

## On some Ostracode species of the Family Trachyleberididae from Tertiary of NW. Iraq

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### Abstract

Six Ostracode taxa belonging to the family *Trachyleberididae* were recorded for the first time from the Jaddala Formation (M. Eocene) and the Serikagni Formation (Early Lower Miocene). From Sinjar anticline NW. Iraq, these are: *Acanthocythereis sinjarensis* sp. nov., *Paleocosta bensoni* (1), *Paracosta (Paracosta) rogeri* (2), *Allocosta ninurta* (3), *Trachyleberis*? sp., and Genus A, the latter two taxa left under open name due to the lack of material and might represent new Ostracoda species and genus respectively.

### Materials :

This study is based on material collected from the outcrops of the Jaddala and Serikagni formations about 500m south of Sharaf Al deen village, northern limb of the Sinjar anticline NW. Iraq (Fig.1).

### Jaddala Formation:

This Formation was first described in (5), It consists mainly of marly and chalky limestone intercalated with thin bands of nodules of chert. Its age is Middle Eocene, the lower contact of the formation is unconformable with the Sinjar limestone Formation. The unconformity is marked by glauconite concretions.

Oligocene Tarjil Formation unconformably overlies the Jaddala Formation, the Ibrahim Formation Early L. Miocene overlies unconformably the Tarjil Formation (4) Fig. 1.

### Serikagni Formation:

The formation was first described in (5). In the type area the formation consists of chalky globigerinal limestone with a few more calcareous bands. Its age is Early Miocene.

The Ibrahim Formation underlies conformably the Serikagni Formation while The Jeribe formation overlies the Serikagni Formation unconformably (Fig. 3).

### Systematic Description

All Dimensions in (Mm)

**Subclass** *Ostracoda* Latreille, 1806

**Family** *Trachyleberididae* Sylvester - Bradley, 1948

**Subfamily** *Trachyleberidinae* Sylvester - Bradley, 1948

**Genus** *Acanthocythereis* Howe, 1963.

**Type Species:** *Acanthocythereis araneosa* Howe, 1963

*Acanthocythereis sinjarensis* sp. nov.

