

Range extension of an exotic African catfish *Clarias gariepinus* (Burchell, 1822) in southern Iraq

Abbas J. Al-Faisal*¹ , Osamah A. Salih² , Falah M. Mutlak¹ ,
Ali T. Yaseen¹ , Abdullah N. Abood² 

¹ Department of Marine Vertebrates, Marine Science Centre, University of Basrah, Basrah, Iraq.
² Basrah Agriculture Directorate, Agriculture Ministry, Basrah, Iraq.

*Correspondence Email: abbas.al-faisal@uobasrah.edu.iq

Received 10/08/2026

Accepted 23/09/2026

Published 28/09/2026

Abstract

In this paper, the new occurrence of exotic African catfish *Clarias gariepinus* (Burchell, 1822), is reported from the lower part of the Tigris River in Basrah City, and expands the geographic distribution of this species to southern Iraq. Two African catfish of 540-575mm total length were captured using a gill net in September 2024. The individuals of *C. gariepinus* are characterized by elongate body, long dorsal and anal fins, head large with four pairs of barbels around a broad mouth, a band of pigment on either side of the lower head, the posterior margin of the pectoral spine is smooth, and they have 62-64 gill rakers. The expansion raises of the African catfish concerns about the potential impacts on local biodiversity and ecosystem dynamics. The presence of this exotic species could disrupt the existing ecological balance, leading to unforeseen consequences for native species and their habitats.

Key words: African catfish, Alien species, southern Iraq.

Introduction

The exotic species cause numerous negative effects on biodiversity, often they become predators or competitors of native species. In the long run, the exotic species may become a deleterious problem as habitat loss, this could also lead to unalterable impacts on the aquatic ecosystems and result in extinction of native species (Kumar, 2000). Exotic fish species were introduced to Iraq due to human activities for broadening species diversity in aquaculture programmes, or for controlling unwanted organisms, or introduced accidentally, also a result of waters shared with neighboring countries (Al-



Faisal *et al.*, 2014). The family Clariidae comprises 16 genera and 118 species, is distributed in Africa and South-East Asia (Froese and Pauly 2025). The African catfish *C. gariepinus* is an extensive freshwater fish species in Africa and is an invasive species in other parts of Africa, Europe and Asia that has spread primarily due to aquaculture, adverse ecological impact has been observed after its introduction (Turan *et al.*, 2005). The expansion of aquaculture practices, coupled with species introductions for farming and recreational purposes, has sometimes facilitated the spread of non-native fish beyond their intended ranges. This has raised ecological concerns, particularly regarding exotic predatory species such as the African catfish (*Clarias gariepinus*), which can establish self-sustaining populations and impact native fish communities (Silveira *et al.*, 2018).

The African catfish is highly adaptable to harsh environmental conditions, its possession of an auxiliary respiratory organ allows it to respire air when highly active or in extremely drought conditions (FAO, 2025). This species primarily feeds at the bottom but can also occasionally feed near the water's surface, it has an omnivorous diet, consuming plankton, insects, snails, crabs, fish, decaying matter, and plants (Uys, 1989). During confrontations within its own species, the African catfish was observed to emit monophasic electric organ discharges (Naorbe, 2021). Spawning occurs between July and December, coinciding with the rainy season in flooded deltas, these catfish can grow up to 150 cm in size (FAO, 2025).

The exotic African catfish *C. gariepinus* has been documented in northern Iraq from Kirkuk province (Mohammed, 2021), and recently recorded in the middle of Iraq from Wasit province (Hadi *et al.*, 2024). The present study aims to confirm the presence of the species in southern Iraq, from the lower part of the Tigris River.

