800 pink lobsters were caught by some trawlers in one stroke in Habibas Islands.

In comparison, we noted for the month of July 2004, a stock consisting of 61 specimens in captivity captured by 01 trawler for a period of 20 days of fishing. The decline in number of specimens of lobster captured is mainly due to the fact that unfortunately, this decapod doesn't benefit from any protection measure in our country, but has a status of a protected species across the Mediterranean. In addition, the species is poorly known biologically and scarce works have already been made concerning this decapod frequenting the Algerian waters [5,6].

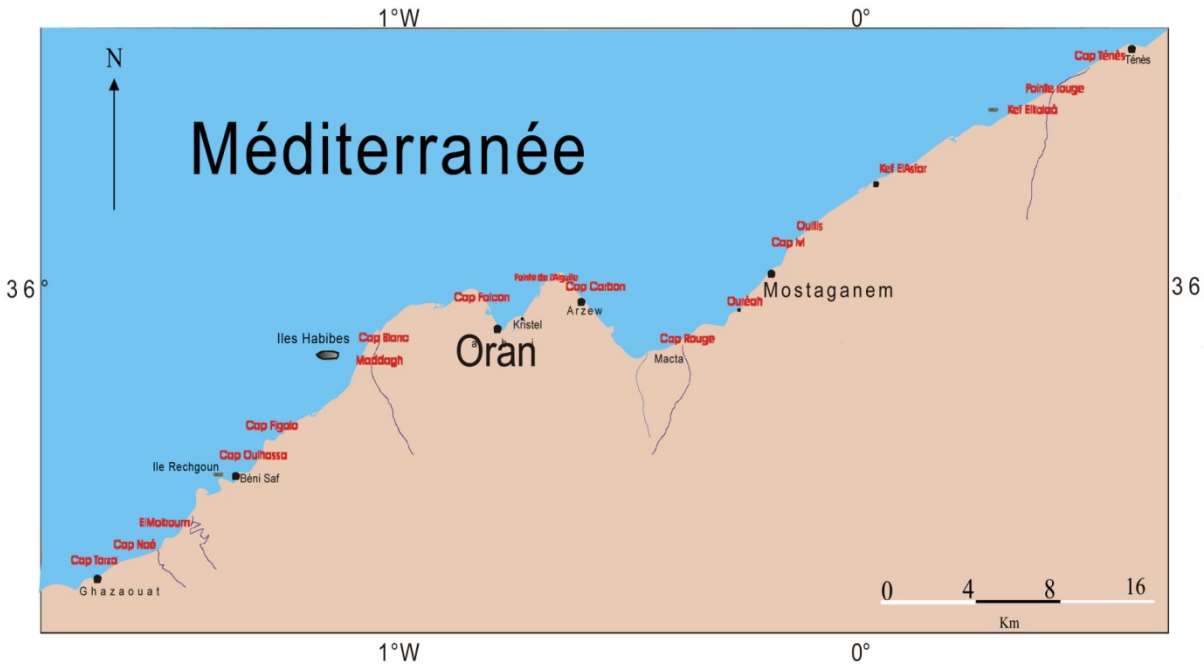

Figure 1. Localization of the study area [7].

2. Material and methods

2.1. Sampling

Specimens were caught in island areas at depth ranging between 180 and 400 m by traps [8], the more selective gear fishing with hourly output of 100.41 g / trap (mean fishing effort of Rais Mahmoud & Mokhtar vessel) or accidentally by trawlers where the number of captured specimens was estimated at 3 or 4 units.

2.2. Weighing and measurements

127 individuals were weighted (total weight: Pt) with a manual balance, a caliper was used (1/10 mm precision) to measure:

-The carapace length (CL) taken from the tip of rostrum to the posterior end of the carapace.

-The total length (TL) taken from the tip of the rostrum to the end of the posterior border of the telson.

