



The Study of annual shrimp stocks in Masshab(Al-Hammar Marsh), Basrah, Southern Iraq

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ABSTRACT:

The catch was identified and included two species of shrimp in the waters of the Masshab near Al – Hammar Marsh, Basra, Iraq. During the study period, some of the following environmental factors were recorded, Temperatures are between 20 to 30 ° C; Salinity (‰) between 1.5 to 4.9; the pH value is between 6.9 to 8.0; Turbidity (NTU) between 18.4 to 21.5. The total catch from shrimp, *Metapenaeus affinis*, and *Macrobrachium nipponense* was 373,35 ± 12.03 per hour per year, and the monthly catch rate for shrimp was 33.11 ± 12.03 kg per hour per month. The peak of fishing during the summer months was the highest in July, with fishing reaching 47.200 kg per hour during July, while the lowest quantities of fishing were in winter during the January month at 12 kg per hour. The overall catch rate for *M. affinis* was 124 ± 10.58 kg per hour per year, while the total catch rate for *M. nipponense* was 241 ± 13.33 kg per hour per year. The female sex ratio was higher than that of males in two species, *M. affinis* of males was 21.67, and females were 78.33, while in *M. nipponense* males were 14.6 to 83.25. And female of *M. nipponense* bearing of eggs 28.62 ± 34,21 during the year. While non-eggs carriers 71.38 ± 34.21. The period in which females were observed carrying-eggs was determined during the summer months from April to July. The highest percentage of egg-carrying was in July at 88.40% and at January, 11.6%. The longest. *M. affinis* was 10 cm and the smallest was 1 cm, the longest, while *M. nipponense* and 9 cm and the smallest was 1 cm.

KEYWORDS:

Al-Hammar Marsh, Masshab, Shrimp stocks.



INTRODUCTION

Fisheries in tropical and subtropical waters often focus on penaeid shrimp and secondly on secondary production of other shrimp species, on the whole penaeid shrimp, its presence in fisheries for a short period lasts for one year. Shrimp fisheries are often managed through a minimum egg laying strategy to prevent overfishing of shrimp stocks, under this strategy during the egg-laying season, hatching and stocking period and if a reduction in shrimp stock is observed, the traps are closed and the relevant laws (84-1989) (Mohammed and Ye, 1999).

Al-Maliky and Mahdi (2017) studied some aspects of the life of exotic shrimp and shrimp *Macrobrachium nipponense* (De Haan, 1849) from *Metapenaeus affinis* (H. Milne Edwards, 1837) at some selected stations in Basra – Iraq. All shrimp in Iraqi waters go back to the lower levels of both Penaeidea and Caridea, in the Southern Marine water, estuary and fresh water, Are 10 species belonging to five families of shrimp were; Penaeidae, Palaemonidae, Atyidae, Hippolytidae and Alpheidae (Al-Maliky, 2013; 2017)

The study aims to determine the best breeding season for shrimp, as well as the presence of shrimps during the breeding season and to recommend follow-up of these girls through the continuation of the annual studies on the estimates of the quantities of shrimp stock in inland waters and the case of a decline in stocks should be addressed by activating the laws to prevent fishing during breeding season or larvae.

MATERIALS AND METHODS

The collection of shrimp, over the whole year from 1/6/2015 to 1/6/2017 from the area of Al-Masshab coordinates (N47°41'10"E"39'38°30) near Al-Hummar Marsh, Basrah, Iraq (fig. 1). The trawl (Gufa) was used for fishing by a speedboat and a fisherman was approximately 0.5 meters per second (fig. 2). Put the shrimp in containers with ice for safekeeping. In the laboratory, the shrimp and diagnosis species were isolated, as well as the distinction between the species. The weights were measured with a sensitive balance, and the length was using a ruler. using the mobile camera for pictures. Some environmental factors were also measured in the laboratories of the Marine Science Center - University of Basra. The classification and diagnosis of shrimp was carried out according to Al-Maliky (2013).

The amounts of shrimp were calculated based on quantity per hour per month or year. Egg-bearing females were isolated from non-egg-bearing females through eye observation

The sex ratio of the two species of shrimp was calculated; the number of prawns in each type of study was 100 individuals per month for each type of 1200 species per species during the months of the year, while in the identification of females carrying eggs from the eastern shrimp, female catches were isolated and the carrier was separated from the non-pregnant eggs during each month for a full year was used in the statistical analysis of the results. Also used Excel for Office 2010 to extract shapes.

