New record species of genus Zonocypris Müller G. W., 1898 From the Province of Holy Karbala, Iraq

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Abstract
11samples (females) were collected from Euphrates River / AlHindeya\ Province of Holy Karbala, in18 July 2008. Genus Zonocypris Müller G. W., 1898 is sparsely distributed in the aquatic environment "Zonocypris sp. was documented for the first time in Iraq. The species is characterized by the right valve overlapping the left valve. Adductor muscle scars 5 central. Posterior margin with pustles. 2nd A. Terminal with 5 claws and one seta. Max, third masticatory processes bear two spine teeth.

Keywords: Crustacea, Ostracoda, Podocopoda *zonocypris*, new record

Introduction

"Ostracods were formally described for the first time by O.F. Müller in 1776 (Henderson, 2002). They are one of the most diverse groups within the crustacea, with estimates of 3,000 to 5,000 living species and around 30,000 fossil species found in both marine and non-marine environments (Park & Ricketts, 2003; Smith & Park, 2003)
"Ostracods are tiny crustaceans recognized by a bivalved carapace that completely covers their bodies and appendages. Typically, their bodies have reduced trunk segmentation and feature 5 to 8 pairs of protruding limbs. They use gaping valves for movement and usually measure between 0.5 and 2.0 mm in their adult form. However, some interstitial forms can be as small as 0.2 mm, certain freshwater species can grow up to 8 mm, and the pelagic marine myodocopan can reach up to 10 mm. The genus Gigantocypris can grow as large as 32 mm (Morin and Cohen, 1991; Cohen et al., 1998)
.At its heart is a carapace consisting of right and left valves with delicate appendages connected by their valve stems as well as viscera in their core (Mahar&Jafri,2012; Victor&Fernando,1981). Fossil Ostracodes offer an essential resource in reconstructing past environments, since their ecology is highly responsive to physical and chemical characteristics that characterize ground water (Forester & Smith. (1993), Szczechura (1996) ; Smith et al. (2003). At present there are over 2000 freshwater species and 13 families found worldwide with 50% belonging to Cyprididae (Martens et al. 2008; Savatenalinton & Martens 2009). Muller (1898) first described Zonocypris from Madagascar living specimens. According to MULLER's original diagnosis, its main features include its characteristic ornamentation made up of concentric ridges and its unique adont hinge. Furthermore, this species features unique second Antenna morphology. "Currently, Zonocypris species are predominantly found in the Afrotropic ecozone, particularly in slightly alkaline African lakes. However, there have been occasional reports of live specimens in other locations
.Living Zonocypris species have also been observed in Turkish lakes . As fossil remains, "Zonocypris species have been traced back to Cretaceous Europe. They are present in various regions, including India, China, and South America. However, in Turkey, Italy, and North Africa, Zonocypris was first identified in Miocene sediments
. "Subsequent Plio-Pleistocene records indicate a broader distribution of Zonocypris, encompassing regions such as Italy, France, Greece, Turkey, Bulgaria, Russia, and India. From a paleoecological perspective, most fossil species discovered in Ethiopia are associated with freshwater environments. The subspecies Zonocypris membranae quadricella (Stancheva, 1966) has been associated with various oligohaline deposits of the Paratethys (Suzin, 1956; Mandelstam and colleagues, 1962; Stancheva, 1966; Olteanu, 1995; Krstic, 2006)."

Materials and Methods

For this study, 11samples (females)for this investigation were taken in 18 July 2008 from Euphrates River\AlHindeya\ Province of Holy Karbala, 32°32'49"N 44°13'25"E by zooplankton net. "They were preserved in 70% ethyl alcohol with a few drops of glycerol added to ensure their viability for future study and examination." Altay Company provided us with a Dissecting Stereo Microscope Type Bush and Lamp to perform dissection of specimens using special fine pins that allowed us to separate valves as well as appendages from one another and dissect other organs and appendages. After dissection was complete we returned all dissected parts for further investigation and preservation.Glycerol drops were applied to microscopic slides with mounting pins. Drawings were accomplished using a Lucida camera.Taxonomic keys were employed for diagnosis and identification purposes; examples are: (Edmondson 1959; Henderson 2002; Victor 2004; Karanovic ,2012;Meisch 2000 .