2.3. Sex determination

The pereiopods bear the sexual organs, which are the third pereiopod in the female and the fifth pereiopod in the male [9,10].

3. Results and discussion

3.1. Reproduction

From a total of 127 lobsters observed, we noted a rate of 63% for males and 64% females, [4] gives a sex ratio of 47.16% for females, while [9] noted a value of 56.30%, both authors mentioned that this ratio increases with depth. Sex repartition during nine months of our study (Fig. 2), indicates an abundance of females in summer (July) and fall (September) corresponding to periods of reproduction. In August and September, a tendency towards equality between the sexes is observed, which leads us to believe that this is a mating period.

In January, February, April and May, males predominate compared to females, which could mean that females migrate to the ocean depths for egg maturation. The grouping of sexes by class of 20 mm CL (Fig. 3), indicates that males outnumber females in large sizes and could be beneficial for pink lobster biomass because avoidance of breeding females ensures stock renewal.

However, some cases of non-compliance with fisheries regulations fixing the minimum sizes of commercial fish species (lobster measuring 10 cm) were identified during our observations, thus 1.57% of the catch representing 02 units didn't meet the above-mentioned regulations. 03 berried females were recorded on the total me, while the regulations require immediate immersion of berried females when caught accidentally with trawlers, which wasn't the case.

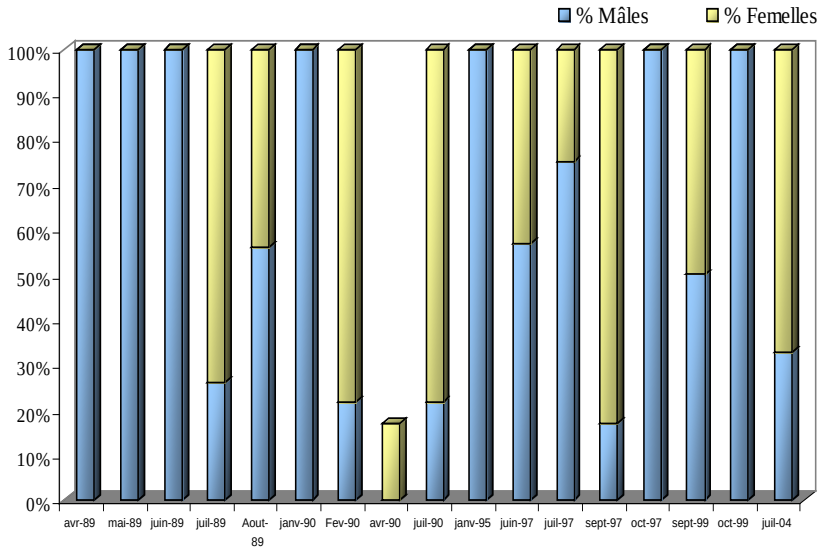

Figure 2. Monthly repartition of sex ratio for *P. mauritanicus* from West Algerian coasts.

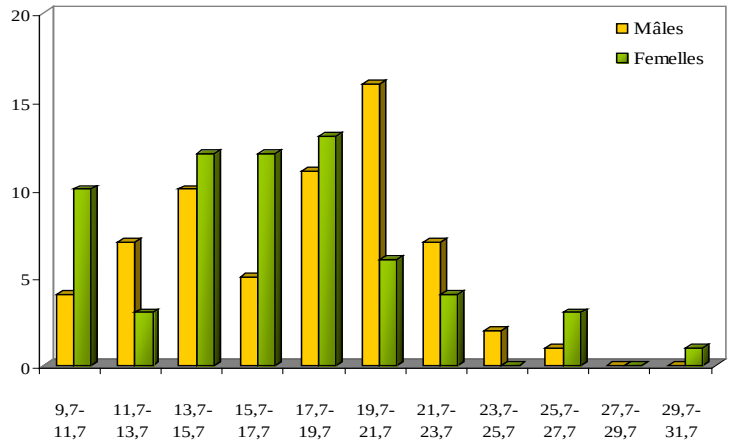

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Figure 3. Distribution of the two sexes of *P. mauritanicus* according to Lct (cephalothoracic length cm)

