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## *Pseudotealliocaris palincsari* n. sp., a pygocephalomorph from the Pocono Formation, Mississippian of Pennsylvania

Frederick R. Schram

Department of Paleontology, San Diego Natural History Museum,  
P.O. Box 1390, San Diego, California 92112 USA

*Abstract.* *Pseudotealliocaris palincsari* n. sp., a pygocephalomorph eumalacostracan, is described from the Mississippian Pocono Formation of Pennsylvania. This represents an increase in the geographic range for the genus. Comparisons are made of the new species to two other recognized species of the genus *Pseudotealliocaris*, *P. caudafimbriata* and *P. etheridgei*.

### INTRODUCTION

The Pygocephalomorpha are among the most common of eumalacostracan crustaceans preserved in the nearshore and brackish water communities of the Late Paleozoic (Schram 1981). Among these, the genus *Pseudotealliocaris* Brooks 1962 seems to be one of the more important. It forms an important component of the Viséan nearshore marine community of the British Isles (Schram 1979, 1981), and is one of the more commonly encountered crustaceans in the Upper Carboniferous deposits of Nova Scotia (Copeland 1957).

The material described here comes from a bore hole drilled by the Pennsylvania Department of Natural Resources. This *Pseudotealliocaris* is the only fossil material found in the core sections referred to me for study. This report represents an extension of the geographic range of the genus *Pseudotealliocaris* into the United States.

### SYSTEMATIC PALEONTOLOGY

Order Pygocephalomorpha Beurlen, 1930

Family Pygocephalidae Brooks, 1962

*Pseudotealliocaris* Brooks, 1962

*Type species.* — *Pseudotealliocaris caudafimbriata* (Copeland) 1957.

*Diagnosis.* — Carapace as wide as long, antero-lateral spines large and prominent, mid-dorsal keel or ridge present, lateral carinae or ridges two in number. Telson with prominent mid-dorsal ridge, with lateral sculpting of the margin to accommodate the large lobate caudal furcae.

*Remarks.* — The least reliable of the above characters is that which refers to the length and width of the carapace. This ratio, of course, is subject to the vagaries of preservation and compression. However, all previous authors who have dealt with the genus mention this feature. To be able to assess this feature in the way most authors have done requires that the branchiostegal areas of the carapace be spread laterally in a manner quite atypical of what its position must have been in life.

Pygocephalomorpha is treated here as an order, as suggested by the cladistic analyses of Schram (1984, 1986). The exact relation of the pygocephalomorphs to the other "mysidacean" orders is still the subject of some speculation.