Figure1: Study area showed region of collect specimens in Holy Karbala\ Ira

Results and Discussion

Body(Adult female); Fig. 1.(A) :Oval, L;5.5mm,W:4.3mm. greenish yellow. Surface ornamented with small hairs. Eyes fused. Right Valve Overlaps Left Valve. Right Carapace. Fig. 1.(B): Semi-triangle. Adductor muscle scars 5 central . The ovaries can be distinguished. Posterior margin with pustles.1st Antenna. Fig. 1.(D) :7 Segments. Terminal with 3 seta. 2nd Antenna. Fig. 1.(E) :3 segments . Terminal with 5 claws and one seta. Mandible. Fig. 2.(A):4 segments. First :with 2 seta and Palp with 4 seta. Maxilla. Fig. 2.(B): Respiratory plate with 20 feathery setae . third masticatory processes bear two spine teeth.1stThoracopod "Fig.2.(C): Respiratory plate featuring two setae. Palp exhibits two setae. Second thoracopod. Fig.2.(D): Consists of five segments.". Terminal with one claw.3rd Thoracopod. Fig .2.(E):3 Segments. Terminal with tow setae one of them long.Uropod. Fig. 2.(F): Flagellum ,with one seta.

Conclusion

The study documents the first recorded occurrence of the genus Zonocypris in Iraq, specifically from the Euphrates River in Al-Hindeya, Holy Karbala. The specimens collected display distinctive features such as the right valve overlapping the left, five central adductor muscle scars, and the presence of pustules on the posterior margin. The discovery expands the known distribution of Zonocypris and contributes to the understanding of its morphological characteristics and ecological distribution. This finding underscores the importance of continued biological surveys and taxonomic studies in enhancing our knowledge of crustacean biodiversity in Iraq.

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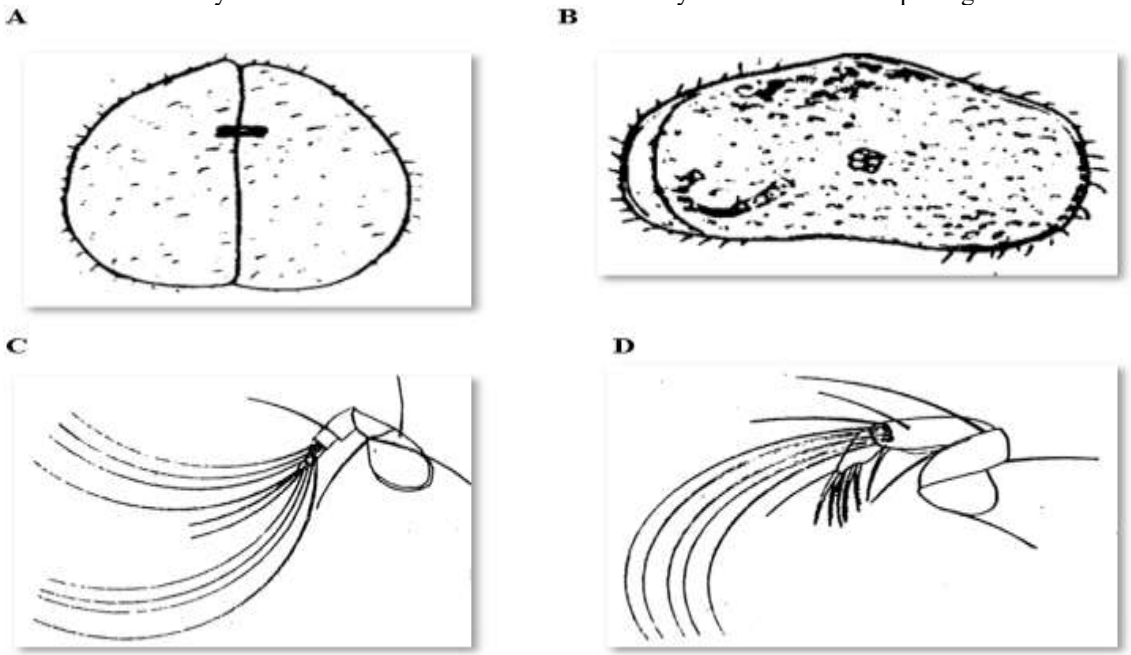

Fig.(2) *Zonocypris sp.* . A; Adult female B; Right valve (0.1mm ———)
C; 1st Antenna D; 2nd Antenna (0.01mm —)