Percentage of egg-carrying females (%) = $\frac{\text{The number of eggs carrying}}{\text{the total number}} \times 100$.

Percentage of shrimp species weight (%) = $\frac{\text{shrimp species weight}}{\text{the total weight}} \times 100$.

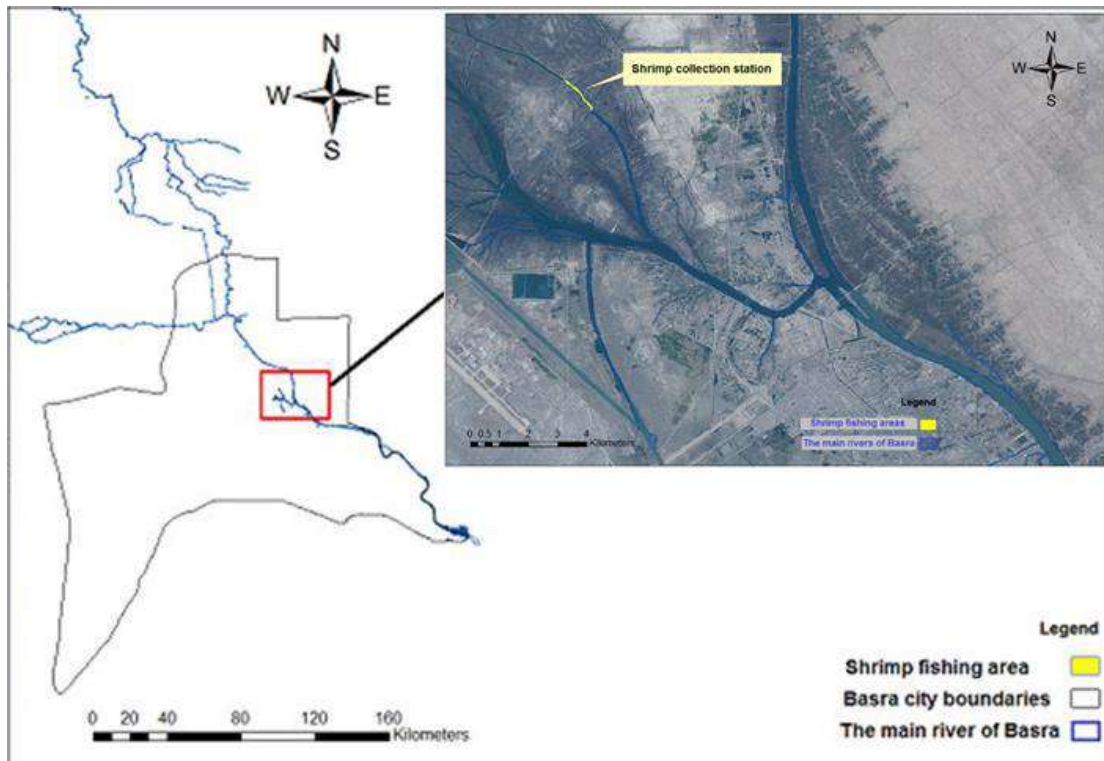


Figure 1. Map showing the location of shrimp fishing and collection in Basra - Iraq.

