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## A new species of *Pinnixa* (Crustacea: Decapoda: Brachyura: Pinnotheridae) associated with a tube worm, *Chaetopterus cautus* (Annelida: Polychaeta), from Tokyo Bay, Japan

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### Abstract

A new species of the pea crab genus *Pinnixa* White, 1846 (Pinnotheridae), *P. banzu* n. sp., is described and illustrated on the basis of four specimens from Banzu, an estuary of the Obitsu River, Kisarazu, Chiba Prefecture, Japan. All the specimens examined were associated with the polychaete tube worm *Chaetopterus cautus* Marenzeller, 1879 (Chaetopteridae). The new species is very similar to *P. chaetoptera* Stimpson, 1860 from the western Atlantic, *P. occidentalis* Rathbun, 1894 from northwest North America, and *P. rathbuni* Sakai, 1934 from East Asia. It is distinguished from the latter three species by characters of the carapace, ambulatory legs, male abdomen, and male first gonopod. It is suggested that previous records reporting on the association of *P. rathbuni* with *Chaetopterus* tube worms might be actually referred to the new species.

**Key words:** *Pinnixa chaetoptera*, *occidentalis*, *rathbuni*, *Chaetopterus*, Japan

### Introduction

The pinnotherid crab genus *Pinnixa* White, 1846, is species-rich, currently represented by 55 species worldwide (Ng et al. 2008; Komatsu & Takeda 2009), although monophyly of the genus has been questioned (cf. Naruse & Maenosono 2010). The genus is typically characterized by a transversely widened carapace without a complete cardiac ridge extending over the posterior part of the carapace, the third maxilliped with dactylus articulated at the proximomesial side of the propodus, and greatly unequal ambulatory legs, with the third (fourth pereopod) the longest (Rathbun 1918; Campos & Wicksten 1997; Heard & Manning 1997). Species in the genus are known to be associated with various invertebrates [for example, the mantle cavity of bivalves, the cloaca of holothurians, the tubes of polychaete worms, and the burrows of decapod crustaceans (callianassids, upogebiids), echinurans and sipunculans], although a few species are putatively free living (Schmitt et al. 1973). Of the 55 species, only six have been recorded from the northwestern Pacific (Stimpson 1858; Sakai 1934, 1976; Vassilenko 1990; Dai & Yang 1991; Yamauchi & Konishi 2005; Komatsu & Takeda 2009): *P. balanoglossana* Sakai, 1934, *P. haematosticta* Sakai, 1934, *P. lata* Komatsu & Takeda, 2019, *P. penultipedalis* Stimpson, 1858, *P. rathbuni* Sakai, 1934, and *P. tumida* Stimpson, 1858. Other species are distributed in the eastern Pacific and western Atlantic (Bouvier 1917; Rathbun 1918, 1922, 1931, 1935; Wells 1928; Glassel 1935a, 1935b, 1936, 1937; Bott 1955; Garth 1957, 1960; Wass 1968; Zmarzly 1992; Martin & Zmarzly 1994; Coelho 1997), although *P. occidentalis* Rathbun, 1894 has been recorded from South Africa (Saldanha Bay, eastern Atlantic side) as an introduced species (Clark & Griffith 2012).

During habitat surveys for the polychaete tube worm *Chaetopterus cautus* Marenzeller, 1879, in Tokyo Bay, central Japan, four specimens of a pinnotherid crab, including one male and three females, were collected from the estuary of the Obitsu River (Banzu flat), Kisarazu, Chiba Prefecture. Detailed examination of these specimens

Kornienko & Korn (2010: 179) actually agrees with the new species, rather than with *P. rathbuni*, in particular in the proportion of the ambulatory legs and the color in life. Examination of voucher specimen(s) is needed to satisfactorily evaluate the specific identity of these Russian records.

The following nine species presently assigned to *Pinnixa* (except for *P. rathbuni*) are known to be associated with species of *Chaetopterus*: *P. bahamondei* Garth, 1957, *P. brevipollex* Rathbun, 1898, *P. chaetoptera* Stimpson, 1860, *P. darwini* Garth, 1960, *P. sayana* Stimpson, 1860, *P. tomentosa* Lockington, 1877, *P. transversalis* (H. Milne Edwards & Lucas, 1844), *P. tubicola* Holmes, 1894, *P. valdiviensis* Rathbun, 1907 (Schmitt et al. 1973; Zmarzly 1992; Coelho 1997; Petersen & Britayev 1997). The present new species represents the tenth example of the genus associated with *Chaetopterus* tube worm.

**Etymology.** Named after the type locality, Banzu, Kisarazu, Chiba Prefecture, Japan. Used as a noun in apposition.

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