



Commercial shrimp landings of two penaeid shrimps in the main markets of Basrah Province, Iraq

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Article info.

- ✓ Received: 13 April 2021
- ✓ Accepted: 10 June 2021
- ✓ Published: 29 June 2021

Key Words:

Basrah Markets
Landings
Shrimp

Abstract - Two penaeid shrimp species were found in the main fish markets of Basrah Province, *Penaeus semisulcatus* and *Metapenaeus affinis*. The quantities of the two species were recorded, the highest landings of *P. semisulcatus* in Al-Ashar market was 396 +26 kg during September, and the lowest during December (159 +16 kg). In Basrah market, the highest landings was observed in July (410 +32 kg), and the lowest was 200 +22 kg in January. As for *M. affinis*, the highest landings was 397 +55 kg in July at Al-Ashar market, and the lowest rate in December, which reached 205 +19 kg. In Al-Basrah market, the highest rate of landings was 597 +68 kg in July, and the lowest rate (298 +48 kg) in November. The highest average monthly weight of *P. semisulcatus* was 80 +7 g during January and the lowest average was 40 +6 g in April. For *M. affinis* the highest average weight was 25 +5 g, in December and the lowest (12 +6 g.) in May. The highest annual landings of *P. semisulcatus* in Al-Ashar market was 15.5 tones and in Al-Basrah market was 18 tones. While the highest annual rate of landings of *M. affinis* in Al-Ashar market was 12.7 tones and in Al-Basrah market 25.8 tones.

كميات الصيد التجاري لنوعين من الروبيان البنيادي في الاسواق الرئيسية لمحافظة البصرة

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المستخلص - تم مراقبة كميات الصيد لنوعين من الروبيان البنيادي وهما الروبيان البحري *Penaeus semisulcatus* والروبيان *Metapenaeus affinis* في سوقين رئيسية في محافظة البصرة. سجل اعلى معدل كميات الصيد للروبيان البحري في سوق العشار 396 ± 26 كغم في شهر ايلول و اقل معدل في شهر كانون الاول 159 ± 16 كغم. اما في سوق البصرة، فقد سجل اعلى معدل لكميات الصيد في شهر تموز 410 ± 32 كغم، و اقل معدل 200 ± 22 كغم في شهر كانون الثاني. سجل الروبيان الشحامي *M. affinis* اعلى معدل لكميات الصيد في سوق العشار في شهر تموز 397 ± 55 كغم، و اقل كمية في شهر كانون الاول 205 ± 19 كغم. بينما في سوق البصرة فقد كان اعلى كميات صيد 597 ± 68 كغم في شهر تموز و اذناها 298 ± 48 كغم في تشرين الثاني. وبلغ اعلى معدل وزن شهري للروبيان 80 ± 7 غم في شهر كانون الثاني و اقل معدل وزن بلغ 40 ± 6 غم في شهر نيسان. اما معدلات الوزن للروبيان *M. affinis* فقد بلغ اعلى معدل 25 ± 5 غم في كانون الاول و اذناه 12 ± 6 غم في شهر ايار. سجل اعلى معدل كميات صيد سنوي للروبيان *P. semisulcatus* مطروحة في سوق العشار 15.5 طن و اقل معدل في سوق البصرة 12.7 طن. اما اعلى معدل للصيد السنوي للروبيان *M. affinis* في سوق العشار وبلغ 25.8 طن و اقل معدل 25.8 طن.

الكلمات المفتاحية: الروبيان، اسواق البصرة الرئيسية

Introduction

Shrimp is one of the most important marine products in the global markets, as the global production of shrimp reaches about six million tones, 60% of which come from fishing activities, equivalent to 3.4 million tones and 40% of breeding (FAO 2009). Iraq has a view on the Arabian Gulf with a coastline of 50 km in length (Ahmed and Hussain, 2000). Iraqi marine waters have importance in the multiplication of water resources such as fish and crustaceans (Bishop and Khan, 1991).