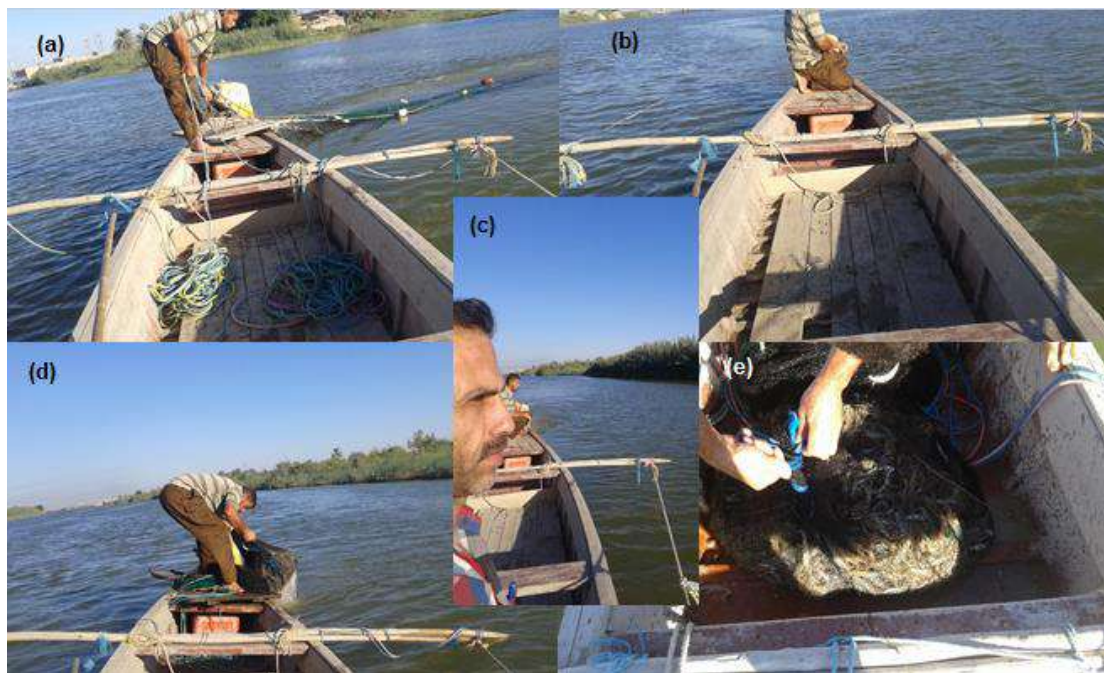


Figure 2. Catch and collect shrimp from Al-Masshab; (a), Throwing the net.(b), Pulling method.(c), An environment of the region.(d), Fishing pull.(e), The catch.

RESULTS AND DISCUSSION

Table 1. Some environmental factors in Al-Masshab area during shrimp fishing and gathering.

Environmental factor	Value
Temperature (° C)	20 – 30
Salinity (mg·L ⁻¹)	1.5 – 4.9
pH	6.9 – 8.0
Turbidity (NTU)	18.4 – 21.5

Some environmental factors were measured in the shrimp fishing area, the temperature was between 20 to 30 °C, salinity ranged from 1.5 to 4.9 ppt, pH was between 6.9 to 8, and the turbidity ranged between 18.4 to 21.5 NTU, and these factors are appropriate for shrimp living and reproduction. The record that the amount of shrimp fishing in the area of the Masshab near Al-Hammar in Southern Iraq was the highest quantities of fishing in July, while the lowest quantities of fishing in January, there was a gradual increase in the amount of shrimp fishing in conjunction with high temperatures and this indicates a direct link on the impact of temperature on the abundance and presence of shrimp in the area of Al-Masshab, which is indicated by the increase in fishing amounts in May and June, which are the summer months with high heat bikes. It was noted that the wind speed impacts the amounts of shrimp fishing and the impact was negative as the amount of fishing from the shrimp with high wind speed and vice versa. This may be due to changes in the behavior and movement of shrimp with high wind speed, leading shrimp to look for more stable places by going down to the river bed and hiding under sand or mud or among submersible plants. Al-Maliky and Mahdi (2017) Shed light on some of the life aspects of shrimp *M. nipponense* and its comparison with *M. affinis* for this purpose, samples of both species were collected monthly from four sites Water sites in Basra (one site in each of the Marsh from the Karma River) during the period from July 2015 to June 2016 and was used for this purpose, a net called al-Kufa pulled by a motorized boat for a fixed distance and a period of 15 minutes for each collection process. For samples, the total number of shrimp was calculated during the unit time (individual/hour). The water temperature and salinity concentration were measured monthly, and it was between 15 -33 °C and 2- 9.1 PSU respectively.

