

## Distribution of silver pomfret ( *Pampus argenteus*) in Iraqi marine water

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### Abstract

The fishery and population characteristics of silver pomfret *Pampus argenteus* (Euphrasen) landed in basrah were studied for the period from 2005 to 2015. The average annual landing of Silver Pomfrets was about 68.273 tonnes, which contributed 2.04% to the annual marine fish landings in Iraq. The total catches of Silver Pomfrets have declined from 378.16 tonnes in 2012 to 27 tonnes in 2015. It is suggested that the fishery stocks of the northern Arabian Gulf are under ecological stress due to high fishing pressure, and to ecological changes in the area. Length frequency data collected suggested that the general size range of Silver pomfrets in Iraq is 65 to 320 mm total length. The size group (138- 208 mm) was the most fish size landed during the period of the study (59%). The landed Silver Pomfrets was dominated by male individuals (73.3%) with maximum size reached 270mm.

**Keywords;** Impro Fishery, Silver Pomfret , *Pampus argenteus*, Iraq, basrah, Length frequency , catch statistics.

## **Introduction**

Silver pomfret, *Pampus argenteus* (Euphrasen) locally called Zobaidy, (family Stromateidae), the most dominant and commercially important species, usually occur in Indo-Western Pacific region [1;2], the eastern part of China, the western and south western Korean Peninsula [3], western Asia and Arabian Gulf [4]. Silver pomfret is a prime, valuable and shared fish stock in the northern Gulf between Iraq, Iran and Kuwait. These fish prefer the muddy-sandy substratum [5] and later, post-larvae were found in shallow coastal waters [2]. The adult fish migrates from Kuwait and Iran waters to the northern Gulf during the period from March to October for spawning. They migrate southward to deeper waters during the period from November to March, and the adults return to spawn in Kuwait's waters from March to May. The Kuwait's waters might be also consider as the main nursery areas for these fishes [6].

The Researchers were reported that the spawning season in Kuwait starts from March to April [7;8], reaching to their peak level through May ending in September [9]. Two spawning peaks in Bengal Bay were noticed as first one started from February to April and the second one from July to August [2]. The spawning peak was occurred from May to July in the eastern China Sea [10]. The spawning of silver pomfret in Kuwait waters start from March to May [11]. Earlier, eggs and larvae during all the year in Kuwait Bay [12]. The highest larvae abundance in Khor Al-Sabyiah and in the northern flats of Failaka Island throughout the summer months (May – August). Therefore, a significant correlation was found between the zooplankton abundance (copepods and meroplankton) and the number of eggs and larvae [13].

The feeding habits of Silver pomfret showed that this fish are herbivore during the pelagic post-larval period and becomes a benthic pelagic carnivore after metamorphosis [14]. It becomes a column feeder taking copepods during diurnal vertical migrations [15]. The young fish feed in small copepods and small crustaceans, while adult ones feed mostly on small crustaceans in shallow water area, and polychaetes and foraminifera in deeper areas [5]. The copepods were the most frequent food in zobaidy's stomach caught from Kuwait's waters [16]. Bacillariophyta, Mollusca, fish scales, fish eggs and larvae were also recorded. The feeding intensity fluctuated throughout the year, with a low during August and September, corresponding to the spawning period. The changes in the fish growth are positively correlated with the changes in the trophic levels of the marine habitat [14].

The present study is a detailed investigation on the current status of the fishery, population characteristics and yield estimates of the silver pomfret collected from Iraqi marine water (Khor Abdulla) and landed in Basrah, Iraq. The output of the project will offer baseline information for the regional institutions.

## **Khor Abdullah**

Khor Abdullah (Fig. 1) is a shallow funnel shape of depths more than 10 m with about 1 km intertidal zone. The substratum is mainly muddy at the southern entrance and sandy-silt at the northern tip. The depths at the southern entrance are between 7-10 m, which gradually increases toward Bubyah Island. The length of the Khor is

about 60 km from Umm Qasr to Khor Al-Amaya with width range of 1-4 km. Khor Abdullah is classified as open marine lake. The main fishing gears used in Khor Abdullah are fixed and draft gill nets, traps, and trawl.



Fig. 1: Khor Abdulla location.