Pl. 1, Figs. 1 – 2

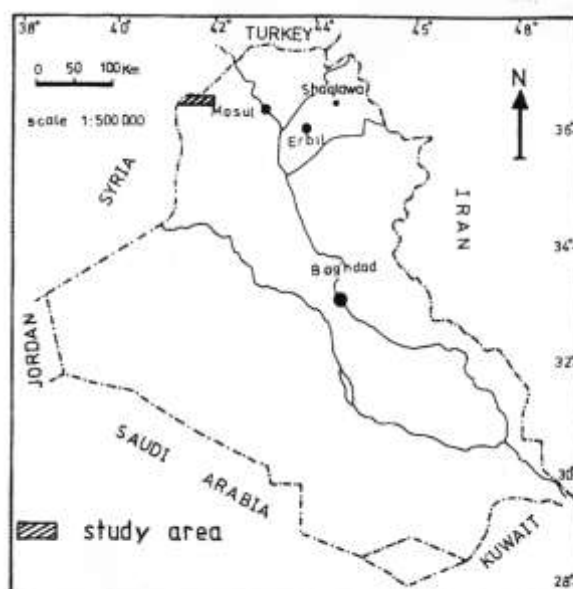


Fig. (1) : Location Map

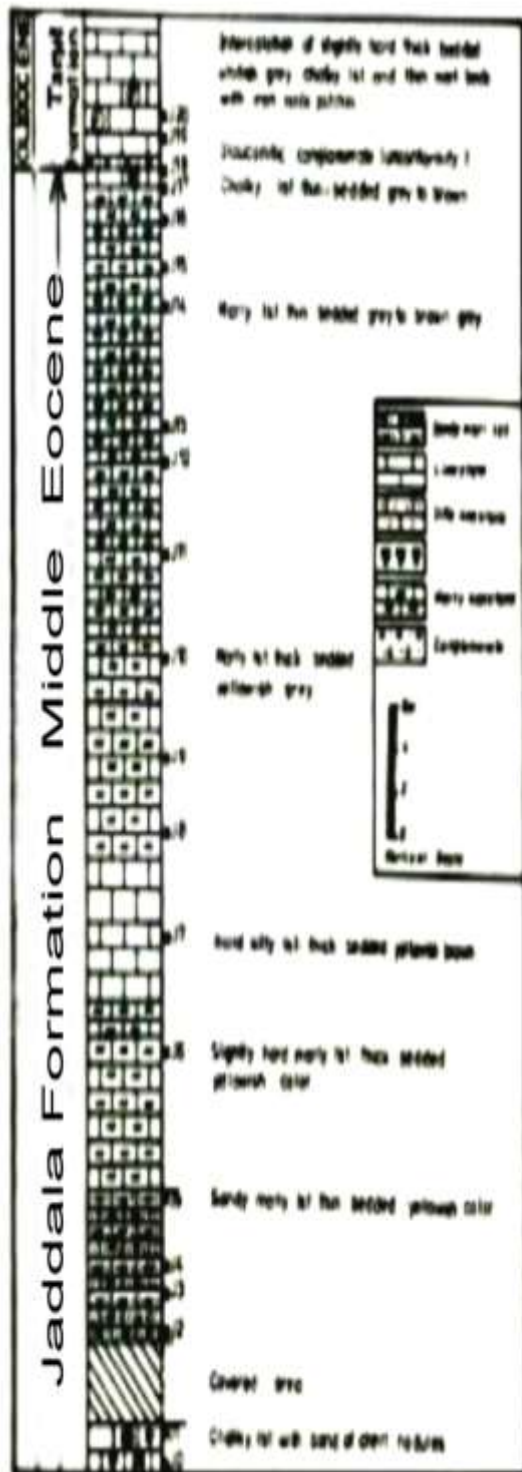


Fig. 2 Lithological section of Jaddala Formation Middle Eocene Sharafadeen section Sinjar anticline NW. Iraq.

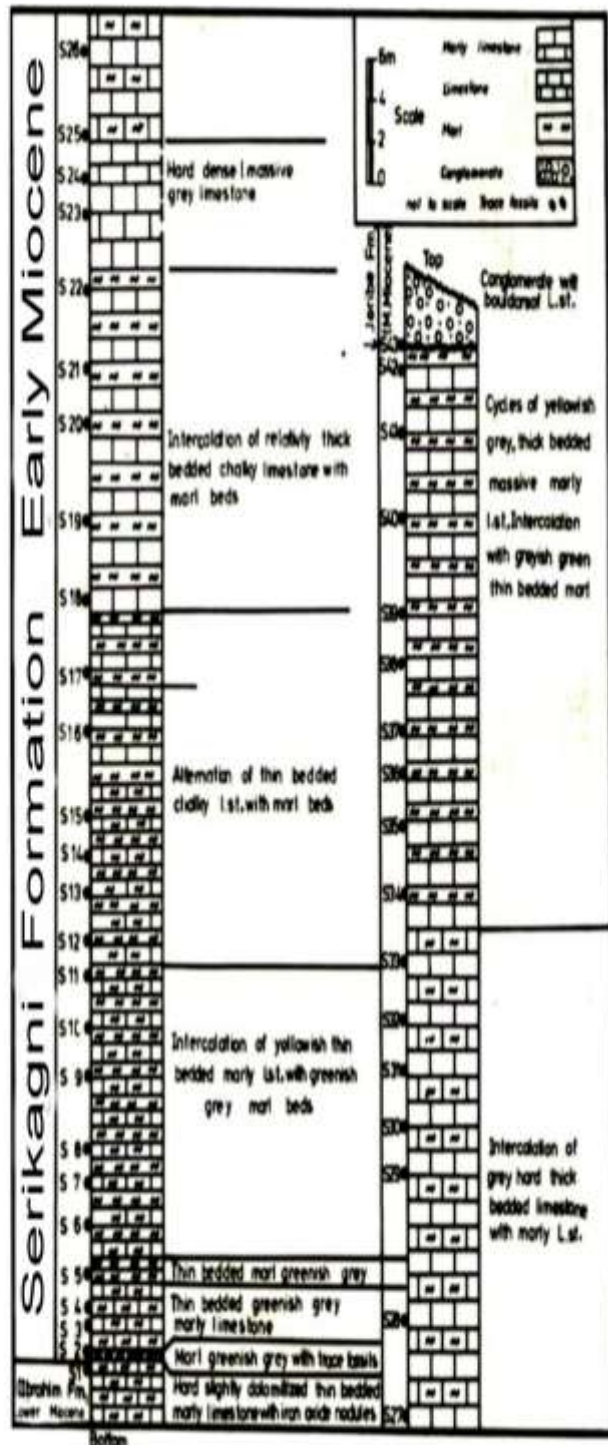


Fig.3 Lithological section of Serikagni Formation (Early Lower Miocene) Sharafadeen Section Sinjar anticline NW. Iraq.

