

# Some New Ostracode Species of Genera *Acanthocythereis*, *Ordoniya* and *Mauritsina* from Tanjero Formation (Late Campanian– Maastrichtian) in Bekhme Dam, North Iraq

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## Abstract

Four new ostracoda species from Tanjero Formation in Northern part of Perat anticline that located in Bekhme Dam, North Iraq. These species are: *Acanthocythereis* (*Acanthocythereis*) *erbilensis* sp. nov.; *Acanthocythereis* (*Canthyocythereis*) *chonraensis* sp. nov.; *Mauritsina* *khalifanensis* sp. nov.; *Ordoniya* (*Ordoniya*) *halabijaensis* sp. nov.

## Introduction

The present paper is a part work investigating the ostracode from Tanjero Formation, northern part of Perat anticline that located in Bekhme area, (90) km of Erbil city, (36° 21' 35" N), (44° 14' 27" E), North Iraq. It lies within the high folded zone structures bordering the imbricate zone of the Zagros Fold-thrust belt (1). This anticline is double plunging and extends NW-SE for about (35) km (Fig.1). The Tanjero Formation was first defined by (Dunnington ,

1952 in (2)) in the Sirwan Valley, southeast of Sulimaniah, near Halabija, north Iraq, which comprises of tow division, the lower division comprise pelagic marl, and occasional beds of argillaceous limestone with siltstone beds in the upper part (2), the upper division comprise silty marl, sandstone, conglomerates and sand or silty organic detrital.

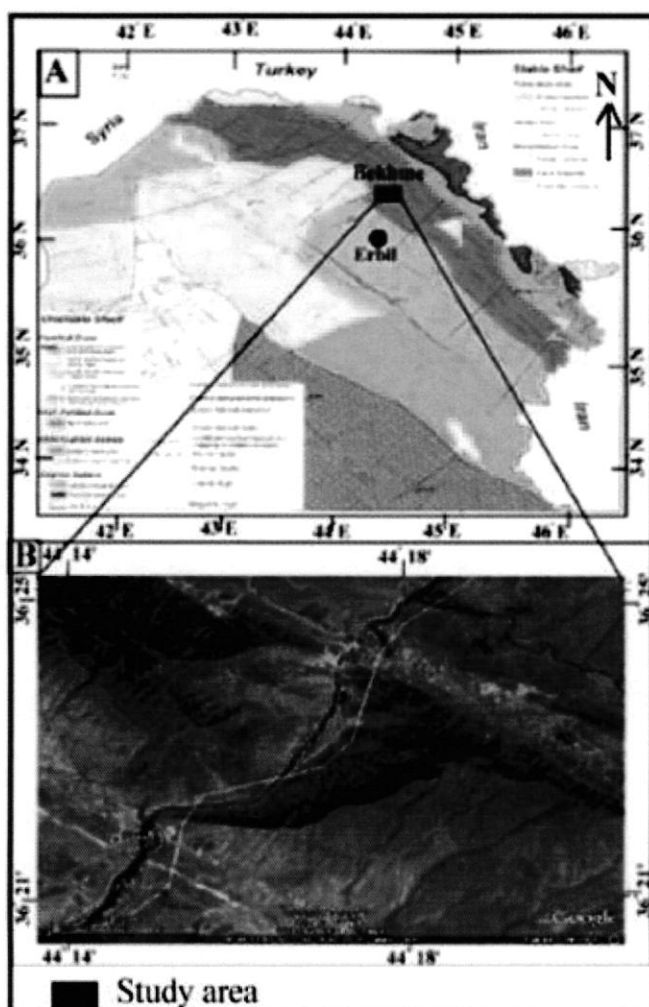


Fig.1: Location of study Area in Northern Iraq.

A : Tectonic Map of Northern Iraq

B : Geology Image of Perat Anticline.

limestone. Tanjero Formation in the study area consists from succession bedded shale, mudstone, marl and a few bedded from marly limestone, the Kolosh Formation (dark grey) unconformably overlies the Tanjero Formation (olive-green). The Shiranish Formation gradationally underlies the Tanjero Formation, for appearance first to sandstone overlapping with shale as well to change colour

sedimentation from light blue for Shiranish Formation to olive green for Tanjero Formation. The Formation is deep water origin but shows shallow water development at different horizons (3). All the figured specimens of Tanjero Formation (Tn.) are deposited in Mosul University (Mo.), Dep. of, Cretaceous collection with prefix (Cr.).

