

On Some Species Of The Superfamily Cytheracea (Ostracoda) From Euphrates Formation And Serikagni / Euphrates Intertonguing In Hamrin Well No.12 And Ajille Well No.6, N. Iraq.

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Abstract

Twelve Ostracoda species of the Superfamily Cytheracea were described from Euphrates in Hamrin well no.12 and Ajille well no.6, northern Iraq, of which three species are new ; *Alocopocythere euphratensis* sp. nov., *Ruggieria anahensis* sp. nov., *Flexus iraqensis* sp. nov., the others nine species have been previously recorded from India, Pakistan, Middle East, Arabian Gulf and N. Iraq.

Introduction

The present paper is part of work investigating ostracoda from Euphrates Formation, the Serikagni / Euphrates intertonguing (Lower Miocene) from northern Iraq in which two subsurface sections of Hamrin well (Hr.12) and Ajille well (Aj.6) (Fig.1). Lithologically (Fig.2), Euphrates Formation consist of well bedded recrystallized Limestone, Chalky Limestone, which first described by Boeckh in(1) at Anah locality (32)km southeast Anah village, Serikagni Formation consist of Chalky Globigerina – Limestone with a few more Calcareous bands which first described by Bellen, 1955 in(1).

These sample have been numbered with the prefix (Eu.) for the Euphrates Formation, and (Ser. / Eu.) for the Serikagni / Euphrates intertonguing. All the figured specimens are deposited at Mosul University with the prefix Mo. = Mosul University and T. = Tertiary Collection.

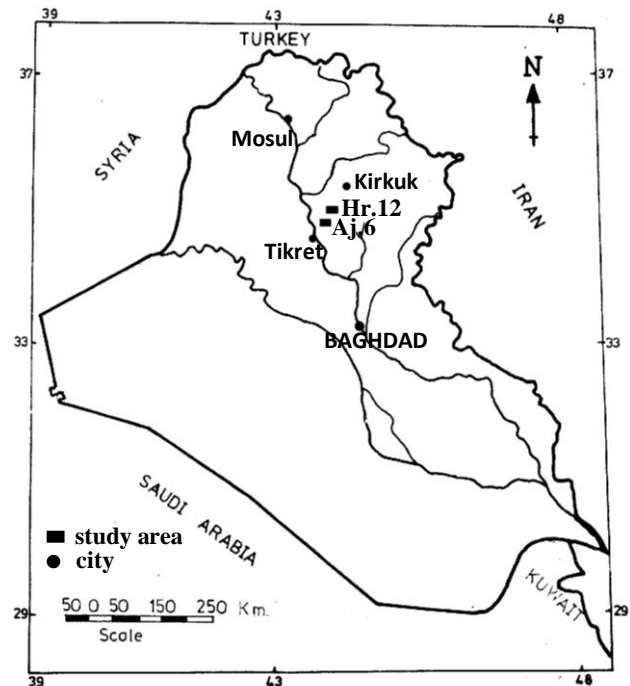


Fig.1 Location Map.

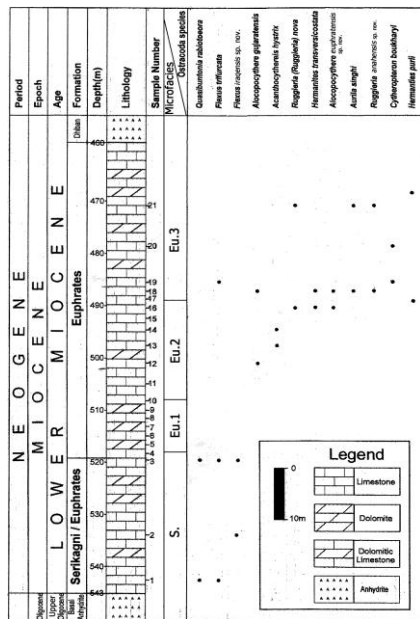


Fig.2 Stratigraphic section of Serikagni / Euphrates , Euphrates Formations in Hamrin-12 (Hr.12).