#### Derivation of name:

From the type locality. Sinjar anticline NW. – Iraq.

#### Holotype:

Right valve( Mo. 2. T1.1 )

#### Type horizon:

#### Paratype:

Left valve( Mo. 2 T. 1.2 )

#### Diagnosis:

Jaddala Formation Middle Eocene sample No.J.1.

#### Type locality:

Sinjar anticline northern limb. Sharaf Al-Deen section, NW – Iraq.

A species of the genus *Acanthocythereis* characterized by eye rib starts from eye tubercle and running diagonally toward the ventral margin broken by some nodes.

**Dimensions of figured specimens:**

Right valve( Mo. 2, T. 1. 1)

L. = 0.8 H. = 0.37

**Description:**

Carapace elongate tapering towards the posterior in lateral view, with ventral inflation. Maximum length passing through mid point greatest height at the eye tubercle. Dorsal margin straight, posteriorly obscures by the projection of the dorsal spines, anterior and posterior cardinal angle are distinct. Ventral margin straight both converging towards the posterior end. Anterior margin broadly rounded, posterior margin sub – triangular pointed in the middle, both are decorated with rows of spines. Eye tubercle distinct small and rounded in shape. Surface ornamentation consists of reticulation, with superimposed spines, a distinct rib starts from eye tubercle and running diagonally towards the ventral margin, broken up by row of (6-8) nodes, subcentral tubercle present but not very conspicuous.

Inner lamella moderately wide, line of concrescence and inner margin coincide, selvage pronounced, well developed marginal flange. Hinge holamphidont right valve consists of two terminal outstanding teeth antero – median represented by small socket, followed by narrow elongate postero -median groove, other internal features can not be observed.

**Affinities and differences:**

The present species shows affinities with *Acanthocytheris usitata* (7), but the former differs in having diagonal rib, carapace inflated postero – ventrally, with well developed, ventral marginal rim and subtriangular posterior end.

The present species also similar to *Acanthocythereis* sp. (3) from M. Eocene but differs in absence of diagonal rib, and in details of ornamentation.

**Genus *Paleocosta*** Benson, 1977

**Type Species:** *Costa mokattamensis* Bassiouni, 1969b

*Paleocosta bensoni* Damotte and Donze, 1982

**Pl 1, Figs. (3 – 6)**

- 1966 Isobuntonia aff. harpa Apostolescu, (8)P. 11 – 12, pl. 3 fig. 5
- 1977 Paleocosta? Sp (9), p. 37, pl. 3, fig. 5
- 1982 Paleocosta bensoni (1), P. 285- 286, pl. 4, figs. 4 – 8.
- 1992 Paleocosta bensoni (11), p. 113, pl. 20. Figs. 1 – 3, 8.

**Locality and horizon:**

Sinjar anticline northern limb, Sharaf Al-Deen section NW. Iraq Jaddala Formation Middle Eocene.

**Dimensions of figured specimens:**

	L	H	W
Female carapace (Mo. 2, T. 4), pl. 1 fig. 5	0.67	0.35	0.24
Male carapace ( Mo. 2 T. 5. 1) pl. 1 fig. 3	0.70	0.35	0.25
Female carapace (Mo. 2, T. 5. 2), pl. 1 fig. 4	0.67	0.35	0.25
Carapace ( Mo. 2, T. 5. 3) pl. 1 fig. 6	0.67	0.35	0.25