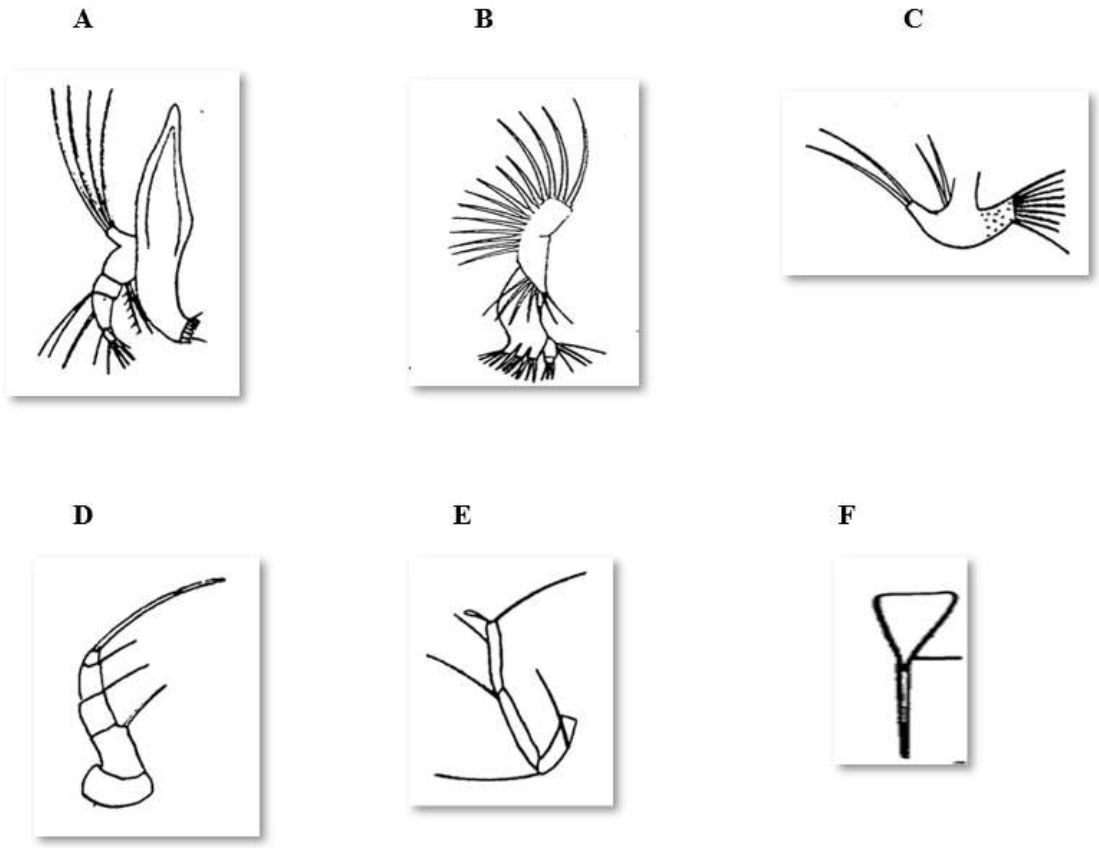

Fig.(3) *Zonocypris sp.* . A; Mandible. B; Maxilla C; 1st thoracopod D; 2nd thoracopod E; 3rd thoracopod F;Uropod . Antenna (0.01mm ———)