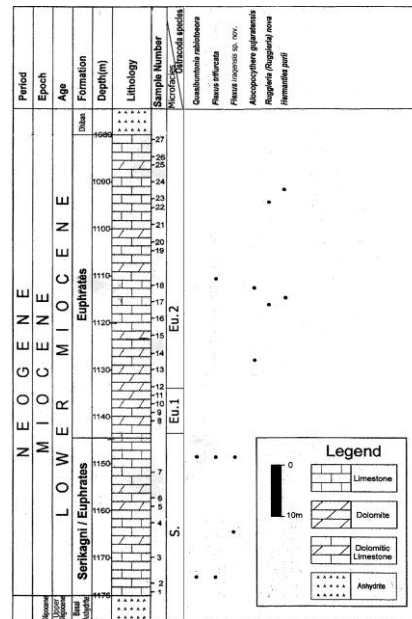


Fig.3 Stratigraphic section of Serikagni / Euphrates , Euphrates Formations in Ajille-6 (Aj.6).

Systematic Descriptions

Class : Crustacea Pennant, 1777
Subclass : Ostracoda Latreille, 1806
Order : Podocopida G.W. Muller, 1894
Suborder : Podocopina Sars, 1866
Supefamily : Cytheracea Baird, 1850
Family : Trachyleberididae Sylvester – Bradley, 1948
Subfamily : Trachyleberidinae Sylvester – Bradley, 1948
Tribe : Trachyleberidini Sylvester – Bradley, 1948
Genus : *Acanthocythereis* Howe, 1963
Type-species : *Acanthocythereis araneosa* Howe, 1963
Acanthocythereis hystrix Reuss, 1849
 Pl. 1, Fig.1
 1849 *Acanthocythereis hystrix* Reuss in Bonaduce and Russo, 1985, p.432, pl.4, fig.1.
Material : (18) Carapace and (3) Valve.
Figured specimen : Mo. T. Eu. 20, Euphrates Formation (L. Miocene).
Remarks : The present specimens from Euphrates Formation, northern Iraq, entirely identical with *A. hystrix* Reuss in (2), which originally described from Lower Miocene of Netherland Reuss, 1849 and from Miocene, Sardinia Island(2), But differs in having much blunter spines and more subtriangular posterior end.
Genus : *Alocopocythere* Siddiqui, 1971
Type-species : *Alocopocythere transcendens* Siddiqui, 1971
Alocopocythere gujaratensis Khosla, 1978
 Pl.1, Figs. 2-4
 1978 *Alocopocythere gujaratensis* Khosla, p.267, pl.4, fig.8.

Material : (8) Carapace.
Figured specimen : Mo. T. Eu. 21, Euphrates Formation (L. Miocene).
Remarks : The figured specimens entirely identical in all characters with *A. gujaratensis*(3) from L. Miocene of India, but the later differs in having deep foose separated by thick muri.
Previous Record : This species recorded previously from Lower Miocene deposits of India by(3).
Alocopocythere euphratensis sp. nov.
 Pl.1, Figs.5-7
Derivation of name : After Euphrates river in Iraq.
Diagnosis : A species of the genus *Alocopocythere* with well developed ovate eye tubercle, bounded posteriorly by shallow furrow thick, elongate carapace, strongly reticulate and faint longitudinal ventro- lateral ridges.
Holotype : Carapace Mo. T. Eu.28, pl.2, fig.2.
Paratype : Two carapaces Mo. T. Eu.22 (1-2) pl.2, figs (3-4).
Type-horizon : Euphrates Formation, Hamrin well no.12, north Iraq.
Material : (16) carapace.
Description : Carapace subrectangular in lateral view, anterior end broadly rounded, posterior end truncated and narrowly obliquely rounded which slightly sloping in its upper part and joining the dorsal margin at the ear-shaped cardinal angle. Dorsal margin nearly straight with prominent anterior and posterior cardinal angles, ventral margin slightly concave in the anterior half, curving upwards posteriorly lateral surface covered with strong, deep, reticulate and faint longitudinal ventro-lateral ridge, dorsal ridge distinct and ends in well developed tubercle, well developed eye tubercle ovate bounded posteriorly by shallow furrow, also two fine ridge

originate at eye tubercle, one vertical short ridge, other running over the anterior margin and continuity along ventral and posterior as a less developed ridge, the ventral inflation tends to form a ridge parallel to ventral margin and terminates in small nodules above terminates in a small nodules above postero-ventral corner, well sexual dimorphism, the males being longer and less high than the females.