## Materials and Methods

Data on catch and effort expended for *P. argenteus* were collected from landing centre of Faw, Basrah, for the eleven-year study period from 2005 to 2014. The basic data on length frequency of Silver pomfret was collected during 2013 and 2014. The size group of the fish may be classified into three major groups such as: smallest size < 66 mm, small 67 to 137mm, medium size 138- 208 mm, large size 209 – 279 and largest size 280 -350 mm. The sex ratio was estimated from the Silver pomfret specimens and Chi-square test carried out to check the homogeneity of fish male and female distribution using SPSS version 17 [17]. Significance was tested at 0.05 level.

## Results and Discussion

The average annual catch of Silver pomfret for the period 2005 – 2015 was 68.34 ton, which contributed 2.04% to the total marine fish landed at Faw region. The contribution of this fish was ranged from 0.22% to 4.61% to the total marine fish landed (Fig. 2)

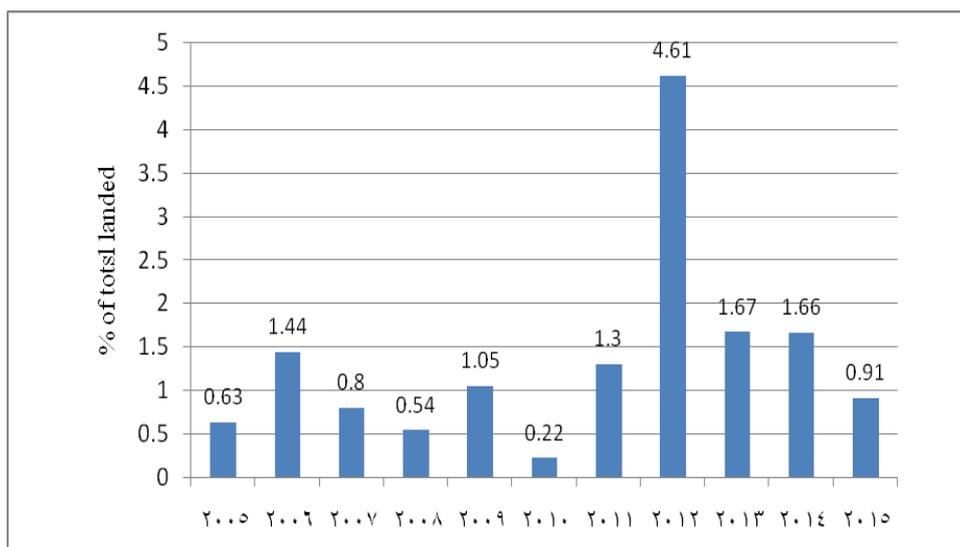


Fig. 2: % of Silver pomfret, *P. argenteus* of total marine fish landed from 2005 – 2015.

The annual landed of Silver pomfret fluctuated between 11.60 t in 2005 and 378.16 t in 2012 (Fig.3). Their percentages ranged from 1.52 during 2005 to 49.53 during 2012 (Fig.4).

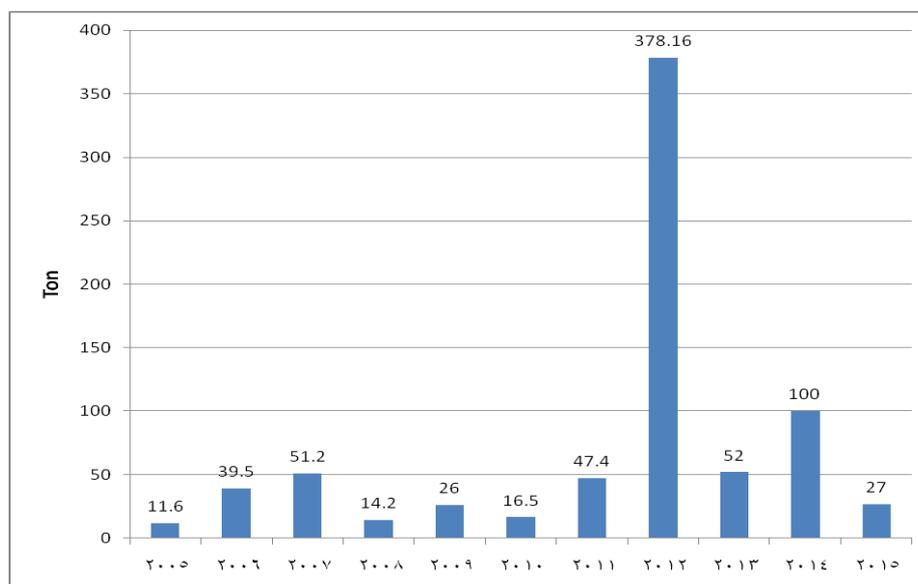


Fig.3 : Yearly catch of Silver pomfret, *P. argenteus* by Ton during the period from 2005 to 2015 .