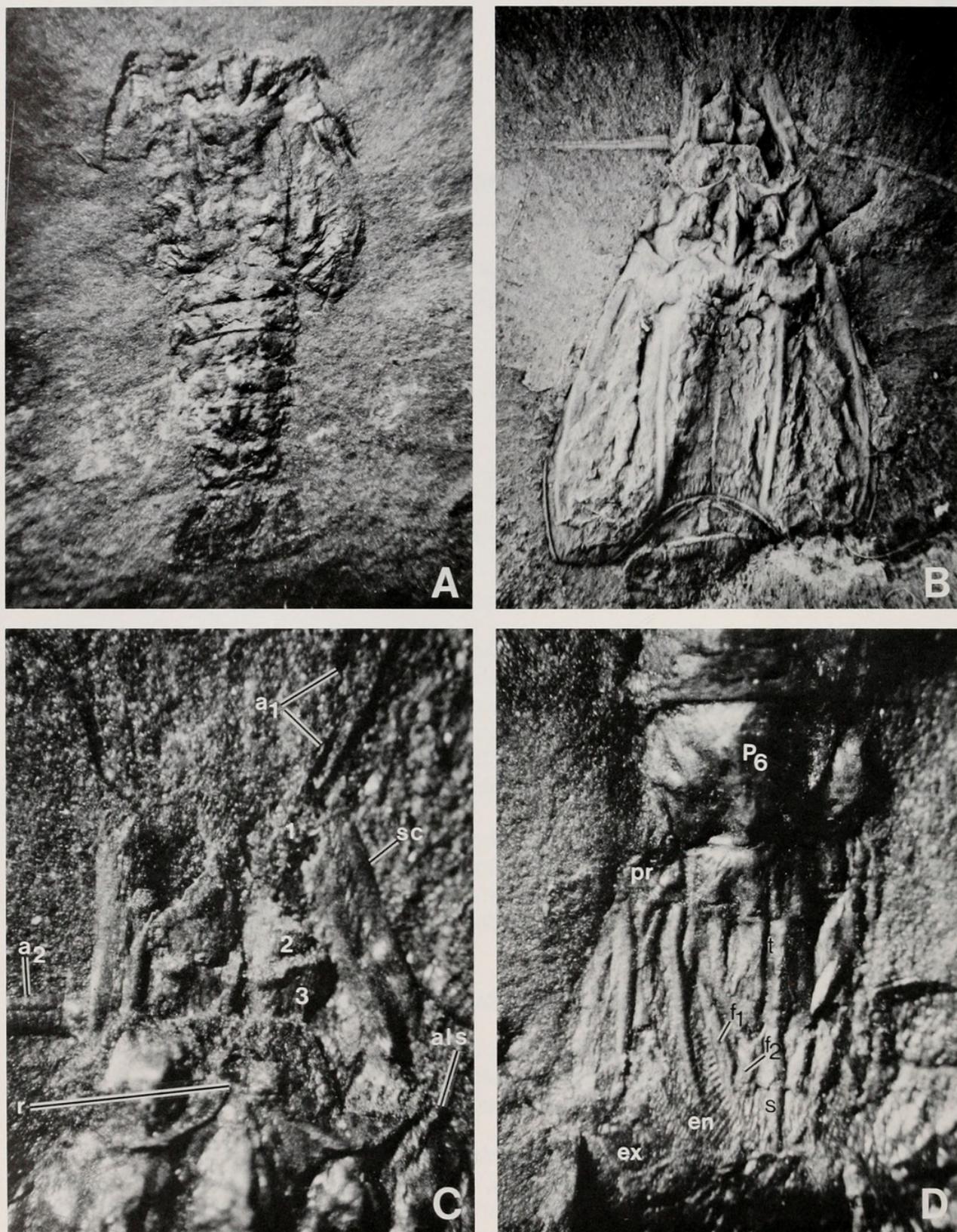


FIGURE 1. *Pseudotealliocaris palincsari*, n. sp. (A) SDSNH 26262, holotype,  $\times 5.3$ . B, C. SDSNH 26271a, paratype, (B) cephalothorax,  $\times 10.8$ , (C) antennules ( $a_1$ ), antennae ( $a_2$ ), scaphocerite (sc), antennule penduncular segments (1–3), base of rostrum (r), anterolateral spine of carapace (als)  $\times 27.0$ . (D) SDSNH 26272a, paratype, tailfan, sixth pleomere (P6), uropodal protopod (pr), uropodal exopod (ex), uropodal endopod (en), telson (t), primary furca ( $f_1$ ), secondary furca ( $f_2$ ), terminal spine (s),  $\times 19.0$ .

*Pseudotealliocaris palincsari*, new species

Figures 1, 2

*Holotype*.—SDSNH 26262 (Figure 1A).

*Additional material*.—SDSNH 26261, 26263–26272.