Materials And Methods

As part of the monitoring of the inland water's environment, two samples of African catfish (males) were collected in September 2024 from lower part of the Tigris River in Basrah city, southern Iraq, 31° 14' N 47° 44' E (Figure 1), using gill nets. The specimens were preserved by freezing. The study area is located in Al-Qurna district, 74 km northwest of Basra Governorate center, near the confluence of the Tigris and Euphrates rivers. The river's width is about 150 m, and the depth is 5 m, the area is affected by the tides. The samples were brought to the laboratory for morphometric and meristic characterization, which included five meristic characters (dorsal fin rays, anal fin rays, pectoral fin spines, pectoral fin rays, pelvic fin rays, and gill rakers) which were counted using a dissection microscope, and 18 morphometric characters were measured to the nearest mm following (Hubbs and Lagler, 1958; Hanssens, 2009). All morphometric measurements were percentages of standard length. The Samples were deposited at Marine Science Centre, University of Basrah, Iraq (MSCUB).

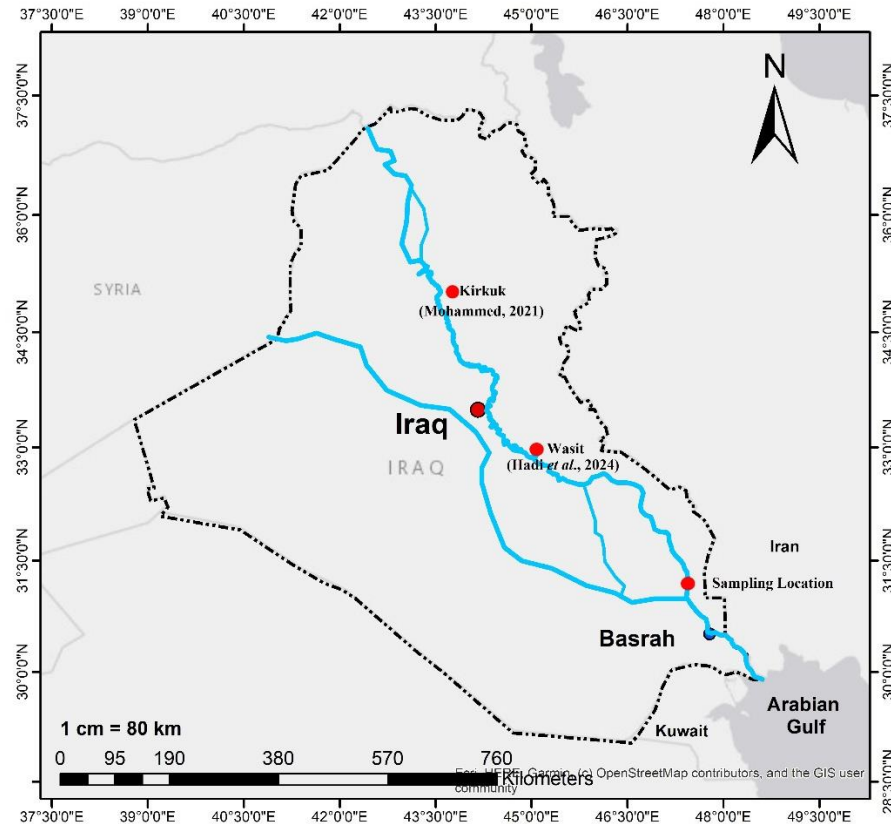


Figure 1: A map showing previously reported locations and the new range extension site in Basrah city, southern Iraq.

Results

Two individuals of *Clarias gariepinus* were collected from the lower part of the Tigris River in Basrah City, southern Iraq. The total length of the specimens ranged from 540-575 mm, standard length 475-500 mm. The collected *C. gariepinus* specimens (Figure 2) were characterized by body cylindrical and elongate (body depth 15.22-16.77% in standard length, body width 13.86-15.99%) with scaleless skin. Head large (23.58-23.63%), depressed and bony with small eyes (1.45-1.66%), with a band of pigment on either side of the lower head. Mouth terminal, large. Four pairs of barbels around a broad mouth. Teeth on premaxilla and lower jaw small, fine and arranged in several rows. Long dorsal (63.00-67.37%) and anal fins (43.00-46.74%), no adipose fin, dorsal fin without spine. The posterior margin of the pectoral spine is smooth, and the anterior edge is serrated. Caudal fin rounded. Dorsal fin rays 65-66, anal fin rays 51-53, pectoral fin rays 8, pelvic fin rays 6. Gill rakers on the first arch 62-64 (Table, 1). The body is dark greyish- brown, belly light.

