Eripleura, a new genus of ostracod from the Upper Jurassic of England and its relationship with Procytheropteron Ljubimova

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ABSTRACT – A new genus of cytherurid ostracod, *Eripleura*, with the type species *E. eleanorae* sp. nov. from the Upper Oxfordian (? rosenkrantzi Zone) and Lower Kimmeridgian (*baylei* Zone) of southern England is described and compared with *Procytheropteron*. Two further species are described for the first time, *Eripleura obliquicosta* from the Lower Kimmeridgian *cymodoce* Zone, and *Procytheropteron*? *elongatum* from the Upper Oxfordian *tenuiserratum* Zone.

INTRODUCTION

In 1955, Ljubimova used the genus "Procytheropteron Mandelstam, 1955," but cited her own species, *P.* obesum, the genotype. Mandelstam's paper in which Procytheropteron was described as a new genus did not appear until 1956. In that paper, Cythere punctatula var. virginea Jones, 1849 was designated genotype. According to the International Code of Zoological Nomenclature, the actions of both authors were invalid; however, two points are pertinent to this discussion.

i. The name *Procytheropteron* must be accredited to Ljubimova and *P. obesum* stands as its genotype. The genus is ovate in outline, smooth to weakly reticulate, has marginal pore canals "present in great numbers at the anterior end" and a hemimerodont hinge.

ii. Mandelstam's concept of the new genus was not the same as Ljubimova's for *C. punctatula virginea* of Jones (1849) is a species of *Neocythere* Mertens (1956). In fact Morkhoven (1963, p. 258) considered *Procytheropteron* to be a junior synonym of *Neocythere (Centrocythere)*, a genus of Progonocytherinae with an amphidont hinge.

In 1969, Kilenyi figured an elongate species from the *baylei* Zone of Dorset which he left in open nomenclature as *Procytheropteron* sp. 1. However, the species differs from *Procytheropteron sensu* Ljubimova in several respects, although it has a hemimerodont hinge. It is strongly costate, sulcate, elongate, has fewer anterior marginal pore canals and has a subalate ventral rib rather than the "sack-like" overhanging ventral margin as Ljubimova described. Species with these characteristics should be removed from *Procytheropteron* and *Eripleura* is here erected to accommodate them. A specimen more typical of *Procytheropteron* from the Upper Oxfordian Corallian Limestone of the Winterborne Kingston Borehole is illustrated (Pl. 1, Figure 12) for comparison, although left in open nomenclature.

Several species from the British Oxfordian have been assigned to *Procytheropteron* on the basis of the hinge and the posteroventral inflation which partially interrupts the ventral margin. *Procytheropteron? elongatum* sp. nov. from the Upper Oxfordian *tenuiserratum* Zone of eastern England and *Procytheropteron? prolongatum* (Sharopova) from the Lower *panderi* Zone of Russia (Sharapova, 1939; Fuller, 1980) are examples. The generic assignment is made only tentatively as they lack the numerous anterior marginal pore canals described by Ljubimova. are considerably more elongate and often show strong primary and secondary reticultion.

SYSTEMATIC DESCRIPTIONS

Figured specimens are housed in the palaeontological collections of the British Geological Survey, Keyworth, Nottinghamshire.

> Order Podocopida Müller, 1894 Superfamily Cytheracea Müller, 1894 Family Cytheruridae Müller, 1894 Subfamily Cytherurinae Müller, 1894 Genus *Eripleura* gen. nov.

Type species. Eripleura eleanorae sp. nov.

Derivation of name. Greek $\epsilon \rho \iota$ plus $\pi \lambda \epsilon \rho \alpha$ referring to the strong lateral ribbing.

Diagnosis. An oval to elongate, caudate member of the Cytherurinae with a broad, shallow sulcus, a strongly costate lateral area and a thick, subalate ventral rib. Hinge hemimerodont. Muscle scars consist of a vertical row of four small ovate adductors and a larger oval frontal scar situated slightly anterior of mid-length.