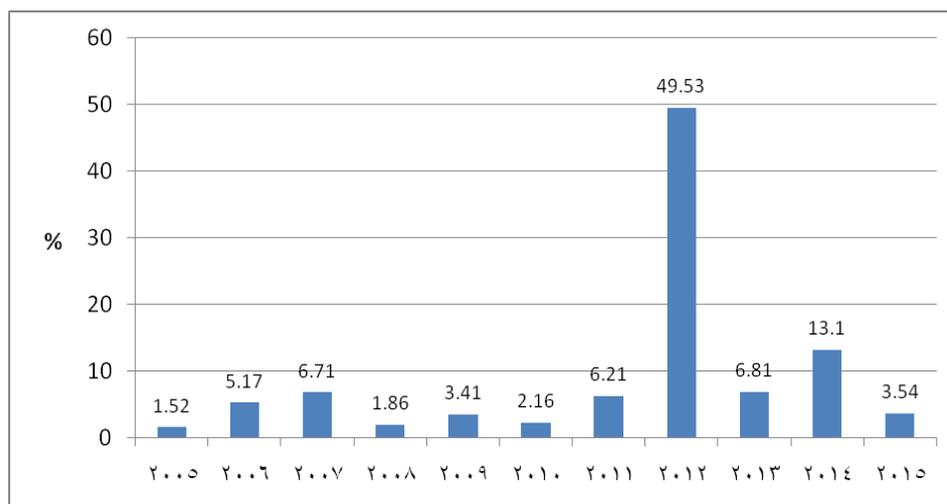


Fig. 4: % yearly catch of Silver pomfret, *P. argenteus* during the period from 2005 to 2014 .

**Length Distribution**

The maximum size of silver pomfret landed was 320 mm and minimum 65 mm during the period from April to November 2014. The size of the fish male and female ranged from 65 to 270 mm and 203 during to 300 mm respectively (Figs. 5 & 6).

