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A new species of *Lepas* (Crustacea: Cirripedia: Pedunculata) from the Miocene Mizunami Group, Japan

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Abstract

Lepas kuwayamai, a new species of a lepadid thracican is described from the lower Miocene Mizunami Group in Gifu Prefecture, Honshu, Japan. This represents the third record for the family from Miocene deposits of Japan.

Key words: Crustacea, Cirripedia, Thoracica, Pedunculata, Lepadidae, *Lepas*, Miocene, Japan

Introduction

The lepadomorph family Lepadidae Darwin, 1851, is a small group including six genera (Newman, 1996). Among these, the genus *Lepas* Linnaeus, 1758, is only known from Japan in the fossil record. O hara et al. (1976) reported *Lepas* sp. from the middle Pleistocene Shimosa Group and unnamed Miocene species was reported from the lower Miocene Morozaki Group (Mizuno and Takeda, 1993) and the middle Miocene Aoki Formation (Tokai Fossil Society, 1995).

The purpose of the present paper is to describe a new species of *Lepas* from the early Miocene of Japan. The specimens were collected from siltstone of the Yamanouchi Member of the Akeyo Formation, Mizunami Group, exposed at Matsugase (Loc. MFM54; Karasawa, 1991, p. 7), Mizunami City, Gifu Prefecture. According to Gladenkov (1998), the Yamanouchi Member is assigned to the *Crucidenticula sawamurae* Zone (NPD2D Zone; early Miocene) of Yanagisawa and Akiba's (1998) scale of diatoms.

Systematics

Family Lepadidae Darwin, 1851
Genus *Lepas* Linnaeus, 1758

Type species: *Lepas anatifera* Linnaeus, 1758, by subsequent designation of Pilsbry, 1907, p. 79 (ICZN Direction 66).

Lepas kuwayamai, new species

(Fig. 1)

Material examined: MFM9043, holotype; 8 paratypes, MFM9044-9051; Coll. M. Kuwayama in, 2004. All specimens are housed in the Mizunami Fossil Museum.

Diagnosis: *Lepas* with moderate sized capitulum. Shell thick. Scutum triangular, slightly higher than wide, with clear growth lines; umbonal tooth absent; very weak radial striae sometimes present; apicoumbonal ridge weak. Tergum flattened without radial striae; occludent margin convex, rounded. Carina broad.

Etymology: In honor to our friend, Mr. Mitsuo Kuwayama (Associate of the Mizunami Fossil Museum), who collected the type specimens.

Description: Capitulum moderate in size. Shell thick, strongly calcified. Scutum triangular, slightly higher than wide, transversely convex. Umbo at basiocculdent angle; umbonal tooth absent. Occludent margin slightly convex; upper tergolateral margin straight or gently convex; lower tergolateral margin convex; basal margin raised, slightly concave, Growth lines clear, slightly elevated. Very weak radial striae sometimes present. Apicoumbonal ridge weak. Tergum flattened with clear growth lines exteriorly. Radial striae absent. Occludent margin convex, rounded; carinal and scutal margins straight. Carina broad, terminating below in folk, with growth lines; Umbo basal.

Discussion: *Lepas kuwayamai* is most similar to *Lepas hilli* (Leach in Darwin, 1851 [1852]) among known Recent species, but differs in that the scutum is slightly higher than wide, very weak radial striae are sometimes present on the exterior surface, the apicoumbonal ridge is weak, the occludent margin of the tergum is convex and rounded in outline, and the carina is broad.