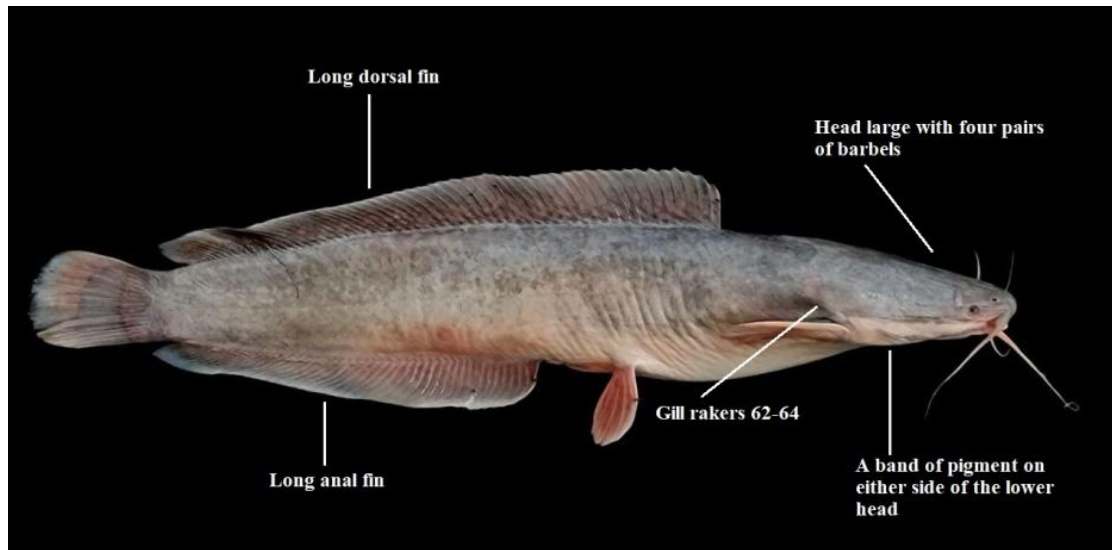


Figure 2: African catfish *C. gariepinus* from south of Iraq, total length 540 mm.

Table 1: Morphometric and meristic characters of *C. gariepinus* from south of Iraq.

Morphometric characters	range	mean $\pm$ SD
Total length (mm)	540 - 575	557.5 $\pm$ 17.5
Standard length [SL] (mm)	475 - 500	487.5 $\pm$ 12.5
Body depth % in SL	15.22 - 16.77	15.99 $\pm$ 0.77
Body width % in SL	13.86 - 15.99	14.93 $\pm$ 1.06
Head length % in SL	23.58 - 23.63	23.61 $\pm$ 0.02
Head depth % in SL	8.73 - 10.02	9.38 $\pm$ 0.64
Head width % in SL	17.85 - 18.54	18.19 $\pm$ 0.35
Snout length % in SL	9.37 - 9.50	9.44 $\pm$ 0.06
Eye diameter % in SL	1.45 - 1.66	1.55 $\pm$ 0.10
Interorbital distance % in SL	11.65 - 11.70	11.68 $\pm$ 0.02
Predorsal length % in SL	34.00 - 35.16	34.58 $\pm$ 0.58
Postdorsal length % in SL	2.66 - 2.90	2.78 $\pm$ 0.12
Dorsal fin length % in SL	63.00 - 67.37	65.18 $\pm$ 2.18
Anal fin length % in SL	43.00 - 46.74	44.87 $\pm$ 1.87
Pectoral fin length % in SL	17.65 - 19.12	18.38 $\pm$ 0.73

Pelvic fin length % in SL	10.52 - 11.81	11.16 ± 0.65
Caudal peduncle length % in SL	4.44 - 4.97	4.71 ± 0.26
Caudal peduncle depth % in SL	8.29 - 8.45	8.37 ± 0.08
Meristic characters		
Dorsal fin rays	65 - 66	
Anal fin rays	51 - 53	
Pectoral fin spines	1	
Pectoral fin rays	8	
Pelvic fin rays	6	
Gill rakers	62-64	

