

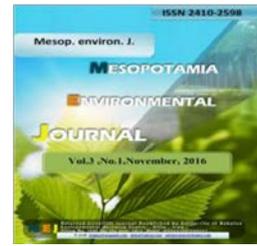


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The first appearance of the Blue tilapia is *Oreochromis aureus* (S, 1864) in diyala river / Buhriz

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Abstract:

Oreochromis aureus was first recorded in the diyala river / buhriz. During the year 2016-2017. A total length ranges from 160 to 180 mm and standard lengths from 130 to 150 mm and total weights from 98.8 to 136.2 g. A number of gill rakers on the first arch gill ranged from 22-26. The dorsal fin contains 15 - 16 spines and 12 soft rays. The number of spines in anal fin, 3- 4, and the number of soft rays 9 – 10. The number of soft rays in the pectoral fin 13. The body depth in size and constitutes 38.40% of the total length ratio and with a body thickness of 15.16%.

Keywords: *Oreochromis aureus*, Diyala river, first appearance

Introduction

Blue tilapia (*Oreochromis aureus*, Steindachner,1864) belong to the Cichlidae family. This family is comprised of over 1,300 species of fish native to Africa, the Middle East, Central and South America, and Southern India. Current distribution of *Oreochromis spp.* Includes: the Jordan Valley, Lower Nile, Chad Basin, Benue, middle and upper Niger, Senegal River,

as well as introduced populations in the United States [1]. The Blue tilapia is native to the Middle east and Africa. Which is present in different environments, including permanent and seasonal rivers, estuaries and marshes, high alkaline lakes, salinity, high acidity and coastal lakes. This contrast indicates the ability of these fish to adapt to A wide range of physical changes [2 ; 3]. The reason for the spread of tilapia is due to several factors, including the ability to tolerate environmental conditions and their ability to feed and grow on both natural and vegetal organisms, their correlation to diseases and the ease of their breeding in families [4]. *Oreochromis aureus* has been introduced mainly in lakes, rivers, ponds and reservoirs to support natural fish stocks for use in biological control and control of harmful aquatic weeds and plants [5]. Tropical and subtropical regions of Africa, particularly Senegal and Niger, are the main citizens of the tilapia [6]. Tilapia fish compete with local fish for a place, food, egg laying and sometimes aggressive behavior, making them prevalent in many regions of the world and have negative impacts on the community in which they are located [7]. It is capable of tolerating difficult environmental conditions and tolerates high salinity [8].

Therefore, this study was conducted in order to register an exotic species of fish on the Iraqi and know its effect.

Material and Methods

Sample collection and identification

Samples of blue tilapia fish were collected from the diyala river / Buhriz with one sample (Fig. 1).

With total lengths of 160 to 180 mm and standard lengths ranging from 130 to 150 mm and total weights from 98.80 to 136.20 g.

The gill nets were used for fishing and fish samples were stored in containers containing crushed ice. She was then transferred to the laboratory of fish and animal resource center for laboratory tests. The total length and the standard length were measured to the nearest cm using a wooden ruler and the total weight to the nearest cloud using a sensitive Sartorius electrical balance. The physiological traits measured body depth, body thickness, head height, head length, snout length, and eye diameter using the cornea. Simple and compound fins were calculated for dorsal fin, perennial, and caudal fins.

Table 1. Numerical characteristics of the blue tilapia *O.aureus* in the diyala river/ Buhriz

Appearance characteristics mm	Percentage of phenotypic characteristics relative to total length%		S.D
	Range	Mean	
Total length (mm)	160 - 180	170	5.77
Stander length (mm)	130- 150	140	1.73
Body depth% IN TL	61.95 -69	38.40	3.54
Body thickness % IN TL	26.56 -28.30	16.15	0.87
Snout length% IN TL	7.88 -10.56	5.64	1.49
Header length% IN TL	42.28-47.59	26.90	3.00

Head high% IN TL	53.15 -63.04	33.92	4.99
Eye diameter% IN TL	7.59 -7.96	4.61	0.21

Results and Discussion

Kingdom: Animalla

Phylum: Chordata

Class: Actinopterygii

Order: Perciformes

Family: Cichlidae

Subfamily: pseudocrenilabrinae

Genus : Oreochromis

Species : Oreochromis aureus (S, 1864)

The total length ranges of the *O. aureus* ranged from 160 to 180 mm with standard lengths of 130 to 150 mm and total weights from 98.80 to 136.20 g.