Remarks : The present species are fairly similar to *A. reticulate* (Hartmann)(4), described from Recent Lagoon of Abu-Dhabi, but differs in having a deeper furrow behind eye tubercle, a higher margined rim and well developed postero dorsal tubercle in postero cardinal angle.

A. gujaratensis(3) from Lower Miocene of India differs in having deep fossae, humped dorsal margin and more tumid carapace. This species shows some similarities to *Alocopocythere schmitzi*(5) from Eocene of Egypt, but differs in being laterally more inflated, having a deeper furrow behind the eye tubercle, and thicker marginal rim.

Subfamily : Buntoninae Apostolescu, 1961

Tribe : Leguminocytherini Howe, 1963

Genus : *Ruggieria* Keij, 1957

Subgenus : *Ruggieria* Keij, 1957

Type-species : *Cythere michelinia* Bosquet, 1852

Ruggieria (Ruggieria) nova Khalaf, 1989

Pl.1, Fig.8

1989 *Ruggieria (Ruggieria) nova* Khalaf, p.1120,

pl.1, figs.5a; pl.2, figs.1-4,11

Material : (7) Carapace.

Figured specimen : Mo. T. Eu. 23, Euphrates Formation (L. Miocene).

Previous Record : This species recorded by^[6] from north Iraq (Middle Miocene).

Ruggieria anahensis sp. nov

Pl.2, Figs.1-4

Derivation of name : From type Locality, (Anah village) western Iraq.

Diagnosis : A species of subgenus *Ruggieria* characterized by three longitudinal ridges, the alae are very prominent maximum width and thickness in the posterior half.

Holotype : Carapace Mo. T. Eu.24, pl.2, fig.6.

Paratype : Two carapaces Mo. T. Eu.24(1-3), pl.2;3, figs.7,8;1-3.

Type horizon : Euphrates Formation, Hamrin well no.12., north Iraq.

Material : (11) Carapace and (1) Valve.

Description : Carapace elongate in lateral view, greatest height anteriorly, maximum length at below mid-height. Anterior end sloping in the upper part, broadly rounded in the Lower part with marginal row of 11-15 fine denticles, posterior end narrower and lower than anterior with an obtus angle. Dorsal and Ventral margin slightly straight lateral surface with faint pitted and has three longitudinal ridges, weak dorsal one, faint median ridge and strongly ventral ridge forming an alae on the postero-ventral corner and ending with spine, between the ventral

ridge and ventral margin there is a weak ventro lateral rib, eye tubercle present but not prominent at the anterior cardinal angle also the subcentral tubercle marked the anterior end of median ridge. Sexual dimorphism distinguished, males more elongate and narrower than the females.

Remarks : *Ruggieria (Ruggieria) sinjarensis*(7), from Lower Miocene of N. Iraq differs in its subtriangular posterior end, square and hexagonal pits. The present species fairly similar to *Ruggieria guhai*(3), from Middle Miocene of India, but differs in having less swelling postero-ventral corner and without spine and strong reticulation. In addition *R. mireticulata*(8), from Lower Miocene of India has distinctive concave postero-ventral corner, and broadly rounded posterior end and different number of spine on the marginal rim. This species shows some affinity to *Ruggieria glabella*(9), later recorded from Late Eocene of Egypt(10), but differs in having distinctive concave postero-ventral corner, subrectangular shape, strong reticulation, and the median ridge weakly developed.

Family : Hemicytheridae puri , 1953

subfamily : Hemicytherinae puri , 1953

Tribe : Aurilini puri , 1973

Genus : *Aurila* pokorny , 1955

Type-species : *Cythere convexa* Baird , 1850

Aurila singhi Khosla and Nagoria , 1989

Pl.2 , Fig.5

1989 *Aurila singhi* Khosla and Nagori , p.36, pl.7 , figs.1-3.