3.2. Growth parameters

Lct and Lt of specimens respectively varied between 97 and 300 mm and between 200 and 533 mm while the weight ranged between 275 and 4000 g, and it is only between 80 and 90 mm Lct corresponding to 228-256 mm Lt or 350-500 g weight per individual that 50% of females are mature and annual growth is estimated at 4 to 5 mm Lct [4]. Thus, almost all lobsters collected have reached sexual maturity.

The relationship between weight, Lct and Lt illustrating the relative growth of the species was established adopting the formula of [12] and we note that:

a) The relationship Lt/Pt for males and females (Fig. 4a & 4b) announces negative allometry which means that the total length for both sexes grows proportionally faster than weight does.

b) The relationship Lc/Pt (Fig. 5a & 5b) for all sexes, also shows a negative allometry.

c) The relationship Lc/Lt (Fig. 6a & 6b) for males, indicates a positive allometry suggesting that males grow faster in length than the carapace, while in females the opposite is observed; which could be explained by the greater visceral mass of females given that they often bear eggs.

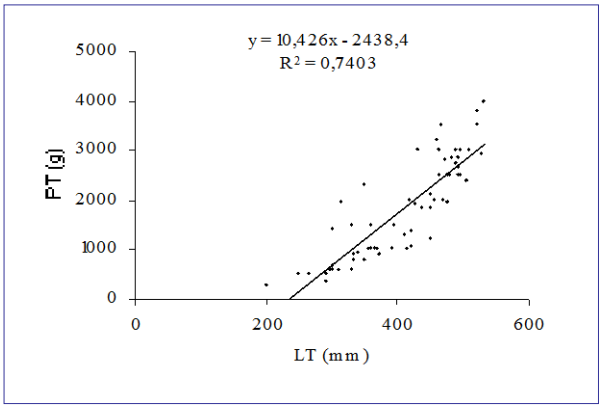

Fig. 4a.Lt / Pt Relationship (males)

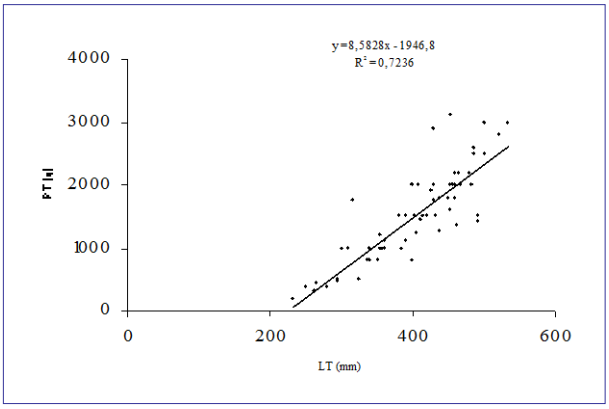

Fig. 4b. Lt / Pt Relationship (females)

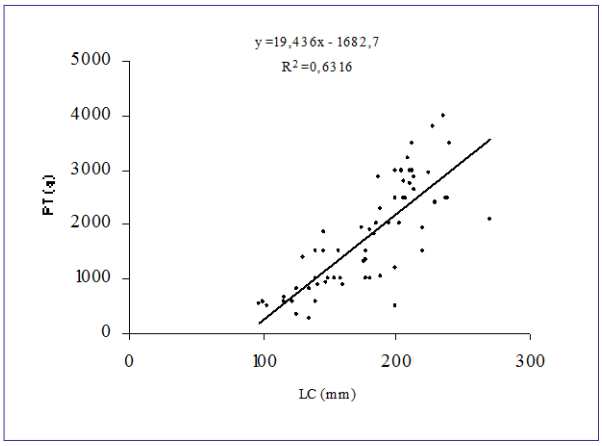

Fig. 5a. Lc / Pt Relationship (males)

