

## **A Review article: Diversity of fish in Iraqi waters and some factors affecting them**

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### **Abstract:**

Rivers Tigris and Euphrates, as well as the wetlands in southern Iraq and the Diyala River, were all included in the evaluation of earlier studies on the variety and factors impacting fish in Iraqi waters. Different studies documented different types, and the number of species recorded varied between the studies, which could be explained by the registration of some species, synonyms, differs from the registration of some species with synonymous names By mistake, as well as recording new species in times that followed some previous studies, Also, the difference in some factors, including the pollution of some waterways, leads to a difference in the existing species, so we find the presence of species that are tolerant of pollution.

There are different factors that determine the diversity of different types of fish. Temperatures, water salinity, electrical conductivity, organic materials, nutrients represented by nitrates and phosphates, in addition to ammonia are all factors that determine the types of fish present in the environment, It is these different taxes Poeciliidae, Mugilidae, Sparidae, , Hemiramphidae, , Siluridae , Engraulidae, Mastacembelidae Some marine species also exist Liza subviridis, Hyporhamphus limbatus, Thryssa whiteheadi, Acanthopagrus arabicus

**Key words:**(fish,factor,water,Diversity,Marshes).

### **Introduction:**

Since the Sumerians created the earliest civil fishing regulation over 4,000 years ago, fisheries have been significant in Iraq (1), basin of the Euphrates and Tigris is the largest in Southwest Asia. The length of the Tigris is 1900 km and the Euphrates is 2700 km long. which originate in Turkey,

The Euphrates River has a few small tributaries that branch off in Turkey and Syria, but there are only two; in contrast, some tributaries in Iraq flow into the Tigris River, the most significant of which is the Great The Little Azab and Diyala River. The Tigris River in Iraq is 1,345 km long, and the Fart River is 1,200 km. The two rivers meet in the city of Qurna It drains into the Arabian Gulf to create the Shatt al-Arab. and measures roughly 200 kilometres in length.

## Classification of some speices of fish in Iraqi waters

The categorization of freshwater fish in Iraq has been the subject of numerous research. These studies can be divided into two sections: the first focuses on characterizing, classifying, and cataloging freshwater fish throughout in Iraq or the country Khalaf. Euphrates and Tigris Basin, which are comprehensive studies, the most important of which is the study of both(1)(2)(3)(4)(5)(6).

The other section was concerned with the categorization of particular types of fish or particular species regions of Iraq These studies were not comprehensive of the fish population throughout the Iraqi freshwaters and are many studies, including (1) for Study of the phenotypic traits of three species of the carp family and Shatt al-Arab fish in Basra,(7) record species *Caecocypris basimi* As a new species within the carp family in a Haditha city, Some studies indicated the introduction of some types of fish for the purpose of culture in Iraq, which is the grass carp *Ctenopharyngodon idella*(8), *Hypophthalmichthys molitrix*(9) *Hypophthalmichthys molitrix* And the big-headed carp *H. nobilis* (10),

(11) The electrophoresis technique was used to distinguish some freshwater fish in Basra city, (12) made a list of fish Shatt al-Arab in the city of Basra, A natural cross between two long-legged quails has been recorded *Alburnus mossulensis* And the broad quail *Acanthobrama marmid* in al-Hammar marish (13),(11) recorded The appearance of silver carp fish *H. molitrix* in the Shatt al-Arab, And studied (10) extirnal species in the basins of the Tigris and Euphrates The type has been recorded *Hemiculter leucisculus* For the first time in Iraq from (14), From Al-Rasheadiea region in the north to Nivava bridge in the south, the Tigris River crosses Mosul City, and the fish species content structure of the river was studied, To classify the species, genius, and families, morphological and dissecting rays in various fins, the number of scales above and down lateral line, and pharyngeal parameters such as barbell number, total length, standard length, and spines number were utilized. *Chondrostoma regius* was the most common species among those obtained during this study, with 15 of the 22 species related to 16 genius of 8 families, including the cyprinidae family (15). Between June 2014 and May 2015, the Al-Hindyah barrier along the Euphrates River in Babylon Province, Iraq, was compared to the community structure of fish. 15

different fish species totaling 2389 fish were gathered(16), in the oceanic seas off the coast of Iraq between November 2014 and March 2018. 214 species from 75 families were on the list The family Carangidae, which was represented by 24 species, predominated the marine fishes in Iraq. It was followed by the Haemulidae family with 11 species, the Serranidae family with nine species, and the Sparidae family with nine species apiece(17).