References

1. Cohen, A. C, Martin, J. W. and Kornicker, L. S., Homology of Holocene ostracode biramous appendages with those of other crustaceans: the protopod, epipod, exopod and endopod, Lethaia, 31, 251-265, 1998.
2. Edmondson, W. T. (1959), Freshwater Biology.2nd. ed John Wiley and Sons, Inc. Newyork: 124 pp.
3. Forester , R . M . & Smith , A . J . (1993) . Microfossils as Indicators of paleohydrology and paleoclimate . paleohydrogeological Methods and their applications . Nuclear Energy Agency technical workshop 1992, Nuclear Energy Agency, Paris, France: 39_57
4. Henderson, P. A. (2002), Freshwater Ostracodes. Pisces Conser- vation Ltd: 258pp.
5. Karanovic I. (2012). Recent Freshwater Ostracods of the World. Berlin, Heidelberg: Springer-Verlag, 608 p.
6. Martens, K., I. Scho¨n, C. Meisch & D. J. Horne, (2008). Global diversity of ostracods (Ostracoda, Crustacea) in freshwater.Hydrobiologia 595: 185–193.
7. Mahar,M.A. and Jafri,S.I.H.(2012)New Record Of Some Freshwater Seed Shrimps (Ostracoda:Podocopida)from Lakes Of Sindh .Pakistan J.Zool.,vol.44(5),pp.1440- 1446.
8. Meisch, C. (2000). Freshwater Ostracoda of western & Central Europe. Spektrum Akademisher Verlog GmbH. Heidelberg, Berlin: 513pp.
9. Mandelstam, M.I., Markova, L.P., Rozieva, T. R. & Stepanajtys, N.E. (1962): Ostrakody pliotzenovyh i postpliotzenovyh olotzenii Turkmenistana. – Izvestija Akademii Nauk Turkmenskoj SSR: 1-287, Aschabad.
10. Muller, G.W. (1898): Die Ostracoden. – In: VÖLTZKOW, A. (ed.): Wissenschaftliche Ergebnisse der Reisen in Madagaskar und Ostafrika in der Jahren 1889–1895. – Senckenbergische Naturforschende Gesellschaft, Abhandlungen, 21(2): 255-296, Stuttgart.
11. Morin, J. J. and Cohen, A. C, Biolumnescent displays, courtship and reproduction in ostracodes, in Crustacean sexual biology, edited by Bauer, R. and Martin, J., 1-16, Columbia University Press, New York, 1991.
12. Olteanu, R. (1995): Dacian ostracodes. – In: MARINESCU, F. & PAPAIANOPOL, I. (eds.): Chronostratigraphie und Neostratotypen. Neogene der Zentrale Paratethys, IX. Dacien. – Editura Academiei Române: 268-385, Bucarest.
13. Park , L . E . & Ricketts , R . D . (2003) . Evolutionary history of the Ostracoda and the origin of Non marine faunas . In : Park , L . E and Smith , A . J . (Eds) , . Bridging the Gap Trens in the ostracode Biological and Geological Sciences . The Paleontological Society Papers , 9 : 11-36
14. Szczechura, J. 1996. Ecological control of ostracode distribution in the middle miocene of paratethyes In : keen , M . C . (Ed) . : Proc , 2nd Europe . ostracod . Meet . Univ . Glasgow . Scotland 23 rd _ 27th July , 1993 . Brit . Micropal . Soc . , London , 99 _ 106 .
15. Smith , A. J & Park , L .E . (2003) . An Introduction to Ostracoda in : Park , L .E and Smith , A .J . (Eds). Bridging The Gap Trends in the Ostracode Biological and Geological Sciences. The Paleontological Society papers ,9 :9-10.
16. Smith, A. J. ; Davis, J. W ; Palmer, D. F ; Forester, R. M and Curry, B. B. (2003), Ostracoda as hydrologic indicators in springs, streams and wetlands: A tool for environmental and paleoenvironmental assessment. In:

park; L.E & Smith, A. J. (Eds). Bridging the Gap Trends in the Ostracode Biological and ecological Sciences . The Paleontological Society Papers , 9 :203- 222.
17. Stancheva, M. (1966): Notes on the stratigraphy and the ostracode fauna from the Pliocene and post-Pliocene in the district of the Silistra. – Bulletin of the Strasimir Dimitrov Institute of Geology, 15: 1-217.
18. Suzin, A.V. (1956): Ostracody Tretichnykh otlozheniy severnogo predkavkazya. – 191 p., Moskva. WITT, W. (2003): Freshwater Ostracods from Neogene deposits of Develiköy (Manisa, Turkey). – Zitteliana, A43: 93-108.
19. Savatenalinton S. & Martens K.(2009). Generic revision of Cypricercinae McKenzie, (1971Crustacea, Ostracoda), with the description of three new genera and one new species and a phylogenetic analysis of the subfamily .Hydrobiologia 632:1–48
20. Victor,R. and Fernando,C.H.(1981).An Illustrated Key To The Freshwater Ostracoda Genera of The Oriental Region. University of Waterloo Biology Series .92pp
21. Victor R. (2004). Crustacea: Ostracoda. In: yule, C. M & sen, Y. H. (Eds). Freshwater Invertebrates of the Malaysian Region. Academy of sciences Malaysian: 225 – 252