Crustacean occupy an important part of the benthic fauna (Gibinkumar *et al.*, 2012). The demand for shrimp consumption by the local population as food is increasing, and this has led to an increase in the exploitation of shrimp stocks, especially for the species that abound in our local environment, the most important of which *Penaeus semisulcatus*, *Metapenaeus affinis* and *Parapenaopsis stylifera* (Ali and Ahmed 2015; Ali *et al.*, 2007). There are numerous activities of shrimp fishing in the Arabian Gulf, especially in Kuwait, Qatar, Saudi Arabia, Bahrain, Iran and Yemen (Price, 1975 ; Abdulqader 2002; Al-Yamani *et al.*, 2004; Abdul-Wahab, 2005 and Al-Maslmani *et al.*, 2007; Paighambari and Daliri, 2012; Kazemi *et al.*, 2013). Ali (2001) recorded a number of species belonging to two different families, Penaediae and Palaemonidae and noted nine species of the first family and one species of the second family. *P. semisulcatus* and *M. affinis*, considered as the largest species that exploited in the fishing activities of Iraqi waters, the first species is mainly fishing in the marine waters, but the second species is fishing in the marine and inland waters (Salman *et al.*, 1986). The current study aims to find a database on the quantities of shrimp offered in the local markets of Basrah Province and this helps to give an idea of the amount of exploitation of the shrimp wealth in Iraq.

Materials and Methods

Sampling was carried out monthly from January to December 2016, from two main markets in Basrah Province: Al-Ashar and Al-Basrah market. Shrimp samples were collected four times a month from the two most important markets in Basrah Provinces, namely Al-Ashar market and Al-Basrah market.

The estimates of landings offered in the markets was by direct questioning of fish sellers, and by taking samples to measure the weight of each species. The wet weight was recorded by using a sensitive balance (Sartorius BL-1500) and the average weight was calculated.

Results

Two penaeid shrimp species, were found in the main fish markets of Basrah Province, *Penaeus semisulcatus* and *Metapenaeus affinis*. The data on the total landings of the shrimps during the survey are summarized in Figures 1 and 2. In Al-Ashar market the highest landing rate was 296 ± 26 kg during September and the lowest fishing quantities was during December, which amounted to 159 ± 16 kg. As for Basrah market, the highest fishing rate was observed in July, which amounted to 410 ± 32 kg, and the lowest amounted to 200 ± 22 kg in January (Fig. 1).

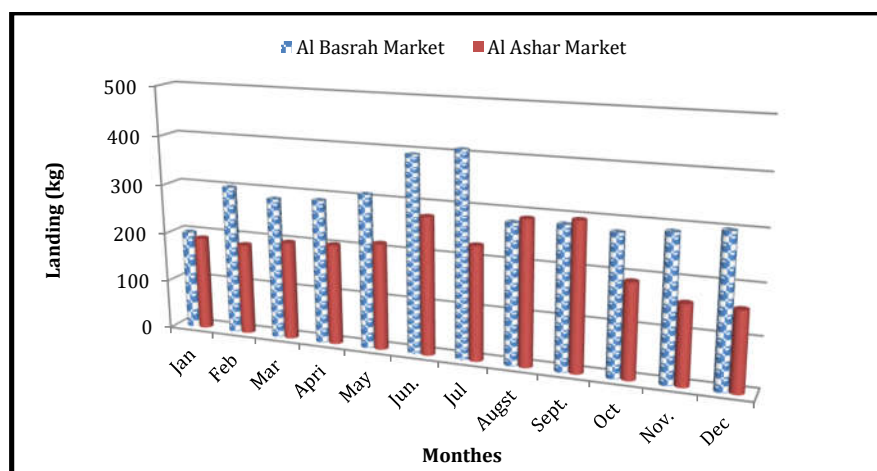


Figure 1. Monthly changes of mean landings of *Penaeus semisulcatus* in Al-Ashar and Al-Basrah markets during 2016.

As for *M. affinis*, the highest average landing quantities was 397 ± 55 kg in Al-Ashar market in July, and the lowest rate in December, which reached 205 ± 19 kg. As for Al-Basrah market, the highest rate of landings was 597 ± 68 kg in July, and the lowest rate of 298 ± 48 kg in

November (Fig. 2). The highest annual rate of the shrimp *P. semisulcatus* was recorded in Al-Ashar market (15.5) tones and in Al-Basrah market was 18 tones. While the highest annual rate of *M. affinis* shrimp was observed in Al-Ashar market 12.7 tones and in Al-Basrah market 25.8 tones (Fig. 3).

The highest average weight of *P. semisulcatus* was 80 ± 7 g during January and the lowest average weight was 40 ± 6 g in April. As for *M. affinis* shrimp, the highest average weight was 25 ± 5 g in December and the lowest average weight was 12 ± 6 g in May (Fig 4).