Fig. 1. The distribution of localities mentioned in the text.

Marginal pore canals few (7-9 anteriorly and 3 posteriorly) straight and simple. Dimorphic.

Remark. Eripleura shows some resemblance to Procytheropteron in terms of general outline and hingement. It differs, however, in its strongly costate ornament, including a subalate ventral rib, in the sulcus and in lacking the overhanging, "sack-like" (Ljubimova, 1955) ventrolateral inflation. Internally, the marginal pore canals are fewer in number. Eocytheropteron differs in its hinge being crenulate throughout, the terminal elements merging imperceptibly with the median element. Procytheropteron subtrapezoides Bielecka, Blaszyk & Styk. 1976 from the Lower Kimmeridgian of the Holy Cross Mountains, Poland, is placed here together with Eripleura eleanorae sp. nov. and E. obliquicostata sp. nov. The range of the genus is Oxfordian to Kimmeridgian of north western Europe.

> Eripleura eleanorae sp. nov. (Pl. 1, figs. 1-5) Procytheropteron sp. 1 Kilenyi: 142-143, pl. 28,

- 1969 *Procytheropteron* sp. 1 Kilenyi: 142-143, pl. 28, figs. 18-24.
- 1978 Eocytheropteron decoratum (Schmidt); Kilenyi, 280, pl. 9, figs. 5-6.

Derivation of name. After the author's daughter.

Holotype. MPZ 5059; female left valve from a depth of 172.20m in the Nettleton Bottom Borehole, Lincolnshire [Grid Ref: TF 1252 9820]; Upper Oxfordian *Rosenkrantzi* Zone.

Paratypes. MPZ 5060, carapace; MPZ 5061, left valve; MPZ 5062, right valve; MPZ 5063, carapace; MPA

9730/C2, left valve (unfigured). All from the same sample as the holotype. All female.

Dimensions (in mn	1)
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· ·	Length	Height	Width
MPK 5059	0.48	0.28	—
MPK 5060	0.48	0.25	0.23
MPK 5061	0.46	0.26	_
MPK 5062	0.48	0.25	
MPK 5063	0.50	0.27	0.24
MPA 9730/C2			
(unfigured)	0.50	0.28	

Diagnosis. Species of *Eripleura* with an oval to elongate outline; heavily ribbed lateral area; broad, shallow sulcus and a prominent, subalate ventral rib. A horizontal series of three large fossae, associated with the median rib, is characteristic of the species.

Description. Ovate to elongate with an arched dorsal margin and convex ventral margin. Anterior margin broadly rounded, posterior drawn out into a caudal process situated at mid-height. Left valve is larger and overlaps the right. Highest anterior of mid-length, widest posterior of mid-length. A series of ribs cross the lateral area, the most dominant being a median longitudinal rib below which is a complex of riblets that form a series of three large fossae. A thick ventral, subalate rib partly obscures the ventral margin and extends from the posterodorsal area to the anteroventral area. It then forms the anteromarginal rib, although somewhat reduced in thickness, and terminates in the anterodorsal area. An irregular, diagonally disposed rib extends from the anterior of the middorsal area to join with the ventral rib anteroventrally and, by a series of transverse riblets, is weakly connected to the median longitudinal rib. A weak, diagonally orientated rib extends from the posterior of the mid-dorsal area and connects with the ventral ribs distally. Forward of the anterior marginal rib is a flattened anterior marginal rim, best seen in dorsal view. A shallow sulcus at mid-length is terminated by the median longitudinal rib. There is no eve tubercle. Normal pores are small and numerous. Internally, the inner margin is moderately broad and the inner margin and line of concresence are coincidental throughout. Selvage prominent. Radial pore canals few, straight and simple, seven anteriorly and three posteriorly. Hinge hemimerodont. In the left valve it consists of elongate, loculate, terminal sockets and a smooth median ridge. The hingement in the right valve is complementary with elongate, dentate terminal elements and a smooth median groove. The hinge flange in the right valve is thickened to fit into the broad accommodation groove in the left. Muscle scars poorly preserved, but consist of a vertical row of four small ovate adductors and a large frontal scar. Sexual dimorphism well developed, males being more elongate with a straight or only slightly arched dorsal margin.