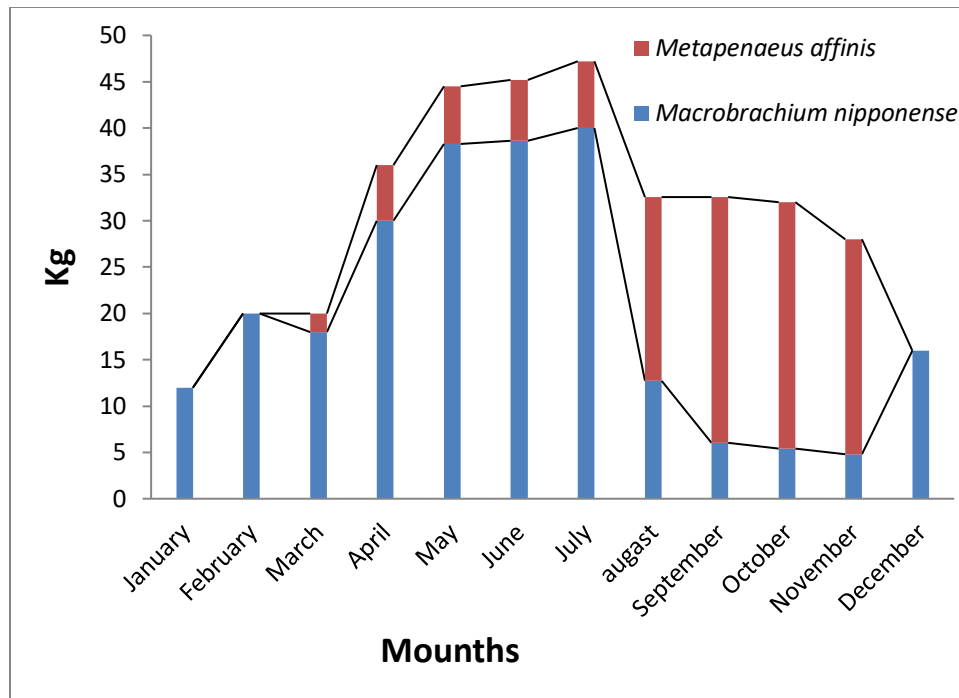


Figure 3. The monthly shrimp catch (kg/hour/month) for *M. affinis* and *M. nipponense* at Al-Masshab near Al-Hammar marsh, Basra - Iraq.

Figure 3 shows the amount of shrimp caught in the Masshab outlet near Al – Hammar Marsh in 12 months. Determine the amount of shrimp caught in the area of the surveyor, and determine the amounts of *M. nipponense* fishing as well as amounts of fishing *M. affinis*

The two species of shrimp are most likely, the bulk of fishing during the summer months, especially the month of July was the amount of fishing 47 kg/ hour, while the less fishing during the winter months, especially in the first month, with the amounts of fishing 12 kg/ hour. Most of the fishing comes from two species of shrimp *M.affinis* and *M.nipponense*,which were recorded with the highest catch of *M. affinis* in September and the lowest in December, January and February, while the highest quantities of shrimp for *M. nipponense* in July, and lowest in November. This is in line with the study of Al-Maliky et al. (2015) about the eastern shrimp, in which the reference to the presence and breeding of the most was during July.

It was noted that the presence of *M. affinis* in most months of the year, except for December and January and February, while the presence of *M. nipponense* was observed in all months of the year. This may be due to the behavior, and nature of the feeding of each species, as the lipid is a crustacean animal at low temperatures immersed itself in mud or sand, and bottom feeder, while *M. nipponense* does not submerge itself in the mud and is caught in plants, and fed bottom, and pelagic.

As mentioned by Al-Maliky et al. (2009) during the study of raising shrimp during the collection of his young women from the area of the pond in Marsh of Hammar were most present during of June and July was not observed during December and the second while were observed during the small branches in a few numbers and caught large volumes in the middle of the river in February the deepest point of the

river is hidden in the mud. It was also noted that the amounts of fishing *M. affinis* most in September, October, and November. And this may be due to the reproduction and growth of juveniles, who were present in the marshes during the beginning of Summer.

Table 2. Sexual ratio and carrying eggs for shrimp during one year in the Al-Masshab area.

Shrimp	Sex		bearing rates	
	male	female	egg	non-egg
<i>M. affinis</i>	21.33±1.58	78.33±1.58	-	-
<i>M. nipponense</i>	14.60±6.69	83.25±5.78	28.62	71.38

The female sex ratio was higher than that of males in both sexes. The female proportion of females was 21.67, while females were 78.33 while in the east males were 14.6 to 83.25. It differs from what was mentioned by Al-Maliky (2013) mentioned that the difference between the ratio of females to males in both species *M. affinis* and *M. nipponense* were slight the ratios of males to females in ratios (1: 1.14); and (1: 1.36), respectively.