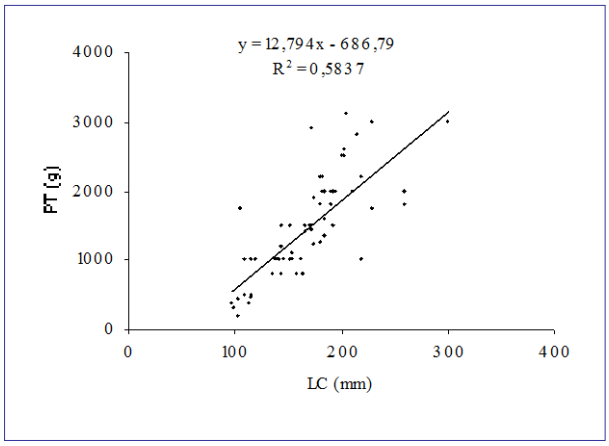

Fig. 5b. Lc / Pt Relationship (females)

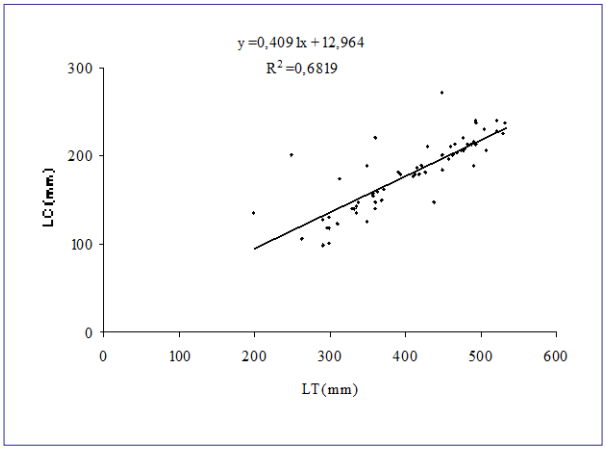

Fig. 6a. Lt / Lc Relationship (males)

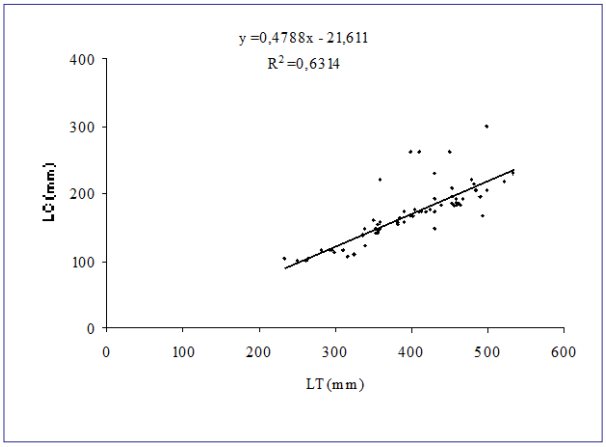

Fig. 6b. Lt / Lc Relationship (females)

4. Conclusion

To avoid future decline in the fishable stock of pink lobster *Palinurus mauritanicus* and allow a rational exploitation of specimens attending insular areas, we strongly recommend the following points:

✓ Prohibit all year round catching of berried females and return them to water in case accidental trawl fishing.

✓ Strengthen regulatory measures by the closure of the lobster fishing during periods of reproduction and egg maturation ie the months of July, August and September.

✓ Prohibit the use of fishing gear including metal or PVC traps which are not biodegradable, and encloses lobster for life in case of loss or net drift.

✓ Use selective gears such as trammel nets, or cages made of reeds, tamarisk which are biodegradable and do not disturb the natural habitat of the species.

Acknowledgements

The authors want to thank Oran, Arzew and Béni-Saf fisheries admistations and staff for their help procuring scarce specimens of *Palinurus mauritanicus*.

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