Material : (14) Carapace.

Figured specimen : Mo. T. Eu.25, Euphrates Formation, Lower Miocene

Previous records : This specimens recorded previously from Lower Miocene of India(8).

Genus : *Qusibuntonia* Ruggieri, 1958

Type-species : *Cythere radiatopora* sequenza, 1880

Qusibuntonia radiatopora Sequenza, 1985

Pl.2, Figs.6-8

1985 *Qusibuntonia radiatopora* Sequenza, in Bonaduce and Russo, p.432, pl.3, figs.7a,b.

Material : (6) Carapace.

Figured specimens : Mo. T. Ser./Eu.26, Serikagni/Euphrates intertonging (L. Miocene)

Previous records : This specimens recorded from Miocene deposit of Italy, Sequenza in(2).

Subfamily : Thaerocytherinae Hazel, 1967

Tribe : Thaerocytherini Hazel, 1967

Genus : *Hermanites* puri, 1955

Type-species : *Hermanites reticulate* puri, 1954

Hermanites purii Tewari and Tandon, 1960

Pl.3, Fig.1

1960 *Hermanites purii* Tewari and Tandon, p.158, pl.5, figs.1a-b.

Material : (4) Carapace.

Figured specimen : Mo. T. Eu.27, Euphrates Formation, Lower Miocene.

Previous records : This species was found at the India (L. Miocene) by(11)(3).

Hermanites transversicostata Khalaf, 1982

Pl.3, Fig.2

1982 *Hermanites transversicostata* Khalaf, stero-atlas q(11), 59-62.

Material : (8) Carapace.

Figured specimen : Mo. T. Eu.28, Euphrates Formation, Lower Miocene.

Previous Records : This specimens founds in North Iraq (M. Miocene) by(12)(13).

Family : Cytherettidae Triebel, 1952

Genus : *Flexus* Neviani, 1928

Type-species : *Cythere plicata* Munster, 1830

Flexus trifurcata (Lyubimova and Guha) 1960

Pl.3, Fig.3

1960 *Cytheretta trifurcata* Lyubimova & Guha in Lybimova, Guha and Mohn, p.45-46, pl.4, fig.3.

1960 *Cytherelloidea* sp. Indet. Bhatia and Mandwal, , p.283, pl.41, fig.13.

1960 *Cytherelloidea ktaphrawarensis* Tewari & Tandon, p.160, text.1, fig.5.

1978 *Flexus trifurcata* Khosla, p.217, pl.3, figs.3-4.

Material : (6) Carapace.

Figured specimens : Mo. T. Eu.29, Euphrates Formation (L. Miocene).

Previous records : This specimens recorded previously from Lower Miocene W. India(3), N. Iraq (M. Miocene) by(12)(13).

Flexus iraqensis sp. nov

Pl.3, Figs.5,6

Derivation of name : From its first occurrence in Iraq.

Diagnosis : A species of the genus *Flexus* with slightly variation in the development of the longitudinal ridges and indistinct reticules.

Holotype : carapace Mo. T. Ser./Eu.30 pl.3, fig.5.

Paratype : one carapace Mo. T. Ser./Eu.30(1), pl.3, fig.6.

Type horizons : Serikagni / Euphrates intertonging (Lower Miocene).

Material : (8) Carapace.

Description : Elongate to subrectangular in lateral view, greatest length in the middle, maximum height anteriorly, greatest width posteriorly, well developed anterior and posterior cardinal angle, distinct elongate eye tubercle, Anterior end gently sloped and broadly rounded, posterior end narrowly rounded and compressed. Dorsal and Ventral margins slightly straight, lateral surface shows slight variations in the development of longitudinal ridges and indistinct reticules, short ridges developed between the ventral ridge and ventral Margin, dorsal ridge connected the diagonal median ridge by short ridge posteriorly, ventral ridge strong and ended by well developed tubercle, sexual dimorphism distinct.

Remarks : This species is fairly similar in outline to *F. trifurcata*(14), figured by(3), from Lower Miocene of India, but it differs in being less swelling posterior half, and the anterior ridge not found.