**Description:**

Carapace sub rectangular tapering towards posterior end in lateral view. Maximum height at the anterior cardinal angle greatest length passing below the mid-height,. Dorsal margin concave in the middle with well marked anterior cardinal angle ventral margin slightly convex, anterior margin obliquely rounded with well developed marginal rim, posterior margin subtriangular and narrowly rounded in middle. Surface ornamentation consist of five longitudinal ridges. Dorsal ridge originates below the eye tubercle and runs up wards projecting over the dorsal margin then curving down wards to ends below posterodorsal corner, the upper median ridge starts from subcentral tubercle running backwards to terminate below the end of dorsal ridge, lower median ridge starts from eye tubercle running parallel to the anterior margin and gradually curving backwards to terminating below the upper median ridge, ventral ridge starts from antero-ventral corner to end in a short vertical ridge posteriorly. The rest of the surface covered with sub rounded reticules, with separated thick muri. Eye tubercle small rounded in shape. Short eye rib originating from eye tubercle running down to join the subcentral tubercle in the right valve and with lower median ridge in the left valve. Left valve larger than the right overlapping more distinct along the dorsal and posterior margins. In dorsal view carapace compressed with acutely rounded ends, maximum width at the posterior half, sexual dimorphism pronounced, the presumed males more elongate and narrower than the presumed females.

**Affinities and Differences:**

The figured specimens are completely identical with *Paleocosta bensoni* (9), although some differences in details of ornamentation.

**Genus: *Paracosta*** Siddiqui, 1971 emended

Al-Sheikly, 1980

**Type species:** *Costa (Paracosta) declivis* (7) 1971, p. 29, pls. 13 & 14.

*Paracosta (Paracosta) rogeri* Senmez-

Gokeen 1974

**Pl. 1, Fig. 7.**

- 1974: *P. (P.) rogeri*: (2).

- 1980: *P. (P.) rogeri* (3), pl. 20 figs 2, 5, 9, 11, 12

**Locality and horizon:**

Sinjar anticline northern limb Sharaf Al-Deen section NW – Iraq Jaddala Formation M. Eocene.

**Dimensions of figured specimen :**

Carapace Mo. 2. T. 7.1 L= 0.77, H = 0.4

**Description:**

Carapace sub rectangular tapering towards posterior in lateral view. Maximum height at the anterior cardinal, greatest length at mid- point of height. Dorsal margin convex, ventral margin slightly convex with well marked anterior and posterior cardinal angle, anterior margin obliquely rounded very thick marginal rim starts from eye tubercle around anterior margin with about 12 – 18 spines posterior margin sub triangular, convex below, concave above and pointed in the middle with about 7 spines in its ventral half. Surface ornamentation consists of four longitudinal ridges, dorsal ridge starts from subcentral tubercle curving upwards projecting over the dorsal margin and ends posteriorly below posterior

cardinal angle. Upper median ridge starts from subcentral tubercle and ends below the ends of dorsal ridge, lower median ridge starts from anteroventral corner and continue parallel to the ventral margin to ends posteriorly. The rest of surface is reticulated with sub rounded to rounded reticules. Eye tubercle not very conspicuous.

#### Remarks:

This species recorded previously from Eocene deposits of Syria by Al- Sheikhly (1980)

Genus: *Allocosta* Al-Sheikhly 1980

**Types species:** *Carinocythereis (Reticulina) scitula proteros* (Bassiouni, 1969).

*Allocosta ninurta* Al-Sheikhly 1980

Pl. 1 , Figs 8 – 9.

- 1980 *Allocosta ninurta* (3) , pl. 26, figs 5, 7, 8, 11.

#### Dimensions of figured specimen:

Carapace : (Mo.2, T.11.1) L= 0.88 , H= 0.41, W= 0.36

#### Locality and horizon:

Sinjar anticline northern limb NW. Iraq. Upper Eocene.

#### Description:

Carapace subrectangular in lateral view, dorsal margin straight obscures by the projecting of dorsal nodes, ventral margin slightly convex, both are parallel and converging towards the posterior end, anterior margin smoothly rounded, posterior margin sub triangular, straight in upper and convex below decorated with thick marginal rim. Maximum height occurs at the anterior cardinal angle maximum length at the mid height. Eye tubercle clear, rounded located at the anterior cardinal angle. Left valve larger than the right conspicuously overlaps the latter at the anterodorsal, ventral and posterior margins. The lateral surface is characterized by one diagonal ridge starts from eye tubercle parallel to anterior margin than curved backwards to coincide with ventral margin. The rest of the Surface covered with rounded and sub rounded reticules with thick muri in addition to the small nodes scattered over the reticules.