The total length ranges of the *O. aureus* ranged from 160 to 180 mm with standard lengths of 130 to 150 mm and total weights from 98.80 to 136.20 g. The length of the head and the height of the head were 26.90% and 33.92%, respectively. The total length and eye diameter were 4.61%. (Table, 1) (Figure, 2). The results of the study differed with those reached by [9]. The total length ranges have ranged from 125 to 330 mm and weights from 30.60 to 1230 g in the Euphrates River. They differed with [10] with total lengths ranging from 35 to 279 mm and with total weights from 11.6 to 387.79 g in the Tigris river south of Baghdad. And differed with the study of [11] as recorded ranges of kidney length ranged from 93 mm to 187 mm and weights total ranging between 15.5 g and 128.19 g. And differed with the study of [12] The total length was 68 to 274 mm. The results of the present study differed from the results of [13] with a length of ironing from 35 to 279 mm and weights total between 11.6 to 387.79 g. The results of the study [14] show that the largest length recorded in Lake Zimapan Dam in Mexico 312 mm. It differed with the study of [15] where the maximum expected length of blue tilapia in the Invernello reservoir in Mexico was 478 mm. The body is deep and forms 50 - 40% - 43.83 of the standard length of the body. The relative header length is greater than its depth in the Euphrates / Musayyib River. The results of this study differed from the results of the study of [16] which found that the depth of the body constituted 50.07 - 44.7% in the southern part of the estuary. [17] found that the species of fish reached a total length of 400 mm. The number of gill rakers on the first arch gill in the *O.aureus* was 22 – 26, and average at 24, the dorsal fin contained 15-16 spines and 12 soft rays, anal fin contains 3-4 spine and 9- 10 soft rays, The pectoral contains 13 soft ray table (1). Approaches to the study of [18] It was found that the dorsal fin with 12-13 rays and 16 spine, anal fin with 8-10 rays and 3 spines. The number of the first gill arch is 18 – 28gill racker. The results of the present study differed with [19] It was reported that the first gill arch contains 18-22 gill rakers.

Table 2. Numerical characteristics of the blue tilapia *O.aureus* in the diyala river/ Buhriz.

Qualities	Range	Mean%	S.E ±
Dorsal fin Fin spine Soft rays	15 -16 12	15.66 12	0.33 0.00
Anal fin Fin spine Soft rays	3 -4 9 -10	3.33 9.33	0.57 0.33
Pectoral Fin Soft rays	13	13	0.00
Gill rakers	22 -26	24.66	2.30

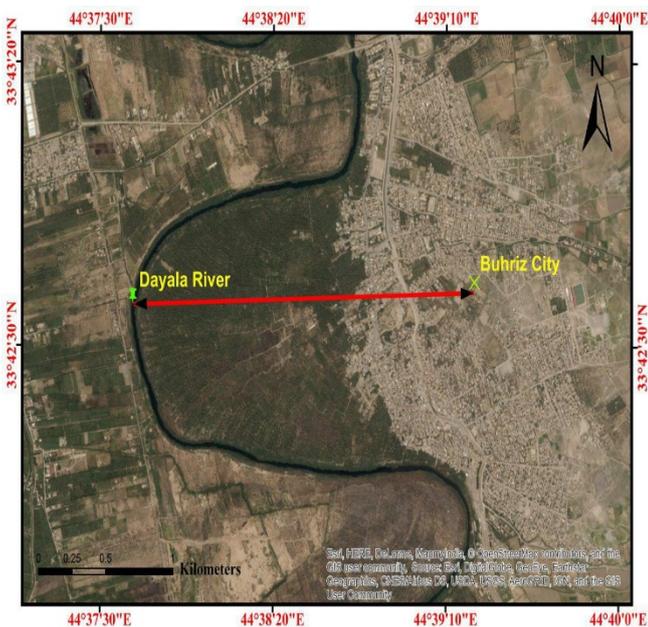


Fig. 2: Blue tilapia in the diyala river/ Buhriz.

Fig. 1: A map of the location of the study.

Conclusions

- 1) The entry of the fish into Iraqi waters has caused damage to local fish
- 2) Compete with local fish on the place and feeding, resulting in their sovereignty
- 3) Their resistance to environmental and biological conditions has spread to most rivers
- 4) Reproduction throughout the year and have the sexual maturity of 4-5 months