*Locality*.—Bore hole number 6, Pennsylvania Department of Natural Resources;

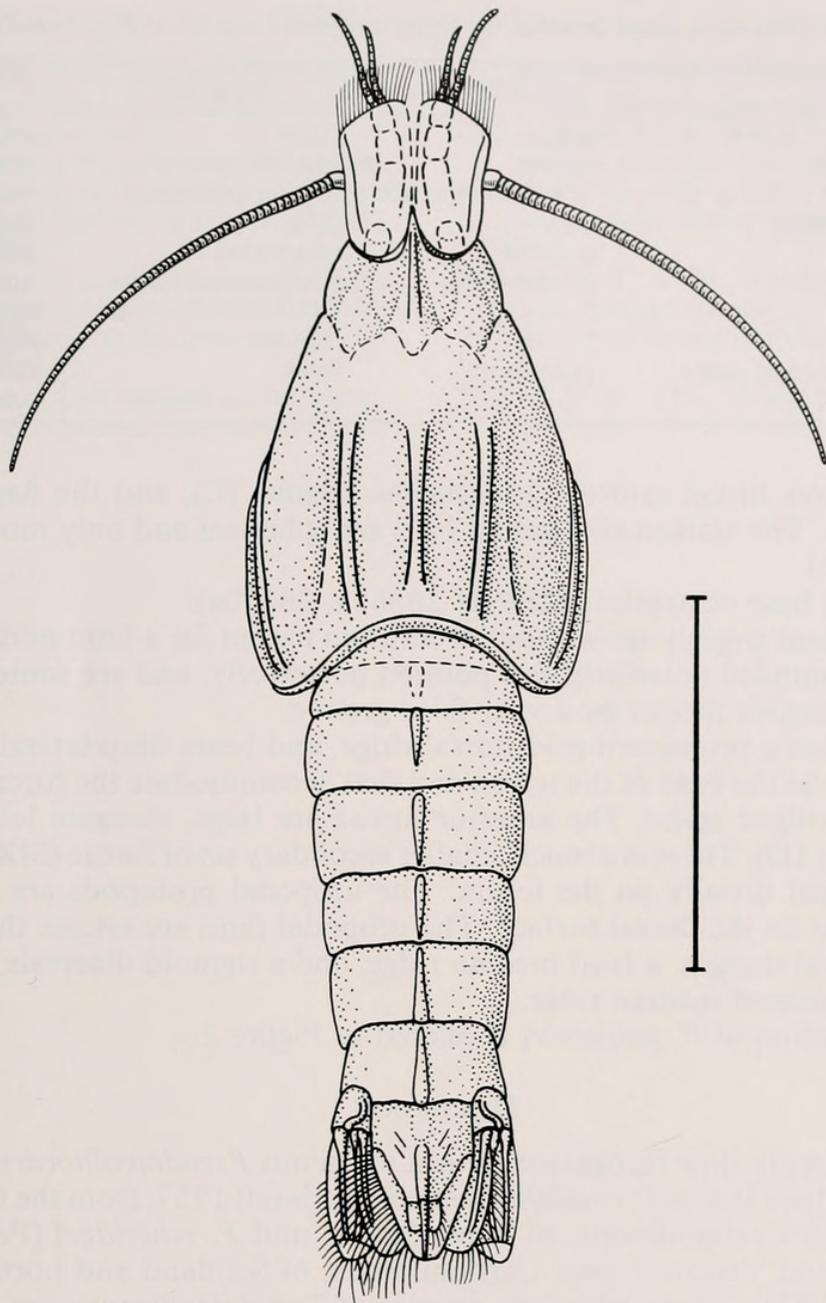


FIGURE 2. *Pseudoteallicaris palincsari* reconstruction. Scale represents 5 mm.

depth 607–613 ft.; 41°12'57"N, 78°55'16"W, 1¼ miles northwest of Allens Mills, Warsaw Township, Jefferson Co., Pennsylvania.

*Stratum*.—Lower Pocono Formation, Kinderhookian, Mississippian.

*Diagnosis*.—Cuticle smooth. Carapace with weakly-developed cervical grooves and mid-dorsal ridge, inferior lateral ridges located close to lateral margins, lateral margins not serrate. Rostrum of moderate size and slightly falciform, base delineated by grooves. Telson with terminal spine.