Flexus coarctata(15), from M.Eocene of Saudia, differs in having truncated broadly rounded and compressed posterior end.

Flexus quadricostata(16), from Upper Eocene of Liyba differs in having different ornamentation and pattern of median ridge which not found in Iraqi specimens.

Family : Cytheridae Muller,1894

Subfamily : Cytheruinae Muller, 1894

Genus : *Cytheropteron* Sars,1866

Type-species : *Cythere tatissima* Khalifa and Cronin, 1979

Cytheropteron boukhuryi Khalifa and Cronin, 1979

Pl.3, Figs.7,8

1979 *Cytheropteron boukhuryi* Khalifa and Cronin, p.113, pl.2, figs.17-21.

Material : (6) Carapace.

Figured specimens : Carapace, Mo. T. Eu.31, Euphrates Formation (L. Miocene)

Previous records : This specimens recorded from M. Eocene of Egypt(17), also from Late Eocene by(18).

PLATE -1-

Fig.1 *Acanthocythereis hystrix* Reuss, 1849.

Internal right valve (Mo. T. Eu.20).

Figs. (2-4) *Alocopocythere gujaratensis* Khosla, 1978.

External carapace right valve (Mo. T. Eu.21).

External carapace left valve (Mo. T. Eu.21).

Dorsal view (Mo. T. Eu.21).

Figs.(5-7) *Alocopocythere euphratensis* sp. nov.

External carapace right valve (Mo. T. Eu.22).

External carapace left valve (Mo. T. Eu.22).

Dorsal view (Mo. T. Eu.22).

Fig.8 *Ruggieria (Ruggieria) nova* Khalaf, 1989.

External carapace left valve (Mo. T. Eu.23).

PLATE -2-

Figs.(1-4) *Ruggieria anahensis* sp. nov.

External carapace right valve (Mo. T. Eu.24).

External carapace left valve (Mo. T. Eu.24).

Dorsal view (Mo. T. Eu.24).

Internal right valve (Mo. T. Eu.24).

Fig.5 *Aurila singhi* Khosla and Nagoria , 1989.

External carapace right valve (Mo. T. Eu.25).

Figs.(6-8) *Qusibuntonia radiatopora* Sequenza, 1880

External carapace right valve (Mo. T. Ser./Eu.26).

External carapace left valve (Mo. T. Ser./Eu.26).

Dorsal view (Mo. T. Ser./Eu.26).

PLATE -3-

Fig.1 *Hermanites purii* Tewari and Tandon, 1960.

External carapace left valve (Mo. T. Eu.27).

Fig.2 *Hermanites transversicostata* Khalaf, 1982.

External carapace left valve (Mo. T. Eu.28).

Fig.(3,4) *Flexus trifurcata* (Lyubimova and Guha) 1960.

External carapace right valve (Mo. T. Eu.29).

External carapace left valve (Mo. T. Eu.29).

Figs.(5,6) *Flexus iraqensis* sp. nov.

External carapace left valve (Mo. T. Ser./Eu.30).

Dorsal view (Mo. T. Ser./Eu.30).

Figs.(7,8) *Cytheropteron boukhuryi* Khalifa and Cronin, 1979.

External carapace right valve (Mo. T. Eu.31).
External carapace left valve (Mo. T. Eu.31).