Stady make up in(2019) A total of 4260 fish specimens were gathered, representing 24 species and 10 families. Seven of the species were alien, while 17 were native. The blue tilapia species was the most prevalent one. In a north station, *Oreochromis aureus* made up 26.84% of all the fish collected. (18) Every month from December 2017 to November 2018, fish samples were collected using a variety of fishing techniques. A total of 28959 fish were collected, representing 9 families and 19 species, of which 8 are alien and 11 are native (19), In order to examineRandom fish samples were collected from 26 places, mostly in the Lesser Zab and Sirwan tributaries of Sulaimani Region, Kurdistan Region, Iraq, to study the biodiversity of fish that are naturally found in the water bodies of this province.. The survey was conducted in 2018, from January until the end of December. 2100 freshwater fish in all, representing 35 species and 8 groups, were gathered. Four of these native fish species are worldwide imperiled. The research also showed that *Leuciscus vorax* was rare in this province and the *Cyprinion macrostomum* in question was the prevalent and widespread species there(20). It was determined how the fish assemblages in the maritime waters of Iraq were composed. Using trawl net fishing, 91 species from 71 genes, 13 species of Conderchthyes and 47 families of Osteichthyes were gathered from January to December 2018 for the study. Three sites were chosen, and two freshwater fish species (*Siganus javus* and *Gobiopsis* sp.) as well as a reclassification of *Torpedo panthera* were discovered (*Oreochromis niloticus* and *Oreochromis aureus*)(21),

### **Environmental factors affecting the presence of fish:**

The species that live in the ocean seasonally suggests that the Marsh of Al-Hammar, which has recently been restored, is crucial to the recovery of fisheries in the northwestern Arabian Gulf, which were noticeably degraded during the Al-Hammar Marsh's desiccation in the 1990s Liza subviridis, *Tenualosa lisha*, Fisheries in the freshly restored Al-Hammar Marsh: structure and ecological indices... 183 L. klunzinger According to the northwestern ecosystem of the Arabian Gulf and the southern marshes of Iraq are closely related.(22), Salinity and temperature are more closely correlated with species diversity and catch totals, respectively. Plankton productivity cycles and the rate using organic material decomposition were both increased by the higher spring and summer temperatures, increasing the amount of food resources available to fish(23).

For young marine organisms including *Liza Subviridis*, *Thryssa Whitehead*, and *Tenualosa llisha*, the restored Al- Hammar Marsh serves as a feeding and nursery ground, with thick aquatic plants, such as *Ceratophyllum demersum* providing an acceptable habitat a cover for. ducks and predatory fish such as. *Silurus triostegus* and *Aspius vorax* Tidal marshes are more biologically productive than other freshwater ecosystems on a global scale Large marine predators are protected by marshes.(24), ) the fish collection in the renovated Chybayish wetland was explained. In the period from October 2005 to September 2006, as many as 14 species were caught. *Liza Abu*, a species of detritovorus, was the most prevalent species, then *Barbus luteus* and *Carassius auratus* Fish ,Lower Compared to comparable restored southern wetlands, species diversity indicators may represent the marsh's still-degraded habitat and decreased vegetation productivity. Diets differed between fishes. The majority of them were dependent based on the five main food-web energy flow routes and two to three major foods. reestablishing drained marshes through flooding is now taking place, but further study is needed to determine the ecological impacts of this significant water diversion. There have been some suggestions for how to keep water in the marsh even in poor weather(25) ,Two research zones were chosen. the first zone, Al-Salal in the Al-Hammar marsh, and the second, Sinbad in the Shatt al-Arab river, between April 2013 and March 2014. In both areas, 13 environmental factors were evaluated. In the Shatt Al-Arab River and Al-Hammar Marsh, respectively, there have been records for 12 alien species and 9 and 11 individual anglers, respectively. 16988 and 3091 individuals, respectively, were recorded in the Al-Hammar marsh and Shatt al-Arab river. While the overall fish harvest was 6747 fish and included three species, accounting for 89.83% of all alien species, there were documented 7 fish kills in the Shatt al-Arab marsh and 62614 in the marsh of Al-Hammar, respectively(26) ,It is possible to assess the nutritional value of different fish species and make planning decisions based on their proximate chemical composition (protein, fat, moisture, and ash) commercial and industrial processes. 10 types of fish from Iraq's freshwater and marine waterways were investigated (27), other study clarified that Because of its high salinity and overall hardness, the Euphrates in Samawa City has a different aquatic environment than other river segments,The fish the assemblage unique different river sectors in terms of the variety of species, their quantity, and their dominance. It is evident that foreign species are prevailing (*O. aureus* and *C. auratus*). Additionally, there was a lack of *M. sharpeyi* and a low abundance of economically important local species including *A. grypus* and *L. xanthopterus* (18) . The greatest risks to fish variety in the Kurdistan Region of Iraq include sewage contamination, wastewater pipelines to rivers, garbage and oil dumping, illegal aquaculture, and mining of gravel and overfishing. As a result, it is advised to minimize mining gravel on rivers, process all trash before disposing it, and stop overfishing and illicit fishing. Additionally, recognize and manage an area's geographical location(20), Significant relationships existed between fish activity and feeding intensity as well as water temperature. The species is omnivorous and mostly consumes diatoms, macrophytes, debris, and aquatic insects.

The outcomes can help with the management of fisheries and the preservation of the species in this river (28)

### Conclusions:

The freshwater ichthyofauna of Iraq is still incomplete. The list of freshwater fishes in Iraq has changed over the years as new species have been added and old scientific names have been updated to reflect changes in the environment over the course of seasons and years. This checklist might therefore provide direction for continuing study on the freshwater ichthyofauna of Iraq..

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