Remarks. Eripleura eleanorae differs from E. subtrapezoides (Bielecka, B**J**aszyk & Styk, 1976) by the presence of the median longitudinal rib complex. E. subtrapezoides has a characteristic ornament consisting of transverse ribs. Eripleura obliquicostata sp. nov. can be separated from E. eleanorae by the three obliquely orientated, longitudinal ribs and the intercostal reticulate ornament. Kilenyi (1978) confused the species with Eocytheropteron decoratum (Schmidt), a reticulate species of Cytheropterinae that lacks costae.

The species is not common. It has been found in the *?rosenkrantzi* Zone, Ringstead Waxy Clay of Ringstead Bay, Dorset (Whatley, MS 1965) and the *baylei* Zone of the basal Kimmeridge Clay in the stratotype area (Kilenyi, 1969). The present author has recovered the species from the *regulare* and *rosenkrantzi* Zones of the Ampthill Clay in the Nettleton Bottom Borehole, Lincolnshire [TF 1245 9823] (Wilkinson, 1983).

Eripleura obliquicostata sp. nov. (Pl. 1, figs. 6-8)

Derivation of name. With reference to the obliquely disposed longitudinal ribs on the lateral surface. **Holotype.** MPK 5099; male carapace from a depth of 115.5m in the Northern Wootton Borehole, Norfolk [TF 6439 2457]; Lower Kimmeridgian *cymodoce* Zone. **Paratypes.** MPK 5100; right valve from the same sample as the holotype; MPZ 5101, left valve a depth of 114.9m in the North Wootton Borehole, Lower Kimmeridge Clay *cymodoce* Zone. All males. **Dimensions** (in mm)

[×]	Length	Height	Width
MPK 5099	0.60	0.29	0.25
MPK 5100	0.57	0.25	
MPK 5101	0.60	0.28	_
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Diagnosis. Species of Eripleura with a posterodorsal inflation from which extends three obliquely orientated longitudinal ribs. Intercostal area coarsely reticulate. Description. Carapace elongate. Dorsal and ventral margins straight, and subparallel; anterior margin broadly rounded; posterior margin caudate at midheight. The lateral surface is swollen posterodorsally and two short, obliquely orientated ribs extend from it to about mid-length. A subalate rib, which partially obscures the ventral margin reduces in height proximally and disappears into the anteroventral area. A shallow sulcus extends from the mid-dorsal region to the ventral longitudinal rib. Intercostal area reticulate. Normal pores are small, numerous, Eye spot absent. Internally as for the genus. Hinge hemimerodont; marginal pore canals few, straight and simple; muscle scars consist of a vertical row of four oval adductors and a larger frontal scar. Dimorphic, the males being more elongate than the females.

Remarks. Eripleura obliquicostata sp. nov. differs from E. eleanorae in ornament, lacking the median rib complex, being distinctly reticulate and in having straight, subparallel dorsal and ventral margins. E. subtrapezoides (Bielecka, BJaszyk & Styk, 1976) differs in outline, in the position of the caudal process and in the ornamentation.

The present species has been recorded from the Lower Kimmeridgian of the North Wootton Borehole, Norfolk [TF 6439 2457] and B.G.S. Borehole 81/41, east of Scarborough (California Sheet, 54° 22.197'N., 0° 27.284'E.) (Wilkinson, 1983; Cox *et al.*, in press).

Genus Procytheropteron Ljubimova, 1955 **Type species.** Procytheropteron obesum Ljubimova, 1955

Procytheropteron? elongatum sp. nov. (Pl. 1, figs. 9-11)

Derivation of name. Referring to its relatively elongate carapace compared with the other members of the genus.