PLATE -1-

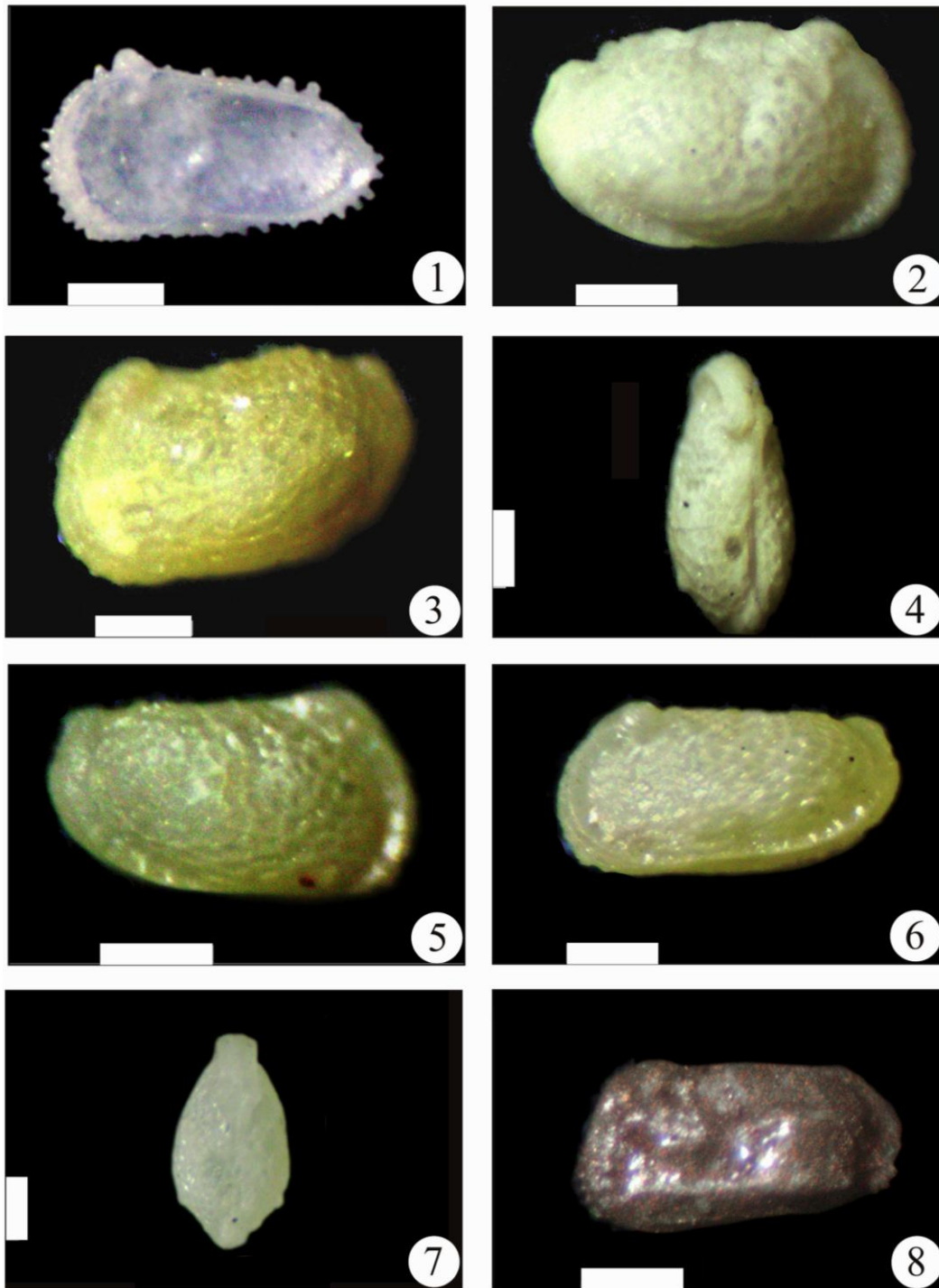
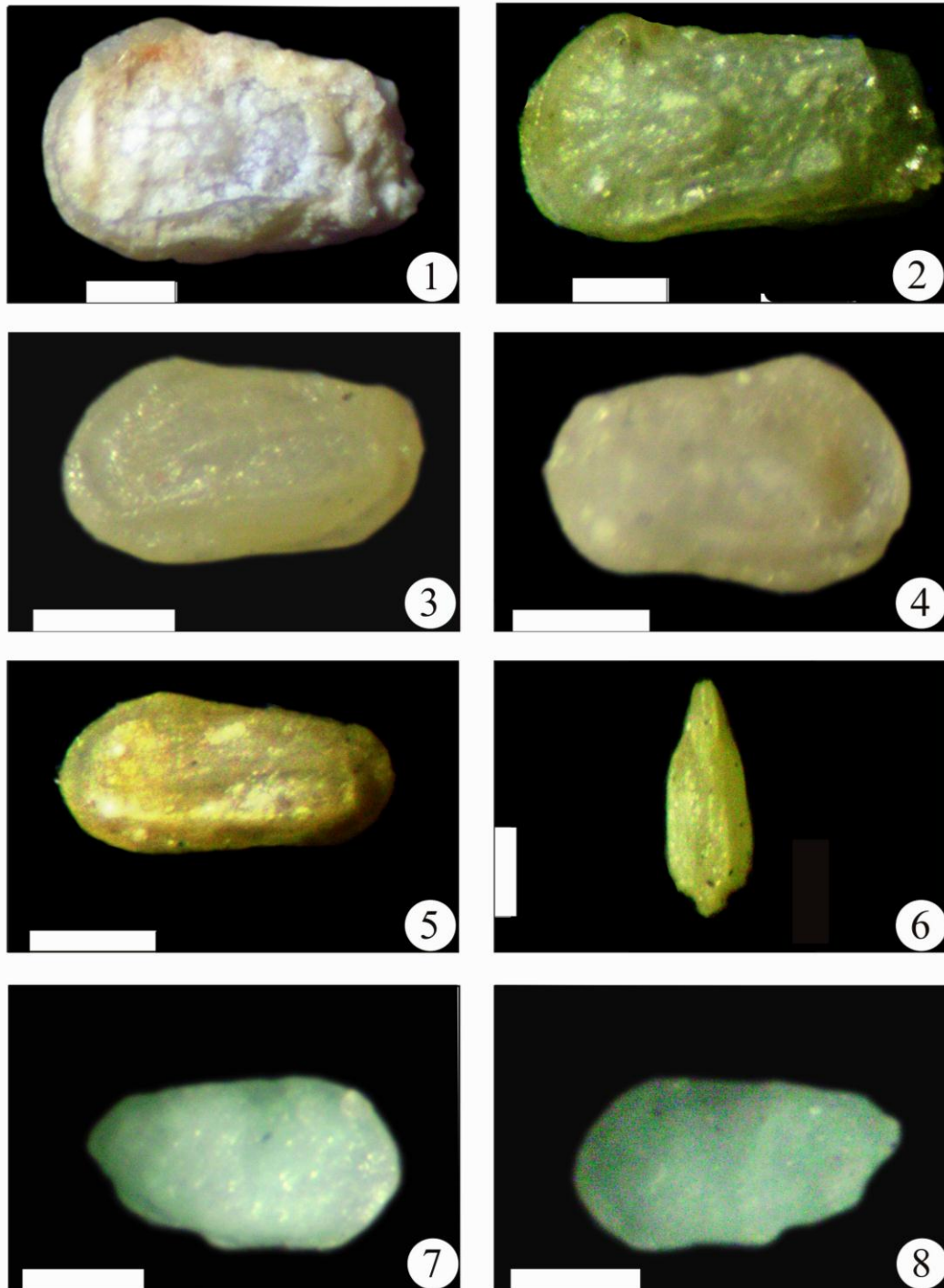


PLATE -2-



PLATE -3-

**Reference**

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دراسة تصنيفية لفوق عائلة السيائريسيا (أوستراكودا) من تكوين الفرات وتلاسن السريكانني/الفرات

من بئري حميرين (12) وعجيل (6) ، شمال العراق

نسرين مال الله عزيز ، هبة محمد الشامام

قسم علوم الأرض ، كلية العلوم ، جامعة الموصل ، الموصل ، العراق

(تاريخ الاستلام: 2012 / 7 / 2 ---- تاريخ القبول: 2012 / 10 / 31)

الملخص

وصف في هذا البحث اثنا عشر نوعاً من الأوستراكودا التي تعود إلى فوق عائلة السيائريسيا من تكوين الفرات والتلاسن بين تكويني السريكانني والفرات في بئري حميرين (12) وعجيل (6) ، شمال العراق ، ثلاثة منها جديدة هي: *Ruggieria* sp. nov., *Alocopocythere euphratensis* sp. nov., *Flexus iraqensis* sp. nov. وتسعة أنواع سجلت سابقاً في مناطق الهند وباكستان والشرق الأوسط والخليج العربي وشمال العراق.