Lepas sp. from the Morozaki Group (Mizuno and Takeda,

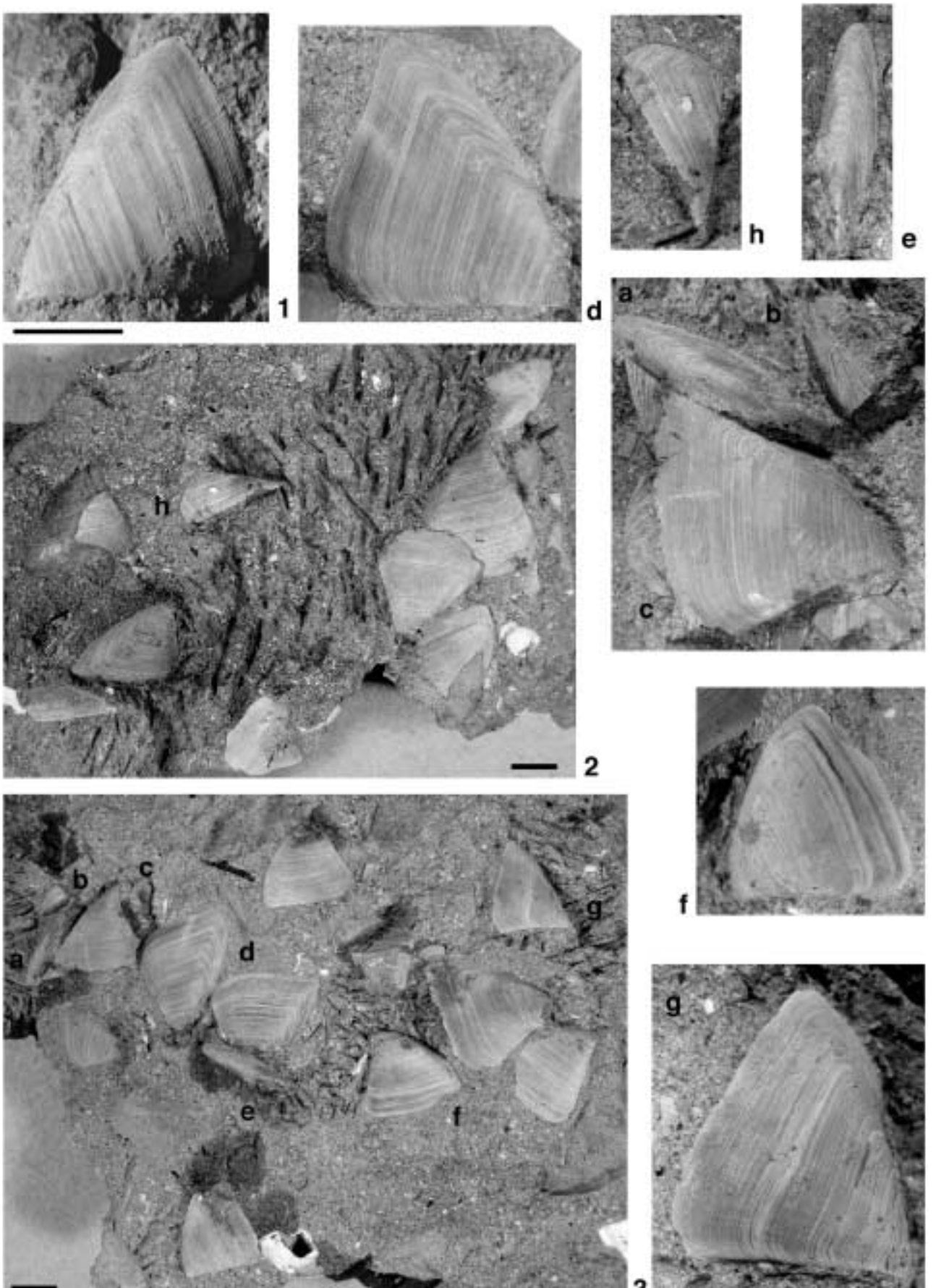

Fig. 1. *Lepas kuwayamai*, new species. 1, MFM9051, paratype, scutum; 2, 3, occurrence of the specimens; a, MFM9044, paratype, carina; b, MFM9045, paratype, carina; c, MFM9046, paratype, scutum; d, MFM9047, paratype, scutum; e, MFM9048, paratype, carina; f, MFM9049, paratype, scutum; g, MFM9043, holotype, scutum; h, MFM9050, paratype, tergum. Scale bars = 1 cm.

1993) and the Aoki Formation (Tokai Fossil Society) possesses scutum and tergum characters like those of the extant lepadid, *Dosima fasciculatus* (Ellis and Solander, 1786). *Lepas* sp. has the tergum with a slightly convex occludent margin, a prominent umbo, and a gently concave carinal margin. Newman (1996) treated *Dosima* Gray, 1825, as a distinct genus; therefore, *Lepas* sp. should be reevaluated.

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