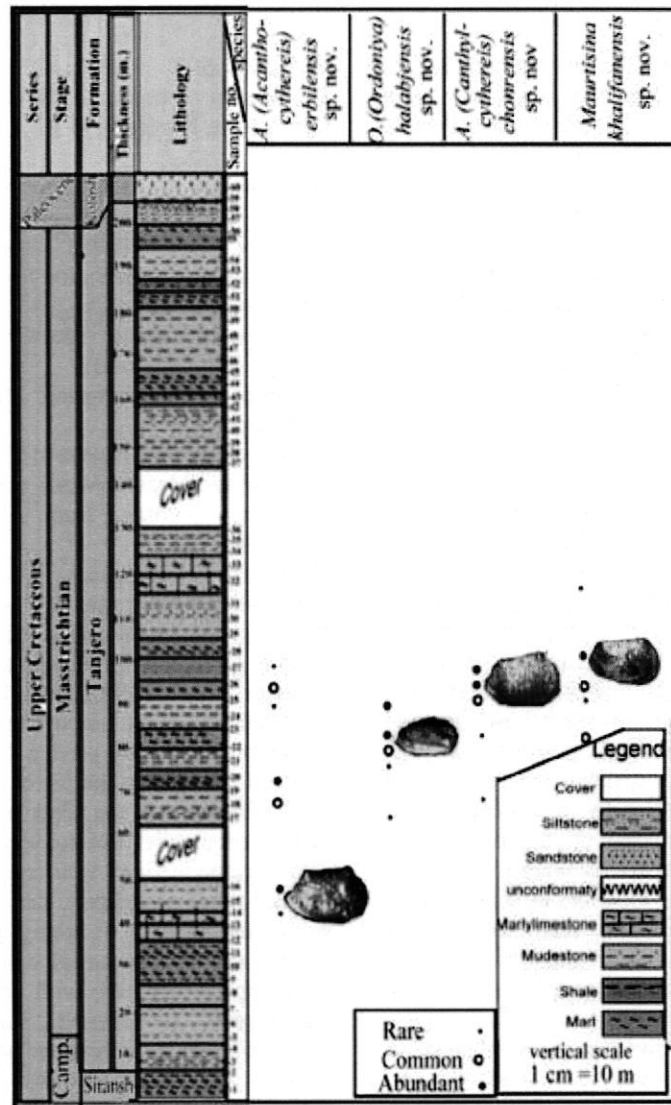


Fig. 2 Stratigraphic column of the Tanjero Formation in the Bekhme Dam Area, Northern Iraq

#### Systematic Description

**Phylum:** Crustacea Pennant, 1773.

**Class:** Ostracoda Latreille, 1806.

**Order:** Podocopida Muller, 1894.

**Suborder:** Podocopina Sars, 1866.

**Superfamily:** Cytheracea Baird, 1850.

**Family:** Trachyleberididae Sylvester bradley, 1948.

**Subfamily:** Trachyleberidinae Sylvester bradley, 1948.

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

**Type species:** *Acanthocythereis araneosa* Howe, 1963.

**Subgenus:** *Acanthocythereis* (*Acanthocythereis*) Al-Sheikhly, 1992

**Type species:** *Acanthocythereis* (*Acanthocythereis*) *corniocularis* Al-Sheikhly, 1992.

*Acanthocythereis* (*Acanthocythereis*) *erbilensis* sp. nov.

**Pl. 1, Figs. 1- 4.**

**Derivation of name:** With reference to great city of Erbil, Northern Iraq.

**Diagnosis:** A species of the subgenus *A. (Acanthocythereis)* with developed distinct ventro-marginal rim and thick rounded eye tubercle.

**Holotype:** Carapace, Mo. Cr. Tn.(1.1), (pl.1, fig.1).

**Paratype:** Three carapaces, Mo. Cr. Tn.(1.2- 1.4), (pl.1, fig.2- 4).

**Type locality and Horizon:** Tanjero Formation (Late Campanian- Maastrichtian) northern limb of Perat anticline, Bekhme Dam, North Iraq, Sample no.Tn.16.