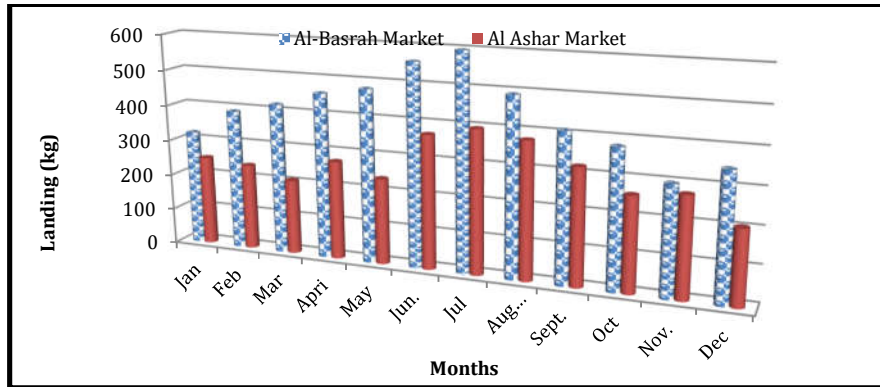


Figure 2. Monthly changes of mean landings of *Metapenaeus affinis* in Al-Ashar and Al-Basrah markets during 2016.

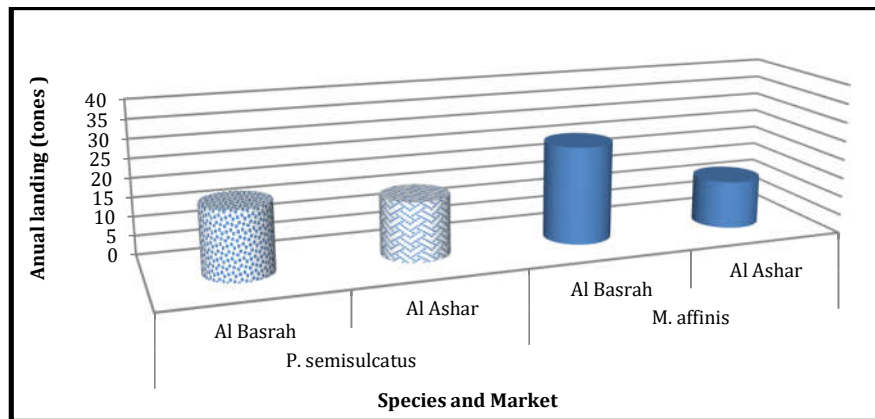


Figure 3. Annual landings (tonnes) of *Penaeus semisulcatus* and *Metapenaeus affinis* in Al-Ashar and Al-Basrah markets during 2016.

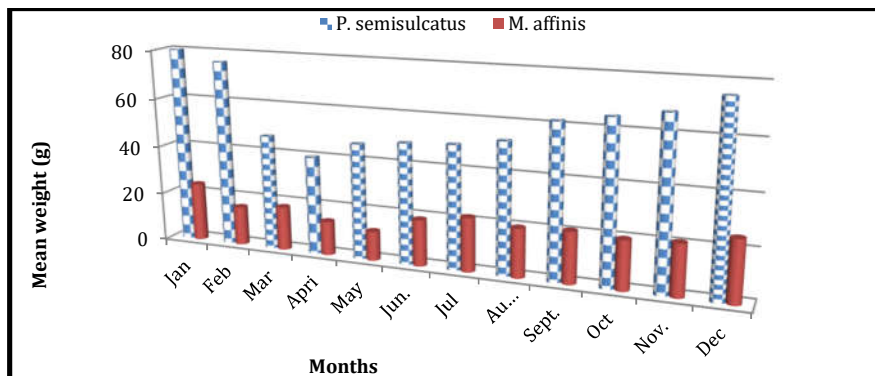


Figure 4. Mean wet weight (g) of *Penaeus semisulcatus* and *Metapenaeus affinis* in Al-Ashar and Al-Basrah markets during 2016.