#### Remark:

The present specimens closely identical to Al-Sheikhly species *A. ninurta* 1980. with slightly differs in details of ornamentation.

Genus: *Trachyleberis* Brady 1898

**Types species:** *Cythere scabrocuneata* Brady, 1880

*Trachyleberis? Sp.*

Pl. 1 , Figs. 10

#### Figured specimen:

R. valve view (Mo. 2, T. 6.2)

#### Dimension (Mm):

L	H	W
0.86	0.36	0.36

#### Locality and horizon:

Sinjar anticline NW of Iraq Jaddala Formation Middle Eocene.

#### Description:

Carapace sub rectangular in lateral view greatest height at anterior cardinal angle. Maximum length occurs above the mid – height. The anterior margin obliquely rounded, the posterior margin is sub rounded narrower slightly concave in the upper part and rounded in lower

part. The dorsal margin is straight obscured due to overreaching of the dorsal ridge, with distinctive anterior and posterior cardinal angles. The ventral margin is straight. Eye tubercle distinctive with small rounded shape. The left valve larger than the right and overlaps the latter along the anterior, posterior and ventral margins. Sub central tubercle is present but not very distinctive.

The lateral surface is strongly reticulate with two well developed ridges. The dorsal ridge, starts from the eye tubercle runs posteriorly, and projecting over the dorsal margin then curves down to terminate below the postero – dorsal angle. The second ridge originates from the anterior cardinal angle and runs parallel to the anterior and ventral margins to end posteriorly in a slight ala above the ventral margin at about two third of length. A short depression present below the eye tubercle. The rest of the surface covered with combination of reticulation and tubercles, of which the reticulation is more developed in the center of the carapace and posterior half. The anterior margin decorated with 8 to 10 denticles along its ventral half whilst the posterior margin decorated with 4 – 6 coarse spines in the lower part.

#### Remarks:

The present species similar to *Trachyleberis. africana* (11) but the latter differs in having acute angle of posterior end. Due to the lack of the material the present species left under open nomenclature.

Genus A. Pl. 1 , Fig. 11

**Figured specimen:** (Mo. 2 , T. 9)

#### Dimensions:

(Mo. 2 , T. 9) pl. 1 fig. 11 L= 0.88 H= 0.41

#### Locality and horizon:

Sinjar anticline NW – Iraq. Jaddala Formation M. Eocene.

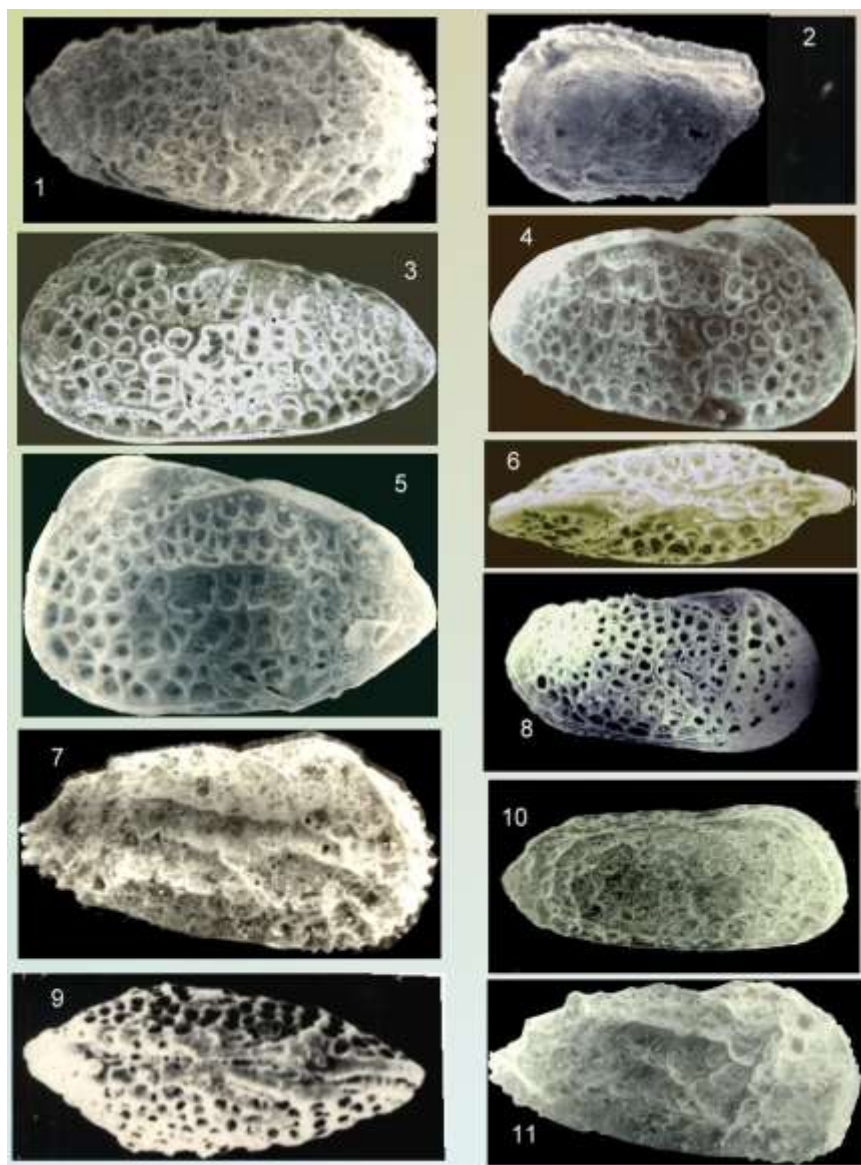
#### Description:

Carapace sub rectangular in lateral view ,maximum height at anterior cardinal angle greatest length at about one third of height above the ventral margin. Dorsal margin sinous, depressed behind the anterior cardinal angle, a distinct postero – dorsal process present in right valve ventral margin nearly straight both converging posterior-ly. Anterior margin obliquely rounded, rimmed with marginal denticles, more developed antero ventrally posterior margin strongly compressed laterally triangular, concave above. The poster dorsal process, pointed at the middle, posterior margin rimmed with well developed. marginal denticles. Surface ornamented by four longitudinal ridges and an eye rib running from eye tubercle diagonally towards ventral margin, bearing few nodes. Dorsal ridge starts from sub-central tubercle curving upwards, projecting over the dorsal margin towards the poster dorsal process where it divided into two branches, in the left valve the upper branch running towards the posterior cardinal angle, the lower branch turning down towards the posterior end at the end of the upper median ridge, in the right valve only lower branch is present, the upper median ridge starting from the middle of the eye rib, curving upwards and running posteriorly to ends below the lower branch of the dorsal ridge. Lower median ridge starts just above the ventral

end of the eye rib and running posteriorly parallel to the upper median and ventral ridges to ends posteriorly by a distinct nodes from this node a short branch extends towards the ventral ridge, which is start from anteroventral corner running towards the posterior margin to join with posterior marginal rim. The surface between ridges covered by coarse rectangular and pentagonal reticules

### Discussions:

The present taxon shows some affinities to the Genus *Allocosta* (3), but the former taxon differs in having compressed triangular posterior end, distinct postero – dorsal process well developed posterior and anterior marginal rim, Coarse reticules covering the lateral surface. The present genus differ from *Paracosta* (7) in having very distinctive diagonal ridge and acute angle at the middle of posterior end.



### PLATE 1

- **Figs. 1 – 2** *Acanthothereis sinjarensis* sp. nov.

Right valve view (Mo. 2 T. 1.)

internal view of left valve (Mo. 2, 2.1)

- **Figs. 3 – 6** *Paleocosta bensoni*, 1977 Damotte and Donze 1982.

3 Carapace from left (Mo. 2 , T5.1)

4 Carapace from right (Mo. 2 T. 5.2)

5 Carapace from left (Mo. 2 T.4)

6 Carapace from dorsal view (Mo. 2 T. 5.3)

- **Fig. 7** *Paracosta (Paracosta) rogeri* (Sonmez & Gokeen)

Carapace from right valve view (Mo. 2 T. 7.1)

- **Figs 8 – 9** *Allocosta ninurta* Al-Sheikly 1980

8 Carapace from right (Mo. 2 T. 11.1)

9 Carapace from dorsal (Mo. 2 T. 11.1)

- **Fig. 10** *Trachyleberis?* Sp.