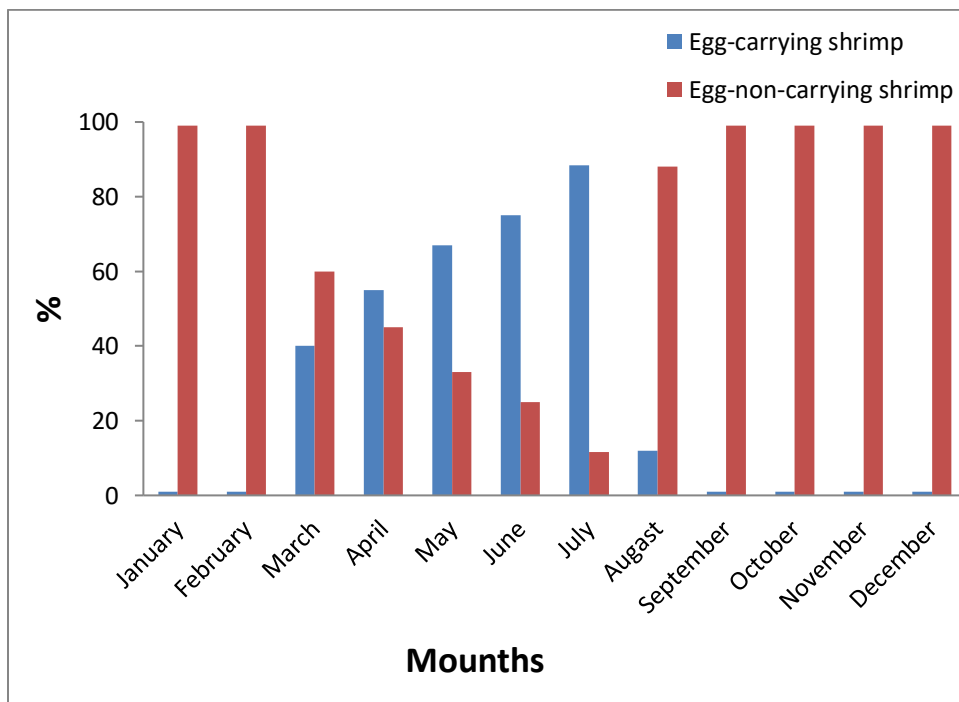


Figure 4. Egg carrying and non-carrying female shrimp *M. nipponense* in the clouds during the months of the year.

It is difficult to identify female carriers carrying eggs from shrimp *M. affinis* because they carry eggs in marine waters, but the Carabid shrimp (*M. nipponense*) carries the eggs between its pereopods. It is easy to determine the female egg carrier *M. nipponense* so the focus was on it (Fig. 4) and the table 2. showed catch in the middle of the river with deeper waters, also this type was observed carrying eggs in stagnant

water in other areas of the waters of the province of Basra. Given that it is difficult to identify females carrying eggs from shrimps because they usually carry eggs in marine waters, but the females of the eastern shrimp carry eggs between the swabs so it is easy to identify the females carrying eggs so the focus was on the females of this type of shrimp in the (fig. 3, table 2), It was the highest female carrying eggs in the summer months and the lowest in the winter months in the center of the Masshab outlet, but there are females carrying eggs for this species of shrimp in stagnant water and throughout the year.

The results of collecting the two species of shrimp were compared during the study period, and it was found that the total percentage of *M. nipponense* accounted for 7%, compared to 93% from *M. affinis*, the percentages of shrimp collected from the two marsh sites (Al-Masshab and Al-Salal) were also compared with two sites, *M. nipponense* appeared in the marshlands at higher rates for seven months compared with the river vine, but *M. affinis*, so the percentages changed during the months of the study. but the marsh areas had a higher rate for six months compared to the Karma River the monthly variance of the percentages of the two types of shrimp was compared in the different study areas and it was found that, in general, the percentage of *M. affinis* recorded the highest at 8.98%, recorded in August was 2015 and the lowest percentage was 8.56% recorded in July 2015 the highest percentage was for *M. nipponense*, which amounted to 2.43% recorded in July 2015, and the lowest rate was 2.1% recorded in a month Father (Al-Maliky and Mahdi, 2017). This study differs somewhat from the current study and may be due to the shortening of the current study to one station and focus on it.

Darge sizes prefer to live in deep water while larvae and young birds live in shallow waters and among seaweeds for protection by keeping away from predators, It has been noticed that wind speed has a clear effect on the amount of shrimp fishing as the amount of fishing decreased with the increase in wind speed. This may be due to the effect of wind on the behavior of the shrimp and make the shrimp resort to searching for places more stable and hiding in the bottom between sand or mud or between submersible plants of the noise caused by the wind from making the water masses in the river and between its banks (fig. 4).

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