Discussion

Basrah Province occupies the first rank in shrimp fishing quantities and is almost the only province in Iraq in this aspect, and because of that it is overlooked normally when counting shrimp producers in the Arabian Gulf. On the other hand, the Iraqi consumers in other provinces of Iraq did not tend to rely on shrimp as food, therefore, the fishing estimates in this province give a clear idea of the quantities of fishing in Iraq in general. Al-Ashar market and Al-Basrah market represent the most important and the largest markets in Basrah province, and they are considered the main source in supplying other markets. The daily and monthly shrimp quantities in both markets vary continuously, as the shrimp is presented in large or small batches depending on a number of factors, including fishing quantities and breeding times, temperature, salinity, natural changes and movement of shrimp into deeper waters, which makes fishing difficult (Haas *et al.*, 2001). The decrease in landings of *P. semisulcatus* compared with *M. affinis* as being a species that only lives in the marine areas, that is the only source of its entry into the market and which is fishing in the marine environments, while the second species is a migratory species and lives both in inland and marine waters, and thus there is a high fishing effort (Salman *et al.*, 1990). Therefore, there is a higher fishing effort on *M. affinis* compared to *P. semisulcatus*, which is confined to the marine waters (Mathews *et al.*, 1987). Also, the nature of the depths of inland marine fishing waters, which did not exceed 10 meters in depth, while shrimps especially, *P. semisulcatus* preferred deeper waters (Bishop and Khan, 1991; Abdul-Wahab, 2005). Daliri *et al.* (2013) studied the effect of three different depths in fishing quantities of shrimp and observed the highest catch rate of 7.5 kg/hour occurred at depth ranges from 10 to 20 meters while the fishing rate in a depth of less than 10 meters reached 5.6 kg/hour and the catch rate was 3.9 kg/hour in the depths that ranged between 20 to 30 meters. Mathews *et al.* (1986) and Ye *et al.* (2000) indicated that shrimp catches in Kuwait decreased significantly during recent years, and this can be explained by overfishing as a result of the development of fishing methods that led to depletion of shrimp stocks, as well as the lack of entry of new gatherings into the catches, which may be due to poor bleaching season due to inappropriate environmental conditions, or as a result of an increase in fishing efforts that lead to a lack of mothers. FAO (2009) reported that one of the most important reasons of the deterioration of shrimp fishing is the overfishing, especially for small shrimps of subsequent environmental and economic importance, offensive to coastal environment areas, bottom trawling practices, and the distraction of the seaweed layer. The results also showed that the weights of both types decreased during the period from February to June, and this is due to the proliferative activities and the entry of new batches into the environment (Mathews *et al.*, 1986). Shrimp prices in the markets of Basrah ranged 15,000 and 30,000 Dinar per kilogram (12-25 USD) for the first species, and between 4000 and 8000 Dinar per kilogram (3.5-7 \$) for the second species and according to daily demands, and these prices are considered high compared to the marine products offered, especially fish. Thus the importance of maintaining shrimp stock in the regional waters is highlighted as a renewable natural resource that provides opportunities for many poor families. Accordingly O'Connor and Matlock (2005) mentioned a number of administrative measures to obtain continued high-quality shrimp fishing of which are: stop using trawling nets in fishing operations as they destroy the bottom environment and fishing capacity techniques by addressing the issue of a limited access to and exploitation of shrimp fisheries. Mathews (1994) stated that setting periods to prevent fishing during breeding times contributed to raising fishing and strengthening shrimp batches.

Conclusion

From the results of the current study, the fishing landings in Al-Ashar market are less than the fishing landings in the Al-Basrah market for both species. The annual rate of shrimp landings in Al-Basrah market is higher than in Al-Ashar market.