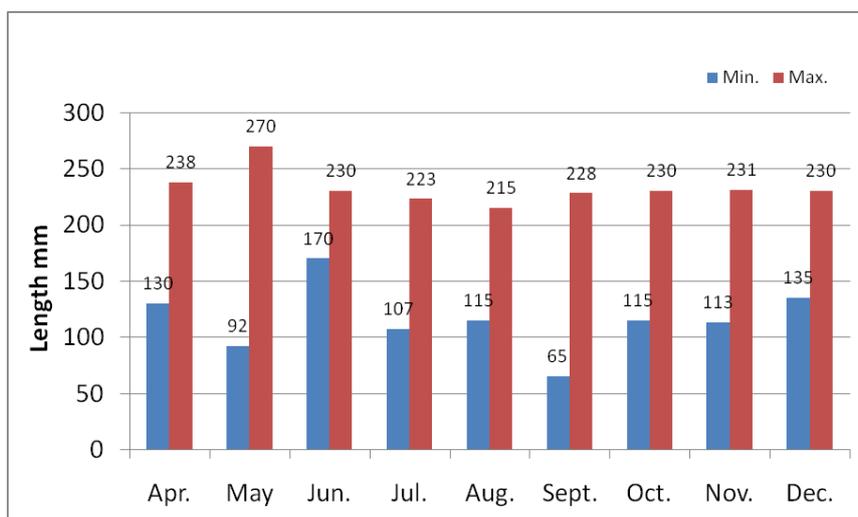
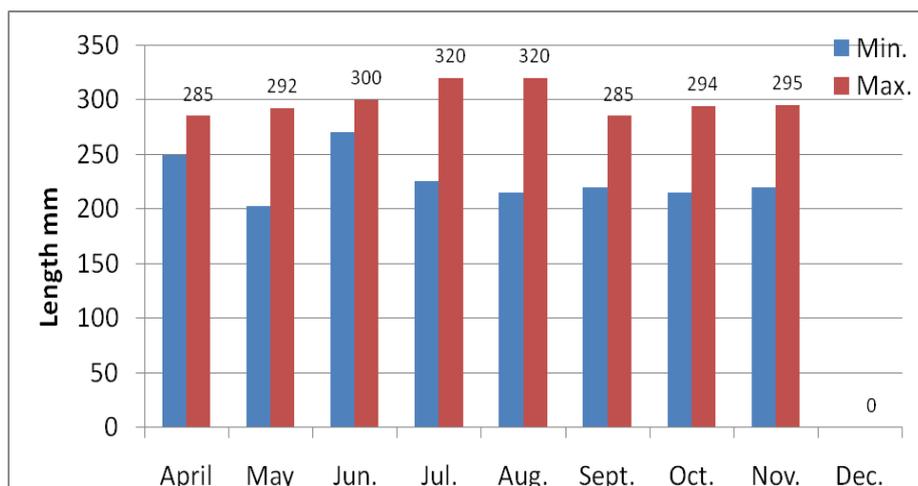
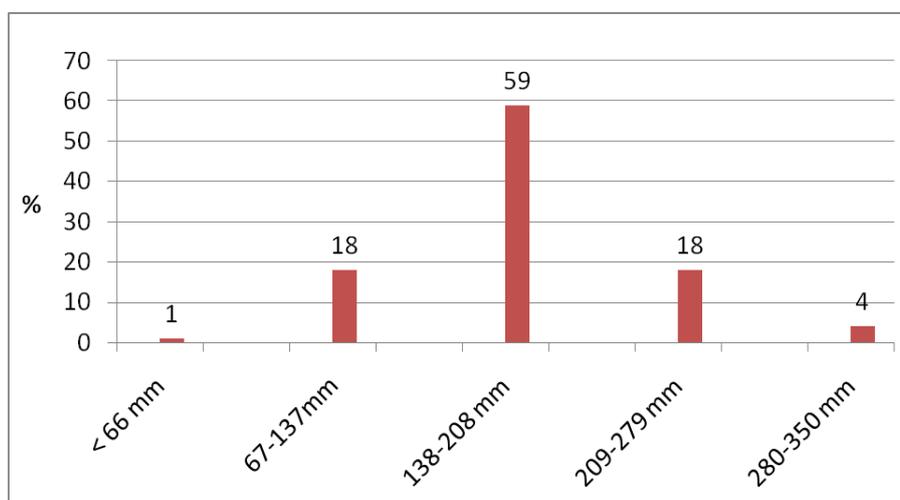


Fig. 5: Minimum and maximum length of Silver pomfret, *P. argenteus* male (mm) from Iraqi Marine water during the period from April to November 2014.



**Fig. 6:** Minimum and maximum length of Silver pomfret, *P. argenteus* female (mm) from Iraqi Marine water during the period from April to November 2014.

The size group (138- 208 mm) was the most fish size caught during the period from April to November 2014 (59%) (Fig. 7).



**Fig.7:** Length Frequency distribution of Silver pomfret, *P. argenteus* during the period from April to November 2014 in Iraqi marine water.

**Seasonal abundance**

The fishing season starts in April and continues to December. The highest fish landed quantity was during the period between September to December. Small quantities of zobaidy were landed during the period from December to march using drift gill net or shrimp trawling fisheries by –catch (Fig.8 ).