**Materials:** (12) Carapaces.

**Description:** Carapace subquadrate to subrectangular, inflated, thick in the lateral view, maximum height under eye tubercle, greatest length at the middle of the carapace. Greatest width from the dorsal view behind the middle. Anterior end broadly rounded with prominent eye tubercle. Posterior end subtriangular, slightly pointed in the middle especially in the right valve, but in the left valve is slightly concave in the upper part, curving in the lower part, anterior and posterior ends are decorated with two rows of nods and small tubercles. Dorsal margin substraight with distinct anterior and posterior cardinal angle, dorsal row consist of about (5- 6) node which posterior one is very prominent, ventral row consist of about (6- 7) node, the first four are small, the most posterior nods is very large and distinct in left valve. Ventral margin slightly straight with convex centrally because of ventral inflation and concave in the anterior and posterior ending, decorated with developed distinct ventro-marginal rim. Lateral surface is strongly ornamented with various size of nods scattered on the rest of the surface. Dorsally the carapace is wedge – shaped, both side converging to the anterior. In ventral view, the ventro – marginal rim can be clearly distinguished, left valve larger than right valve, overlapping along the posterior, anterior and ventral margins.

**Remark:** This species shows some resemblance to *Acanthocythereis (Acanthocythereis) corniculus* (4), from Lower Paleocene in Jordan, but differs in having more developed antero-marginal rim, different in shape of the postero-dorsal process, and less compress carapace. *Acanthocythereis denticulate* (5), from Maastrichtian\_ Early Eocene in Egypt, resembles this species in outline, shape and eye tubercle, but differs in being more developed lateral surface reticulation which triangular to rounded in shape with various nods at the intersection of the muri which increased in posterior half of carapace, and the ventral ridge parallel to ventral margin in the Egyptian species. The present specimens are fairly similar to *Acanthocythereis meslei* (6), from Upper Campanian- Early Eocene in Tunisia, but differs in

having more developed reticulation and large spine scattered on the lateral surface of carapace.

**Subgenus:** *Acanthocythereis (Canthylocythereis)* Al-Sheikhly, 1992.

**Type species:** *Acanthocythereis (Canthylocythereis) quinquespinosa*

Al- Sheikhly, 1992.

*Acanthocythereis (Canthylocythereis) chonraensis* sp. nov.

**Pl.1, Figs. 5- 8.**

**Derivation of name:** After Chonra country in Erbil Governorat, Northern

Iraq.

**Diagnosis:** A species of subgenus (*Canthylocythereis*), characterized by distinct antero-marginal rim, lateral surface covered with combination of reticulation and small nods increased centrally.

**Holotype:** Carapace Mo. Cr. Tn.1.5 ( pl.1, fig.5), (pl.1, fig. 6- 8).

**Paratype:** Three carapace, Mo. Cr. Tn. (1.6- 1.8), (pl.1, fig.6- 8).

**Type locality and Horizon:** Tanjero Formation (Late Campanian- Maastrichtian) northern limb of Perat anticline, Bekhme Dam, North Iraq, Sample no.Tn.27.

**Materials:** (7) Carapaces.

**Description:** Carapace less tumid, subquadrate and flatted in the lateral view. Maximum length at the middle, greatest height at the anterior cardinal angle. Anterior end broadly rounded with distinct antero-marginal rim, eye tubercle rounded with short ridge. Posterior end slightly produced, concave in the upper part and rounded in the lower, which decorated with small, fine nods in the upper part. Dorsal and ventral margin subparallel and converge slightly posteriorly, ventral ridge inclined with one set of nods increasing in size toward posteriorly. Left valve larger than right valve, overlapping it along the ventral, postero-ventral and antero-ventral margins, in dorsal view, the carapace lenticular with nearly subparallel sides and slightly compressed. Surface is covered by reticulation which is rounded and covered with a few nods at the intersection due to thickness of muri centrally.

**Remarks:** This species shows some similarities to *Acanthocythereis (Canthylocythereis) taqiyaensis* (4), from Maastrichtian– Early Eocene in Jordan, but differs in being smaller in the size, narrower marginal area and differences in the details of reticulation also in having less developed or differently shaped spines. *Acanthocythereis (Canthelocythereis) alacere* (4) from Maastrichtian in Chemchemal Well- 2, North Iraq, differs from the species in having indistinct antero-marginal rim, faint eye tubercle, differences in details of reticulation, and the absence of the subcentral tubercles .

**Genus:** *Ordoniya* Al -Sheikhly, 1985.

**Type species:** *Hazelina ordoniya* Bassiouni, 1970.

**Subgenus:** *Ordoniya* (*Ordoniya*) Al-Sheikhly, 1980.

**Type species:** *Hazelina ordoniya* Bassiouni, 1970.

*Ordoniya* (*Ordoniya*) *halabijaensis* sp. nov.