*Etymology*.—Named in honor of my former professor, Dr. Edward Palincsar, Loyola University of Chicago.

*Description*.—The cuticle is smooth, without any pits or papillae. The carapace (Figure 1B) is marked with a weakly developed mid-dorsal ridge. The lateral ridges are robust, though the inferior lateral ridges are located close to the lateral margins. The posterior and lateral margins of the carapace are marked by furrows, and the posterior margin is markedly concave. The cervical grooves of the carapace are weakly developed, and lie less than ¼ the total carapace length from the anterior margin. The rostrum is short (less than ½ the length of the carapace), somewhat falciform, with its base demarcated by grooves (Figure 1C).

The antennules have a well-developed peduncle of three segments (Figure 1C).

TABLE 1. Structural differences noted between the three recognized species of *Pseudotealliocaris*.

	<i>caudafimbriata</i>	<i>etheridgei</i>	<i>palincsari</i>
Cuticle	pitted	pitted	smooth
Lateral margins	serrate	non-serrate	non-serrate
Cervical groove	$\ll 1/4$ from anterior	$1/4$ from anterior	$\ll 1/4$ from anterior
Rostrum/carapace length	0.34	0.32	0.18
Rostrum base	grooved	no grooves	grooved
Abdominal tergites	median ridge	strong lateral ridges	median ridge
Telson terminus	?	lobed	spined
Diaeresis	?	circular	sigmoid
Uropodal rami reinforcing ridges	prominent	weak	prominent on endopod only

The antennae have broad setose scaphocerites (Figure 1C), and the flagella are long and quite robust. The stalked compound eyes are spherical and only moderate in size (SDSNH 26267a).

The females bear oöstegites (SDSNH 26265a, 26270a).

The abdominal tergites are without decoration except for a faint mid-dorsal ridge. The pleura are rounded anteriorly and pointed posteriorly, and are somewhat demarcated from the tergites proper by a very faint groove.

The telson has a prominent mid-dorsal ridge, and bears deep lateral indentations that extend close to the base of the telson and that accommodate the furcae. The telson distally bears a ridged spine. The anterior furcae are large, elongate lobes with very long setae (Figure 1D). There is a much smaller secondary set of furcae (SDSNH 26272a, Figure 1D) located distally on the telson. The uropodal protopods are marked by a comma-like ridge on the dorsal surface. The uropodal rami are setose: the exopod has a reinforced lateral margin, a faint median ridge, and a sigmoid diaeresis; the endopod bears a well-developed median ridge.

A reconstruction of *P. palincsari* is offered in Figure 2.

#### DISCUSSION

Three species are now recognized within the genus *Pseudotealliocaris*. In addition to *P. palincsari*, there is also *P. caudafimbriata* (Copeland) 1957, from the Canso Group, Namurian, Upper Carboniferous, of Nova Scotia; and *P. etheridgei* (Peach) 1882 of the Tournesian and Viséan, Lower Carboniferous, of Scotland and northern England (see also Peach 1908). These latter two species of *Pseudotealliocaris* are characterized by thin, poorly sclerotized cuticles, which generally are preserved rather poorly. The exceptional preservation noted for *P. palincsari* is due to pyrite replacement.

The morphological differences among the three recognized species are outlined in Table 1. In regard to the location of the cervical grooves, the grooving around the rostrum base, median ridge on the abdominal tergites, and the character of the uropod rami, *P. palincsari* resembles *P. caudafimbriata*. Only the probably primitive feature of a non-serrate lateral margin on the carapace is shared between *P. etheridgei* and *P. palincsari*. In addition, *P. palincsari* is uniquely characterized by the retention of several primitive features such as a smooth and unpitted carapace, unpitted abdominal tergites, and short rostrum. *P. palincsari* is apparently specialized in regards to the weak development of the cervical grooves and the styliform terminus of the telson.

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