10. Carapace from right .(Mo.2,T.6.2)

- **Fig. 11** Genus A

11 Carapace from right.



## References

- 1- Damotte, R. Donze, P. Colin, P. Oertli, H., Peypouquet, J. R. And SAID R (1982): Les Ostracodes du Campanian terminal al Eocene inferieur de la kef .tunisie nord-Occidentale Bull cent.Rech .Exp Prod., Elf-Aquitaine, 6 (2), 273-335, 13Pts., 5figs.
- 2- Sonmez-Gokeen, N., (1973): Etude paleotologique (Ostracoda) stratigraphique de niveaux du paleogene du sud – Est de la Thrance Naden Tetkik Arama Enst. Yayinlarindem 147, 118 p. , 12 plts
- 3- AL-SHEIKLY, S. J. (1980). Maestrichtian – Upper Eocene Ostracoda subfamily *Trachyle bridinae* from Iraq-Ph. D. Thesis Glasgow Univ. U. K.
- 4- AL- MUTWALI, M.M. and AL- BANNA, N.Y.B 2002, Biostratigraphy of Planktonic Foraminifera of Jaddala Formation {Eocene}, Sinjar Area, Northwestern Iraq.
- 5- BELLEN, R. C. VAN, DUNNINTON, H. V., WETZEL, R. & NORTON. D. M. (1959): Lexique stratigraphique international, Vol. III Asie, Fase.90 (Iraq) ,paris ,333 p.,.
- 6- HOWE, R. C. (1963). Type Saline Bayou Ostracoda of Louisiana. *Louisiana Geol. Surv. Geol. Bull.*, 40, 62 pp.
- 7- SIDDIQUI, Q. A. (1971) Early Tertiary Ostracoda of family Trachyleberididae from west Pakistan. *Bull. Br. Mus. Nat. Hist. (Geol.) Suppl.* 9, 98 pp., 42 pls
- 8- SALAH, D. (1966): Ostracoda du Cretace superieur et du Tertiaire en provenance d'un Sondage la region de Zelten (Libya) *Rev. Inst. Franc. Petrole.* , 21 (1). 3 – 43, 5 pls.
- 9- BENSON, R.H. (1977): Evolution of *Oblitacythereis* from *Paleocosta* (Ostacoda, Trachyleberididae) during the Cenozoic in the Mediterranean and Atlantic. *Smith. Contrib Paleobiol.* 33. 1- 47, 4. pls., 11 figs. . *Challenger. Zoology. London. I.* (3), 184 pp., 44pls.
- 10- Bassiouni, M.A. (1969): b Ostracoden aus dem Eozan ven Agypten. Trachyleberidinae, Geol, Jb 87, 5. pp 383-426 Tab. 5., Taf. Honover.
- 11- El-Wear., AHMED, A. (1992): Tertiary and upper Cretaceous Ostracoda from NW Offshore, Libya. Their Taxonomy, Biostratigraphy and correlation with adjacent areas pp. 94, pl. 15.
- 12- BRADY, G. S. (1880): Report on the Ostacoda dredged by H. M. S. Challenger during the years 1873 – 1876. *Report on the Scientific. Results of the vogue of H. M.*
- 13- BRADY, G. S. (1898): On new or imperfectly known species of Ostracoda Chiefly from New Zeland. *Trans. zool. Soc. Lond.*, 14 (8), 429 – 452, pls. 43 – 47.

## بعض أنواع الاوستراكودا من عائلة Trachyleberididae من عمر الترشري في شمال غرب العراق

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### الملخص:

سنة أنواع من الاوستراكودا تعود إلى عائلة تراكيليبيريدياي التي تمت تسجيله لأول مرة من تكويني الجدالة من العمر (الايوسين الأوسط) والسيريكاني من العمر (المايوسيني المبكر) من طية سنجار المحية شمال غرب العراق وتعود إلى الأجناس والأنواع التالية *Acahocythereis sinjarensis* sp. nov., *Paleocosta bensoni* (1), *Paracosta* (*Paracosta*) *rogeri* (2), *Allocosta ninurta* (3), *Trachyleberis*? sp., and Genus A , وتركوا الفردان الأخيران مفتوحة للتسمية لقلة المواد لعلهما يمثلان نوع وجنس جديدين على التوالي.