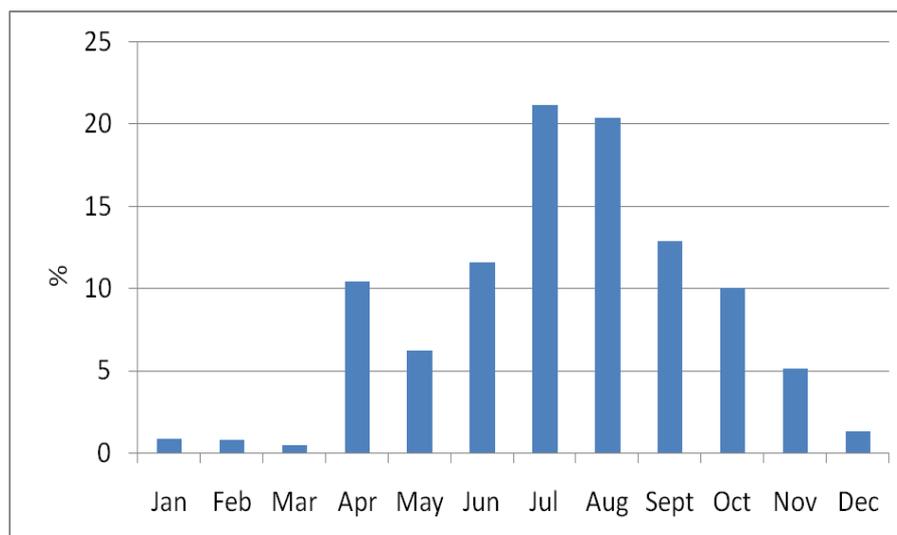


Fig. 8 : Monthly Landed (%) of Silver pomfret, *Pampus argenteus* during the period from 2005 to 2014

The Silver pomfret population was distributed as indicated in Figure 9 . Only 92.2 % of this population was mature. A total of 7.8% of individuals sampled were immature. The chi-square values showed significant (5%) dominance by males during the period of the study. The percentage of males and females was 73.3% and 19% respectively. The ratio of males to females was found to be 3.8: 1. However, the test of significance of difference suggested that the number of males and females differ significantly ( $X^2 = 4.93, P < 0.01$ ).

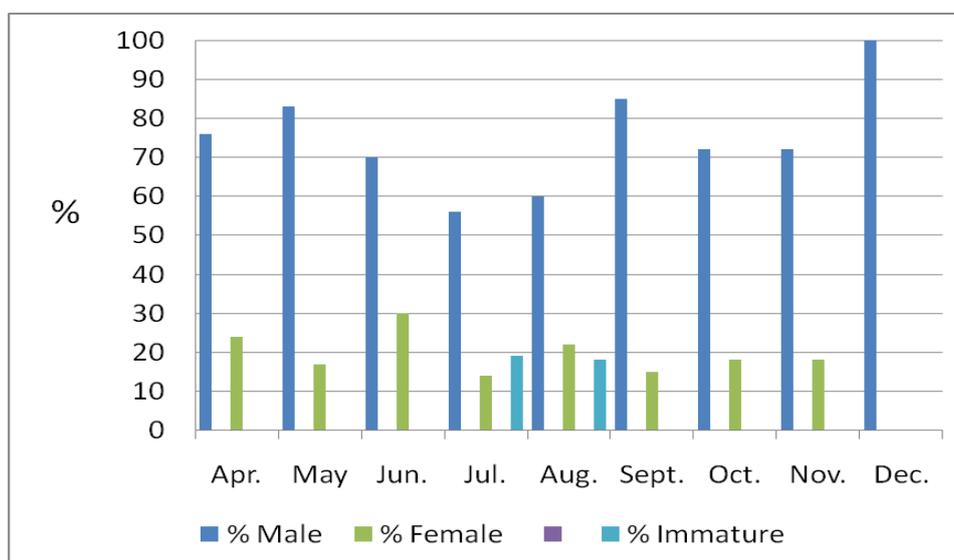


Fig. 9 : Sex Ratio (%) of Monthly of Silver pomfret, *P. argenteus* sample during the period May to October 2014 in Iraqi marine water.

The catch statistics state that the catches of the Iraqi fleet more than doubled from 2010 to 2012 (Fig. 3). Concomitantly with the increased landings was an increased in the total number of boats from 46 in 1993 to 169 in 2012 (Fig. 10). The landings then decreased (Fig. 3) as the number of boats decreased to 14 boats during 2015 (Fig. 10)