References

- [1] Kullander, S.O. *Oreochromis aureus*. <http://www.fishbase.org>. Accessed .1999.
- [2] ISSG (Invasive Species Specialist Group). Ecology of *Oreochromis spp.* Global Invasive Species Database. <http://www.issg.org/database/species/ecology.asp?si=813&fr=1&sts=sss>. 2006.
- [3] FAO., (food and Agriculture organization of the United Nations). Aquaculture Production statistics 1986-1995. FAO fish Circ. NO.815, Rev.9, Rome, Italy. pp.179.1997.
- [4] Chapman, F. A . Culture of hybrid tilapia: A reference profile. Department of fisheries and Aquatic Science, Florida cooperative Extension services, Institute of food and Agricultural sciences, University of Florida. Cir. No.1051. pp.8.2000.
- [5] Canonico, G.C.; Arthington, A.; Mccrary, J.K.; Thieme, M.L.. The effects of introducing tilapias on native biodiversity. Aquatic Conservation: Marine & Freshwater Ecosystem, Vol. 15: pp.463–483.2005.
- [6] Nico, L. *Oreochromis aureus*. USGS Nonindigenous Aquatic Species Database (NAS), Gainesville, Florida. Available from: <http://nas.er.usgs.gov/queries/FactSheet.asp?speciesID>, pp.463.2007.
- [7] FishBase. Fisheries and Aquaculture Department. *Oreochromis aureus* blue tilapia: summary. Available: <http://www.fishbase.org/Summary/SpeciesSummary.php?id=1387>. (March 2008). Fisheries Management, Vol.24: pp.399–405. Fisheries Research, Vol. 83. pp. 23-32.2007.
- [8] Stickney, R.R. Tilapia tolerance of saline water. Review, Priger-fish cult. Vol, 48: pp.461-470. 1986
- [9] Hussein, Taghreed. Salman., Abdul Karim, Jassem. Abulhani., Abdul Zahra, Jabbar. Kata., Saleh, Mahdi. Hassan., Shaima, Mallah Ali, Ashwaq, Mohan Mohsen. Description of the growth of the blue tilapia Steindachner, 1864 (*Oreochromis aureus*) in the Euphrates River / Indian steppe. Tikrit University Journal of Agricultural Sciences, Proceedings of the Sixth Scientific Conference of Agricultural Sciences. Vol. 17 (Special). pp. 443-450. 2017.
- [10] Atee, Raed Sami, AbdulKarim., Jassem Abulhani, Salam, Zidan Khalifa. Description of the growth of blue tilapia Steindachner, 1864) *Oreochromis aureus* in the Tigris River/south of Baghdad. Journal of the University of Thi Qar of Agricultural Sciences, Vol.7. (1): pp. 153-168. 2018.

- [11] Abulheni, Abdul Karim Jassim., Louay, Mohammed Abbas., Abdel-Sada, Rahig Mariosh., Yarob, Jabr Naama. Comparative study of the phenotypic characteristics of two types of tilapia in the Euphrates /Musayyib River. Middle Euphrates University. The Second International Scientific Conference of the Technical College of Musayyib for Engineering and Agricultural Specialties: pp. 472-484. 2015.
- [12] Atee, Raad. Sami., Abd Al Karim, jassem. Abulheni., Salam Zidane Khalifa. Description of the growth of Nile tilapia (Linnaeus, 1758) *Oreochromis niloticus* in the Tigris River south of Baghdad. International Journal of Chem Tech Resaerch.Vol.10(9): pp. 1093-1102. 2017.
- [13] Khalifa, Salam Zidane. Ecological and biological of Nile tilapia *Oreochromis niloticus* and blue tilapia *Oreochromis aureus* from Tigris River Southern Baghdad. Thesis submitted to DiyalaUniversity, pp.16 -141.2017.
- [14] Gomes-Ponce, M. A., Granados-Flores, K., Padilla, C., Lopez-Hernandez, M. And Nunez-Nogueira, G. Age and growth of the hybrid tilapia *Oreochromis niloticus* × *Oreochromis aureus* (Perciformes: Cichlidae) in the dam Zimapan, Mexico. Rev. Biol. Troop., Vol.59 (2): pp. 761-770.2011.
- [15] Jiménez-Badillo.,L. Age-growth models for tilapia *Oreochromis aureus* (Perciformes, Cichlidae) of the Infiernillo reservoir, Mexico and reproductive behavior. Rev. Biol. Trop., Vol.54 (2): pp. 577-588.2006.
- [16] Mutlaq, Falah Maarouf and Abbas Jassim Al-Faisal. New registration of two species of tilapia *Oreochromis aureus* and I *Tilapia zillii* from the southern part of the public estuary in the city of Basra. Journal of Marine Sciences, (2) 24: pp. 160-170. 2009.
- [17] Grammer, G. L., William, T. S., Mark, S. P. And Mark, A. D. Nile tilapia *Oreochromis niloticus* (Linnaeus, 1758) establishment in temperate Mississippi, USA: multi-year survival confirmed by otolith ages. Aquatic Invasions, vol. 7, (Issue 3):pp. 367–376.2012.
- [18]Abulheni, J.A., Luay, M.A. First record of the Tilapia *Oreochromis niloticus* (Linnaeus , 1758) in Euphrates River at Al-Hindia Barrabe Middle of Iraq. Journal of the University of Kerbala. Speciel Tissue, pp.18-21. 2017.
- [19] Krupp, F. And W. Schneider.The fishes of the Jordan River drainage basin and Azraq oasis. Fanna of Saudia Arabia.IO, pp. 347-416.1989.