**Pl. 2, Figs. 1- 4.**

**Derivation of name:** With reference to the name of type locality of the Formation sirwan valley near Halabija southeast Sulimaniah Tanjero.

**Diagnosis:** A species of the subgenus *Ordoniya* (*Ordoniya*) in which antero- marginal rim is well developed and connected with the ventral ridge, well developed dorsal ridge divided in two branch posteriorly forming horn- like shaped.

**Holotype:** Carapace Mo. Cr. Tn. (1.9), (pl.2, fig. 1).

**Paratype:** Three carapaces, Mo. Cr. Tn. (1.10- 1.12), (pl.2, fig.2- 4).

**Type locality and Horizon:** Tanjero Formation (Late Campanian- Maastrichtian) northern limb of Perat anticline, Bekhme Dam, North. Iraq, Sample no.Tn.23.

**Materials:** (6) Carapaces.

**Description:** Carapace elongate- subquadrate in the lateral view, maximum length at the middle of the carapace, maximum height anteriorly greatest width in the last to triple of the carapace. Anterior end broadly round, eye tubercle distinct with deep, anterior margin rim is well developed and connected with the ventral ridge is distinct and straight obliquely to words to the posterior. Posterior end narrow end pointed centrally. Dorsal margin slightly sloping posteriorly, with dorsal ridge well developed and divided in two branches posteriorly forming horn-like shaped, ventral margin is curved at the posterior. Lateral surface strongly reticulation in the valves but posterior ornamented smooth, median ridge weakly starting of prominent subcentral tubercle in the right valve.

**Remarks:** This species fairly similar to *Ordoniya* (*Ordoniya*) *ordoniya* (8) from Maastrichtian- Upper Eocene in Jordan, but differs in having dorsal ridge saddle-shaped in the middle, and well developed subcentral tubercle. *Ordoniya ordoniya* (8) which recorded by (5), (7), (10), (11), from Campanian- Maastrichtian in Egypt, but differs in having narrow antero-marginal rim and less developed reticulate in the anterior half.

**Family:** Mauritsinidae Deroo, 1962.

**Subfamily:** Mauritsina Deroo, 1962.

**Genus:** *Mauritsina* Deroo, 1962.

**Type species:** *Cypridina hieroglyphica* Bosquet, 1847.

*Mauritsina khalifanensis* sp. nov.

**Pl. 2, Fig. 5- 8.**

**Derivation of name:** In reference to Khalifan village, NE in Iraq.

**Diagnosis:** A species of *Mauritsina* characterized by large size, thick tumid carapace, deep fossae, small nods due to thick muri, distinct subcentral tubercle and prominent rounded eye tubercle.

**Holotype:** Carapace Mo. Cr. Tn. (1.13), (pl.2, fig. 5).

**Paratype:** Three carapaces, Mo. Cr. Tn. (1.14- 1.16), (pl.2, fig. 6- 8).

**Type locality and Horizon:** Tanjero Formation (Late Campanian- Maastrichtian) northern limb of Perat anticline, Bekhme Dam, North Iraq, Sample no. Tn. 28.

**Materials:** (8) Carapaces.

**Description:** The carapace is a large size, thick and very tumid, elongated to subrectangular, in the lateral view, greatest height at the eye tubercle, greatest length in the middle. In dorsal view the greatest width lies anterior to the middle. Dorsal margin slightly straight decorated with (9) nods which ending by large one at posterior cardinal angle especially in right valve, and ventral margins almost straight, anterior margin broadly and obliquely rounded, posterior end subtriangular rounded in the middle eye tubercle distinct. Subcentral tubercle prominent with deep sulcus behind it. Lateral Surface strongly ornamented with rounded and large fossae also a nods at intersection of the muri which increased anteriorly but weakly reticulate posteriorly also contain three longitudinal ridges, the dorsal ridge is slightly parallel to dorsal margin with a row of nods like- rosary, the median ridge is less well- developed, it runs posteriorly, The ventral ridge commences anteriorly above the antero-ventral corner and runs obliquely up words towards the posterior decorated with row nods which increased in size back word ending with large one, ventral margin slightly concave anteriorly left valve larger than right valve and overlapping it.

**Remarks:** This species shows resemblance to *Mauritsina provincialis* (9) from Turonian in France basing but it differs in having more developed blunt spines on Lateral surface and less developed subcentral tubercle. The present species is similar to *Mauritsina coronata* (10) from Cenomanian- Maastrichtian of Egypt but the later differs in having faint reticulation, well developed nods on median and ventral ridge.

