REDESCRIPTION OF BRADLEYA JAPONICA BENSON, 1972 (OSTRACODA) FROM THE SEA OF JAPAN AND THE SIGNIFICANCE OF ITS SHELL SHAPE FROM AN OPTICAL POINT OF VIEW

BY

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ABSTRACT

The marine podocopid ostracod, Bradleya japonica Benson, 1972 is redescribed on the basis of appendages and adult valves. This is the first report describing the appendages of the species. The reflectivity of the shells abruptly increases around an incident angle of 70°, and the reflectivity reaches to ca. 50% around an incident angle of 85° from the possible life position of this animal. Based on optical and morphological analyses, Bradleya japonica has a shell shape that minimizes reflection from the shell under the downwelling light conditions in which it lives.

RÉSUMÉ

L’ostracode podocopidé marin, Bradleya japonica Benson, 1972 est re-décrit sur la base des appendices et des valves chez l’adulte. Ceci est le premier travail décrivant les appendices de cette espèce. La pouvoir de réflexion de la carapace augmente abruptement pour un angle incident de 70°, et la réflectivité atteint environ 50% pour une angle incident de 85°, ce qui peut correspondre à la position de l’animal vivant. Sur la base d’analyses optiques et morphologiques, Bradleya japonica a une forme de carapace qui minimise la réflexion sur la carapace sous les conditions de la lumière incidente dans laquelle il vit.

INTRODUCTION

Bradleya japonica was described by Benson (1972) on the basis of an adult left valve that was collected from Recent sediment, Sea of Japan, off Honshu Island, Japan. In spite of the ubiquitous occurrence of B. japonica valves in the Recent sediments around Japan, as well as in the East China Sea and Yellow Sea (e.g.,

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Wang et al., 1988; Zhao & Wang, 1988; Ikeya & Suzuki, 1992; Zhou, 1995), their appendages have not yet been described in a report. We here redescribe *B. japonica* from the Recent sediment of the Sea of Japan, including the appendages and the carapace (or valves) of both sexes. We also discuss the shell shape and the micro-ornamentation developed on the species’ carapace from an optical perspective.

**MATERIAL AND METHODS**

Surface sediment was collected using a Smith-McIntyre grab sampler during cruises by TR/V “Toyoshio-maru”, ca. 120 km east of Tsushima Island (North Island, Japan), 34°46′N 130°46′E, at a depth of 116 m. In this sample, a total of 36 species of ostracods was identified (for further details, see St. 13 in Tanaka, 2008). Among these, one male and several female specimens of *Bradleya japonica* Benson, 1972 were discovered, preserved with their appendages, and along with many exuviae of various stages. A sample had already been washed through a sieve (74 μm mesh) and dried when we borrowed the material. The dried specimens were, therefore, softened in a 10% sodium tripolyphosphate solution. A specimen was picked up from the solution when the air bubble completely disappeared from its appendages (ca. 2 hours). The appendages were dissected in glycerine under a stereo-microscope (Nikon SMZ-U), mounted in Neo-Shigaral on glass slides, and covered. In order to allow observing details of their morphology, the removed valves were then immersed in glycerine on glass slides. The appendages and valves were drawn with the aid of a camera lucida under an Olympus stereo microscope (Olympus BX41). Other carapaces were mounted on stubs and coated with gold in a JEOL ion sputter coater (JFC-1100), then viewed using a JEOL scanning electron microscope (JSM-6100). All specimens illustrated have since been deposited in the Campus Museum of Shizuoka University (SUM), Shizuoka.

**SYSTEMATICS**

Order **PODOCOPIDA** G. O. Sars, 1866

Family **THAEROCYTHERIDAE** Hazel, 1967

Genus **Bradleya** Hornibrook, 1952

**Bradleya japonica** Benson, 1972

(figs. 1, 2, 3A, 3B, 3E, 3F)

*Bradleya japonica* Benson, 1972: 40, pl. 7 fig. 3; Benson, 1982, figs. 1, 3, 9; Wang & Zhao, 1985, pl. 8 fig. 5; Wang et al., 1988: 254, pl. 47 figs. 12-15; Zhao & Wang, 1988, pl. 2 fig. 16; Ikeya & Suzuki, 1992, pl. 2 fig. 9; Zhou, 1995: 73-74, pl. 3 figs. 11, 12; Hou & Gou, 2007: 352, pl. 137 figs. 8-10; Tanaka, 2008, fig. 2].