Discussion

The African catfish *C. gariepinus* seemed to enter Iraqi waters due to the waters shared with neighboring countries. *C. gariepinus* is the only species of the family Clariidae found in the upper Mesopotamian reaches in south of Turkey (Turan *et al.*, 2005), and Syria (FAO, 2025). Its presence in Iraqi waters is due to its wide environmental tolerances. African catfish has been adapted for living in stagnant environments or even out of water, with pseudo-lungs, and a high capacity to produce mucus (Vitule *et al.*, 2006). It is omnivorous, with a wide range of feeding options (FAO, 2025). In addition to its tolerance to high stock density (Basharat *et al.*, 2024). The present study showed the presence of the exotic African catfish in southern Iraq, despite the fluctuating environmental conditions in the region. The impact of climate change, rising temperatures and decreasing river waters is most acutely felt in Iraq's southern governorates. Iraq is facing a complex water crisis, as the intake from the Tigris and Euphrates rivers is decreasing at an unprecedented rate, due to the construction of upstream dams and a prolonged drought. In addition to water quality issues, represented by salinity, and the concentration of pollutants in water resulting from industrial and agricultural activities (Chabuk *et al.*, 2020).

The number of exotic fish species in Iraq has reached 21 species (Al-Faisal, 2020; Cicek *et al.*, 2023), only six of which were introduced due to human activities to broaden species diversity in aquaculture programmes, or to control unwanted organisms (Al-Faisal *et al.*, 2014). Exotic fishes cause a wide array of potential risks including the extirpation of native species, these exotics compete with the native species for resources, and habitat, potentially preying on them, introducing new parasites and diseases,

resulting in the production of hybrids and causing genetic erosion of native species, and environmental degradation within aquatic systems (Kumar, 2000).

The African catfish *C. gariepinus* can be distinguished from the other *Clarias* by the presence of a band of pigment on either side of the lower head, the posterior margin of the pectoral spine is smooth, and It has 27 or more gill rakers on the first arch (Hanssens, 2009). The meristic and most morphometric characteristics of *C. gariepinus* in the present study agree with previous studies (Turan *et al.*, 2005; Hanssens, 2009; Iswanto *et al.*, 2015). The slight difference in some morphological characters (e.g. head length, body depth, and pectoral fin length) between the results of the present study and those obtained for *C. gariepinus* by Turan *et al.* (2005) may be due to differences in environmental factors such as water quality and temperature. The variation in body morphology of fishes influenced by different habitat conditions comprises the adaptation of fish to environmental gradients by functional phenotype differentiation, these alterations can subsequently impact the function of these fish within the ecosystem (Naeem *et al.*, 1992; Pervaiz *et al.*, 2012; Ishtiaq and Naeem, 2016; Shuai *et al.*, 2018).

The African catfish specimens in the present study were larger than those recorded in middle of Iraq by Hadi *et al.* (2024), with total length ranging from 540 to 575 mm compared to 450 - 550 mm. This indicates that this species has found a suitable environment for growth. According to Dumith and Santos (2022). African catfish can take advantage of the high temperatures to enhance their spread and successful establishment in the environment. They showed that African catfish larvae reveal an optimal development at approximately 28°C, and this was noted during the dry season, which showed a high increase in their population. On the other hand, varying light intensity may affect overall growth parameters of African catfish (Alsaqufi *et al.*, 2021).

Conclusions

The range extension of the exotic African catfish *C. gariepinus* into the lower part of the Tigris River in Basrah city marks a significant expansion of its geographic distribution into southern Iraq. The capture of two specimens measuring between 540-575 mm total length provides valuable insights into the characteristics of this species. This discovery highlights the adaptability of *C. gariepinus* to diverse environmental conditions, shedding light on its potential to thrive in new habitats. However, this expansion raises concerns about the potential impacts on local biodiversity. Further research and monitoring efforts are crucial to better understand the implications of this range extension on the local ecosystem. Mitigation strategies may need to be considered to manage any negative effects on biodiversity and ecosystem stability resulting from the presence of the African catfish in southern Iraq.