**PLATE -1-**

Figs. (1-4) *Acanthocythereis* (*Acanthocythereis*) *erbilensis* sp. nov.

1- Holotype, external carapace, Left valve, Mo. Cr. Tn. 1.1.

2- Paratype, external carapace, Right valve, Mo. Cr. Tn. 1.2.

3- Paratype, external carapace, Ventral view, Mo. Cr. Tn. 1.3.

4- Paratype, external carapace, Dorsal view, Mo. Cr. Tn. 1.4.

Figs. (5-8) *Acanthocythereis* (*Canthylocythereis*) *chonraensis* sp. nov.

5- Holotype, external carapace, Left valve, Mo. Cr. Tn. 1.5.

6- Paratype, external carapace, Right valve, Mo. Cr. Tn. 1.6.

7- Paratype, external carapace, Dorsal view, Mo. Cr. Tn. 1.7.

8- Paratype, external carapace, Ventral view, Mo. Cr. Tn. 1.8.

**PLATE -2-**

Figs. (1- 4) *Ordoniya* (*Ordoniya*) *halabijaensis* sp. nov.

1- Holotype, external carapace, Left valve, Mo. Cr. Tn. 1.9.

2- Paratype, external carapace, Right valve, Mo. Cr. Tn. 1.10.

3- Paratype, external carapace, Doesal view, Mo. Cr. Tn. 1.11.

4- Paratype, external carapace, Ventral view, Mo. Cr. Tn. 1.112.

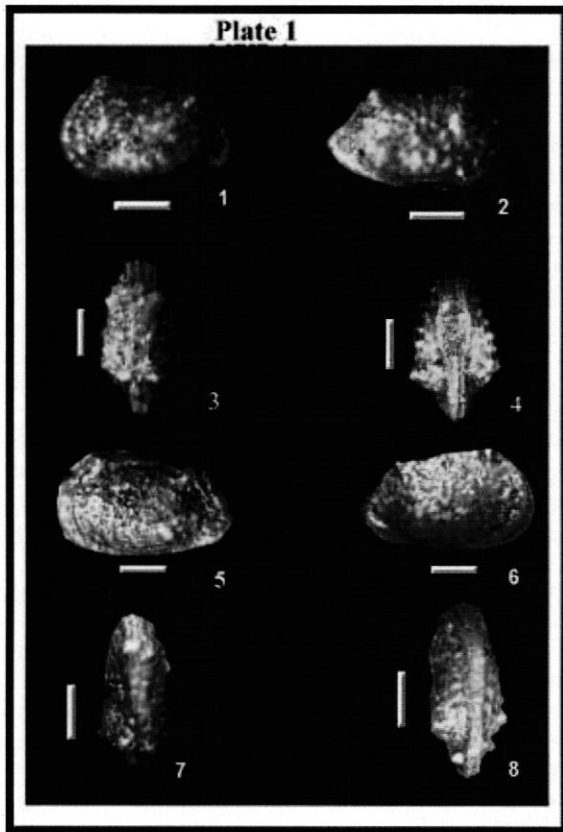
Figs. (5- 8) *Mauritsina* *khalifanensis* sp. nov.

5- Holotype, external carapace, Left valve, Mo. Cr. Tn. 1.13.

6- Paratype, external carapace, Right valve, Mo. Cr. Tn. 1.14.

7- Paratype, external carapace, Ventral view, Mo. Cr. Tn. 1.15.

8- Paratype, external carapace, Dorsal view, Mo. Cr. Tn. 1.16.





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1 bar = 150mm

### بعض الأنواع الجديدة لأجناس الاوستراكودا

*Acanthocythereis, Ordoniya, Mauritsina* من تكوين تانجيرو

(الكامبانيان المتأخر \_ الماسترختيان) في منطقة سد بخمة ، شمال العراق

نسرين مال الله عزيز ، أرجوان خضر الشرو

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

### الملخص

في هذا البحث تم وصف أربعة أنواع جديدة لثلاثة اجناس من الاوستراكودا ضمن تكوين تانجيرو في منطقة سد بخمة على الجناح الشمالي لطية بيرات المحدبة، شمال العراق وهذه الأنواع هي:-

*Acanthocythereis (Acanthocythereis) erbilensis* sp. nov.; *Acanthocythereis (Canthylocythereis) chonraensi* sp. nov.; *Mauritsina khalifanensis* sp. nov.; *Ordoniya (Ordoniya) halabijaensis* sp. nov.