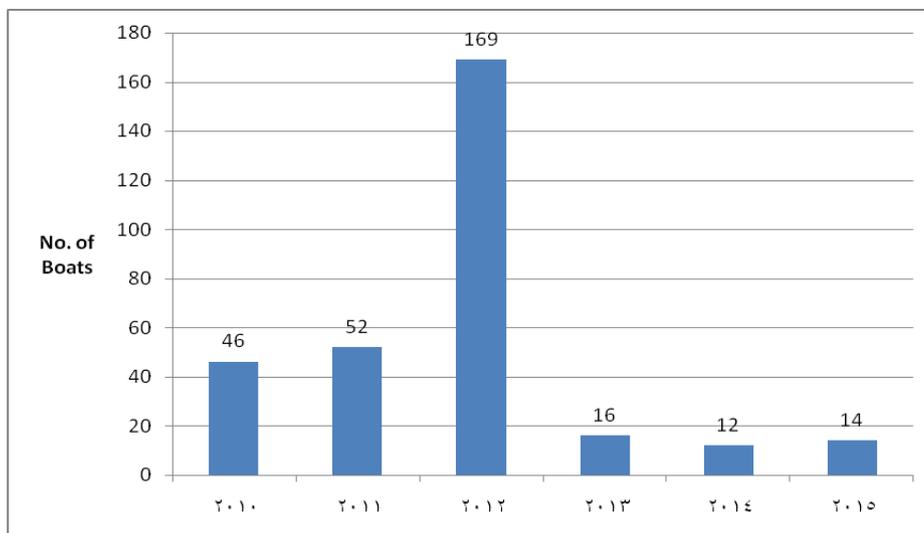


Fig. 10: Number of fishing boats operated in Iraqi Marine water during the period from 2010 to 2015

Iraqi catches of Silver pomfret declined from 378.16 tonnes in 2012 to 27.00 tonnes in 2015 (Fig. 3). As a consequence, economic loss was high due to low catch rates, and therefore, the number of fishermen leaving the sector increased (Fig. 10). Silver pomfret are also landed as shrimp by-catch during the shrimp season in autumn and winter. The familiar fishing grounds for the shrimp *Metapenaeus affinis* are documented to also overlap with the main nursery ground of Silver pomfret during this study, but there was no data are obtainable apart from fishermen's information representing the severe impact of this fishery on young Silver pomfret populations [18]. In fact, the results of this study are consistent with findings of previous investigations in Kuwait and Iran waters. the main fishing seasons in Kuwait are in April to May and September to October, although small quantities of Silver pomfret are landed during November to March either by drift gill net or shrimp trawling fisheries[4].

The fishing season in Iran starts in May and continues to September. Some Silver pomfret are landed as shrimp by-catch during the shrimp season during the autumn and winter [4]. Therefore, silver pomfret is a major, important and shared fish stock in the northern of Arabian Gulf between Kuwait ,Iran and Iraq but their catches decreased significantly due to the northern Gulf's fishery stocks are under environmental stress due to high fishing facility of fleet, and to ecological changes due to the decrease of the rivers discharges [19]. It is very important to regulate size-limit and time limit of Silver pomfret as a shared stocks because any changes in the stock of one country will absolutely influence the fish landed in other country. As a result of this study, cooperative study and management of silver pomfret population in the Arabian Gulf should be prepared for future sustainable harvesting. the major spawning and nursery areas for silver pomfret population are to be found in Iranian waters (Khuzestan province) whereas feeding and wintering regions located within Kuwait waters, therefore, it is necessary to protect adult pomfret from fishing in main spawning grounds through the main

spawning peak, May to July, should be banned and priority should be devoted to generate a natural coastal protected ground. The length at first maturity of the male fish was 65mm, which was much lower than 264 mm which and This difference in the size at first maturity is mainly due to the effect of environment on the biology of the fish and their food availability, the length of mature females from length of 205mm onwards which closely matches the findings of the present study (203 mm)[9;16]. In Kuwaiti waters found that silver pomfret is a multiple batch spawner with peak spawning from May to October[9;16;20]. Studies from other places found that a muddy-sandy substratum is essential for offering tolerable habitat for foraging [5], whereas large numbers of ripe Silver pomfret and post-larvae are observed in shallow coastal waters [2]. The spawning season in Kuwait starts from March to April [7;8] or peaked in May [9] and ends in August to September. Two peaks in the Bay of Bengal as February to April and July to August [2], but in the eastern China Sea, the spawning peak was from May to July [10].

The rapid decline of catches of zobaity in the Arabian gulf is a negative signal of future stock abundance, therefore, joint stock monitoring scheme should be created from all concerned countries to look after the fish stock. This scheme should include institutional study in terms of scientific recommendation to be delivered to the management team and decision-making group. However, preventing illegal fishing and fish transfer through marine borders should be strongly considered.

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