References

- Abdulqader, E.A.A. 2002. The finfish bycatch of the Bahrain shrimp trawl fisheries. Arab Gulf J. Sci. Res., 20(3): 165-174. <https://agjsr.agu.edu.bh/publications/paper/680>.
- Abdul-Wahab, M.M. 2005. Stock assessment of the coastal shrimp *Penaeus semisulcatus* in eastern waters of Yemen. Egyptian Journal of Aquatic Research, 31: 226-239.
- Ahmed, S.M. and Hussain, N.A. 2000. Abundance and distribution of eggs and larvae of clupiformes in the Northwestern Arabian Gulf. Basrah J. Sci., 18(1): 159-164.
- Ali, A.H., Aziz, N.M. and Hamza, H.A. 2007. Abundance, occurrence, seasonal changes and species composition of Macroinvertebrates in the restored Iraqi Southern Marshes. Marsh Bulletin, 2(1): 80-95. <https://www.iasj.net/iasj/article/70670>.
- Ali, M.H. 2001. Commercial fishing for shrimp in Iraq. Marina Mesopotamica, 16(2): 404-417.
- Ali, M.H. and Ahmed, H.K. 2015. Socioeconomic study for the wealth of marine shrimp in the territorial sea of Iraq. Iraqi J. Aquacult., 12(2): 59-70. <https://doi.org/10.58629/ijaq.v12i2.137>
- Al-Maslamani, I., Le Vay, L., Kennedy, H. and Jones, D.A. 2007. Feeding ecology of the grooved tiger shrimp *Penaeus semisulcatus* De Haan (Decapoda: Penaeidae) in inshore waters of Qatar, Arabian Gulf. Mar. Biol., 150: 627-637. <https://doi.org/10.1007/s00227-006-0346-9>
- Al-Yamani, F., Bishop, J., Ramadhan, E., Al-Hussain, M. and Al-Ghadban, A.N. 2004. Oceanographic Atlas of Kuwait's waters. Kuwait Institute for Scientific Research. Environmental Public Authority, 203 p.
- Bishop, J.M. and Khan, M.H. 1991. Depth as a factor in abundance and size of juvenile penaeid shrimps in the absence of estuaries and marshes. Mar. Biol., 109: 103-114. <https://doi.org/10.1007/BF01320236>
- Daliri, M., Paighambari, S.Y., Shabani, M.J. and Davoodi, R. 2013. The effect of depth variation on size and catch rate of green tiger shrimp *Penaeus semisulcatus* in Bushehr coastal water, Northern Persian Gulf. Afr. J. Biotechn., 12(20): 3058-3063. [URL](https://doi.org/10.4236/ajb.2013.122036)
- FAO 2009. Report of the regional technical workshop on sustainable marine cage aquaculture development. Muscat, Sultanate of Oman, 25–26 January 2009. FAO Fisheries and Aquaculture Report. No. 892. Rome, FAO. 2009. 135 p. [URL](https://www.fao.org/3/i2560e/i2560e00.htm)
- Gibinkumar, T.R., Sabu, S., Pravin, P. and Boopendranath, M.R. 2012. Bycatch characterization of shrimp trawl landings off southwest coast of India. Fishery Technology, 49(2): 132-140. <http://krishi.icar.gov.in/jspui/handle/123456789/51528>.
- Haas, H.L., Lamon, E.C., Rose, K.A. and Shaw, R.F. 2001. Environmental and biological factors associated with the stage-specific abundance of brown shrimp (*Penaeus aztecus*) in Louisiana: applying a new combination of statistical techniques to long-term monitoring data. Can. J. Fish. Aquat. Sci., 58: 2258-2270. <https://doi.org/10.1139/f01-169>
- Kazemi, S.H., Paighambari, S.Y. and Naderi, R.A. 2013. Species composition of trawl shrimp by-catch in the fishing grounds of northern Persian Gulf (Hormuzgan Province). World J. Fish Mar. Sci., 5(5): 505-510. [URL](https://doi.org/10.4236/wjfm.2013.55010)
- Mathews, C.P., Bishop, J.M. and Salman, D.S. 1986. Stocks of *Metapenaeus affinis* in Kuwait and Iraq water. Kuwait Institute for Scientific Research. MB-54, Report No. KISR 2231.
- Mathews, C.P. 1994. Fisheries management: Kuwait experience. Marine Fisheries Review, 56(1): 23-30. [URL](https://doi.org/10.1080/08916619409437133)

- O'Connor, T.P. and Matlock, G.C. 2005. Shrimp Landing Trends as Indicators of Estuarine Habitat Quality. *Gulf of Mexico Science*, 23(2): 1-5. <https://doi.org/10.18785/goms.2302.06>
- Paighambari, S.Y. and Daliri, M. 2012. The by-catch composition of shrimp trawl fisheries in Bushehr coastal waters, the northern Persian Gulf. *Journal of the Persian Gulf (Marine Science)*, 3(7): 27-36. [URL](#)
- Price, A.R.G. and Jones, D.A. 1975. Commercial and biological aspects of the Saudi Arabian Gulf shrimp fishery. *Bull. Mar. Res. Centre, Saudi Arabia*, No. 6, 24 p. [URL](#)
- Salman, D.S., Ali, M.H. and Al-Adhub, A.H. 1986. The Penaeid shrimp *Metapenaeus affinis* within the Iraqi waters. *Oceanography of Khor Al-Zubair, Marine Science Center*, 7: 417-447.
- Salman, S.D., Ali, M.H. and Al-Adhub, A.H.Y. 1990. Abundance and seasonal migration of the penaeid shrimp *Metapenaeus affinis* within Iraqi waters. *Hydrobiologia*, 196: 79-90. <https://doi.org/10.1007/BF00008895>
- Ye, Y.M., Alsaffar, A.H. and Mohammed, H.M.A. 2000. Bycatch and discards of the Kuwait shrimp fishery. *Fish. Res.*, 45(1): 9-19. [https://doi.org/10.1016/S0165-7836\(99\)00105-8](https://doi.org/10.1016/S0165-7836(99)00105-8)