References:

- Al-Faisal, A.J. (2020). Updating checklist of freshwater fishes of Iraq. Mesop. Environ. J. 5(4): 1-7.

- Al-Faisal, A.J., F.M. Mutlak and S.A. Abdullah. (2014). Exotic freshwater fishes in the Southern Iraq. *Marsh Bull.* 9(1): 65-78.
- Alsaqufi, A.S., S.M. Rahman, R.T. Mathew, Y.A. Alkhamis, M.M. Rahman and M.A. Pathiri. (2021). Influence of photoperiod and shelter on some phenotypic traits in African catfish (*Clarias gariepinus* Burchell 1822) Larvae. *Pak. J. Zool.* 53(4): 1509-1523.
- Basharat, H., M.R. Ali, A. Ahmed, M.Z. Anjum and S. Akhter. (2024). Growth and production characters of African catfish (*Clarias gariepinus*) stocked at different stocking densities in earthen ponds under local climatic conditions of Pakistan. *Sarhad J. Agric.* 40(2): 637-645.
- Chabuk, A., Q. Al-Madhlom, A. Al-Maliki, N. Al-Ansari, H.M. Hussain and J. Laue. (2020). Water quality assessment along Tigris River (Iraq) using water quality index (WQI) and GIS software. *Arab. J. Geosci.* 13(654): 1-23.
- Cicek, E., L. Jawad, S. Eagderi, H.R. Esmaeili, A.T.T.A. Mouludi-Saleh, S. Sungur and R. Fricke. (2023). Freshwater fishes of Iraq: a revised and updated annotated checklist 2023. *Zootaxa.* 5357(1): 1-49.
- Dumith, M.T. and A.F.G.N.D. Santos. (2022). Ecological Impacts of the African Catfish *Clarias Gariepinus* at Environmental Protection Area in Southeastern Brazil. *Res. Squ. Platform llc.* <https://doi.org/10.21203/rs.3.rs-1132915/v1>
- FAO. (2025). *Clarias gariepinus*. Cultured Aquatic Species Information Programme. Text by Pouomogne, V. In: Fisheries and Aquaculture. [Cited Thursday, January 16th 2025]. (https://www.fao.org/fishery/en/culturedspecies/clarias_gariepinus/en)
- Froese, R. and D. Pauly. Editors. (2025). Fish Base. World Wide Web electronic publication. www.fishbase.org, version (04/2025).
- Hadi, H.D., A.H. Baraaj, A.H. Ali and M.R. Sajet. (2024). First record of the North African catfish *Clarias gariepinus* (Burchell, 1822) (Siluriformes, Calriidae) in Tigris River, Iraq. *Bull. Iraq Nat. Hist. Mus.* 18(2): 477-485.
- Hanssens, M. (2009). A review of the *Clarias* species (Pisces; Siluriformes) from the Lower Congo and the Pool Malebo. *J. Afrotrop. Zool.* 5: 27-40.
- Hubbs, C.L. and K.F. Lagler. (1958). Fishes of the Great Lakes Region. University of Michigan Press, Ann Arbor. revised edition. xv + 213 pp.
- Ishtiaq, A. and M. Naeem. (2016). Length-weight relationships and condition factor for farmed *Catla catla* (Hamilton, 1822) from southern Punjab, Pakistan. *Punjab University J. Zool.* 31(2): 209-214.
- Iswanto, B., I. Imron, R. Suprpto and H. Marnis. (2015). Morphological characterization of the African catfish (*Clarias gariepinus* Burchell, 1822) strains introduced to Indonesia. *Indones. Aquac. J.* 10(2): 91-99.
- Kumar, A. B. (2000). Exotic fishes and freshwater fish diversity. *Zoos' Print J.* 15(11): 363-367.