Holotype. MPK 5102; female carapace, from a depth of 239.2m in the Nettleton Bottom Borehole, Lincolnshire [TF 1252 9820]; Upper Oxfordian *tenuiserratum* Zone.

Paratypes. MPK 5103; male left valve. MPK 5104; female carapace. From the same sample as the holo-type.

Dimensions (in mm)

	Length	Height	Width
MPK 5102	0.45	$0.2\bar{4}$	0.21
MPK 5103	0.45	0.25	
MPK 5104	0.48	0.22	0.20

Diagnosis. An elongate species of Procytheropteron with primary and secondary reticulation over most of the lateral surface, smooth anterodorsally; dimorphic. Description. Female ovate to elongate. Dorsal and ventral margins subparallel, the dorsal margin being slightly concave; anterior broadly rounded; posterior pointed, caudate at mid-height. Ventral margin partially obscured by the overhanging lateral inflation. Posterodorsal margin slightly concave. Laterally reticulate with primary and secondary reticulation, but smooth in the anterodorsal area. Inner margin moderately broad, 11 marginal pore canals anteriorly and (?) 4 posteriorly. Hinge hemimerodont consisting in the left valve of loculate terminal sockets and a smooth, thickened median bar above which is a narrow accommodation groove. Muscle scars consist of four small oval adductor scars and a larger frontal scar. Dimorphism pronounced, males being more elongate than females.

Remarks. *Procytheropteron ? elongatum* differs from *P. obesum* Ljubimova in being more elongate, in having a slightly concave dorsal margin and in having few

marginal pore canals. It is closest to *Procytheropteron*? *prolongatum* (Sharapova), differing in having a more subdued reticulate ornament, a more inflated over-hanging ventrolateral area which obscures most of the ventral margin and the males tend to have a more angular posteroventral margin.

The species was recovered from the upper part of the *tenuisseratum*, *glosense* and (?) basal *regulare* Zones of the Ampthill Clay in the Nettleton Bottom Borehole [TF 1252 9820].

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Explanation of Plate 1

- Figs. 1-5. Eripleura eleanorae gen. et sp. nov. from the Upper Oxfordian rosenkrantzi Zone of the Nettleton Bottom Borehole, Lincolnshire (at a depth of 172.20m). All females.
- Fig. 1. Holotype (MPK 5059), left valve, external lateral view (×135).
- Fig. 2. Paratype (MPK 5063), carapace, right lateral view (×144).
- Fig. 3. Paratype (MPK 5061), left valve, internal view (×144).
- Fig. 4. Paratype (MPK 5060), carapace, dorsal view (×150).
- Fig. 5. Paratype (MPK 5062), right valve, internal view (×135).
- Figs. 6-8. Eripleura obliquicostata sp. nov. from the Lower Kimmeridgian cymodoce Zone of the North Wootton Borehole, Norfolk. All males.
- Fig. 6. Holotype (MPK 5099), carapace, left lateral view; from Kimmeridge Clay bed 10 at a depth of 115.5m (×100).
- Fig. 7. Paratype (MPK 5100), right valve, external view; from the same sample as the holotype (×100).
- Fig. 8. Paratype (MPK 5101), left valve, internal view; from Kimmeridge Clay Bed 11 at a depth of 114.9m (×100).
- Figs. 9-11. Procytheropteron ? elongatum sp. nov. from the tenuiserratum Zone of the Nettleton Bottom Borehole, Lincolnshire (at a depth of 239.2m).
- Fig. 9. Holotype (MPK 5102), female carapace, left lateral view (×125).
- Fig. 10. Paratype (MPK 5103), female left valve, internal view (×125).
- Fig. 11. Paratype (MPK 5104), male carapace, left, lateral view (×125).
- Fig. 12. *Procytheropteron* sp. from the Middle Oxfordian Corallian limestone of the Winterborne Kingston Borehole (at a depth of 423m). MPK 5064, carapace, right lateral view (×125).



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