- Mohammed, E. H. (2021). The affection of environmental conditions of Three types of fish with external parasites of the Little Zab River. M. Sc. Thesis, College of Education for Girls, University of Tikrit, Iraq.
- Naeem, M., A. Salam and M.N. Khan. (1992). Morphometric studies of an exotic fish *Oreochromis nilotica* in relation to body size. Proc. Pak. Cong. Zool. 12, 599-605.
- Naorbe, M.C. (2021). Biological performance of African catfish *Clarias gariepinus* (Burchell, 1822) fingerlings fed with raw chicken entrails. The Palawan Sci. 13(2): 13-24.
- Pervaiz, K., Z. Iqbal, M.R. Mirza, M.N. Javed, M. Naeem and A. Ishtiaq. (2012). Length–weight, length–length relationships and feeding habits of wild Indus Mahseer, *Tor macrolepis*, from Attock, Pakistan. J. Appl. Ichthyol. 28(4): 673-676.
- Shuai, F., S. Yu, S. Lek and X. Li. (2018). Habitat effects on intra-species variation in functional morphology: Evidence from freshwater fish. Ecol. and evol. 8(22): 10902-10913. <https://doi.org/10.1002/ece3.4555>
- Silveira, R.D., F.D.A. Lopes and J.A.A. Perez. (2018). First record of the nonnative African catfish, *Clarias gariepinus* (Burchell, 1822) (Siluriformes: Clariidae), in the D'Una River Basin in Santa Catarina state, Brazil. Biotemas. 31(2): 53-56.
- Turan, C., S. Yalçın, F. Turan, E. Okur and I. Akyurt. (2005). Morphometric comparisons of African catfish, *Clarias gariepinus*, populations in Turkey. Folia Zool. 54(1/2): 165-172.
- Uys, W. (1989). Aspects of the nutritional physiology and dietary requirements of juvenile and adult sharptooth catfish, *Clarias gariepinus* (Pisces: Clariidae) PhD thesis, Rhodes University, Makhanda, South Africa.
- Vitule, J.R., S.C. Umbria and J.M.R. Aranha. (2006). Introduction of the African catfish *Clarias gariepinus* (BURCHELL, 1822) into Southern Brazil. Biol. Invasions. 8(4): 677-681.

توسع نطاق انتشار الجري الأفريقي الدخيل (*Clarias gariepinus* (Burchell, 1822) في جنوب العراق

عباس جاسم الفيصلي^{1*} ID، أسامة عبد الهادي صالح² ID، فلاح معروف مطلق¹ ID،
علي طه ياسين¹ ID، عبد الله نجم عيود² ID

1 قسم الفقرات البحرية، مركز علوم البحار، جامعة البصرة، العراق
2 مديرية زراعة البصرة، وزارة الزراعة، العراق

*Corresponding Author E-mail: abbas.al-faisal@uobasrah.edu.iq

تاريخ الإستلام: 2026/08/10 تاريخ القبول: 2026/09/23 تاريخ النشر: 2026/09/28

المستخلص

تُسجّل هذه الورقة البحثية ظهوراً جديداً لأسماك الجري الأفريقي الدخيل *Clarias gariepinus* (Burchell, 1822) في الجزء السفلي لنهر دجلة بمدينة البصرة، مما يوسع النطاق الجغرافي لهذا النوع ليصل إلى جنوب العراق. وقد تم صيد فردين من هذا النوع، يتراوح طولهما الكلي بين 540 و 575 ملم، باستخدام الشباك الخيشومية في شهر ايلول 2024. تتميز أفراد هذا النوع بجسم متطاول، وزعانف ظهرية وشرجية طويلة، ورأس كبير مزود بأربعة أزواج من اللوامس المحيطة بفم عريض، وشرطي صبغي على جانبي الجزء السفلي من الرأس، كما تتسم الحافة الخلفية لشوكة الزعنفة الصدرية بكونها ملساء، عدد الاسنان الخيشومية 62-64. يثير هذا التوسع في انتشار أسماك الجري الأفريقي مخاوف بشأن التأثيرات المحتملة على التنوع البيولوجي المحلي وديناميكيات النظام البيئي، إذ قد يؤدي وجود هذا النوع الدخيل إلى اختلال التوازن البيئي القائم، مما قد يسفر عن عواقب غير متوقعة على الأنواع المحلية وموائلها الطبيعية.

الكلمات المفتاحية: أسماك الجري الأفريقي، نوع دخيل، جنوب العراق.