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A new species of fiddler crab from the Ogasawara (Bonin) Islands, Japan, separated from the widely-distributed sister species *Uca (Paraleptuca) crassipes* (White, 1847) (Crustacea: Decapoda: Brachyura: Ocypodidae)

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Abstract

A new species of fiddler crab (Brachyura: Ocypodidae), *Uca boninensis* **sp. nov.**, is described from the Ogasawara (Bonin) Islands, Japan. The new species has previously been identified with the widely distributed *U. crassipes* (White, 1847), from which it differs by having a slightly differently shaped carapace, and relatively stouter male first gonopods (G1). The recognition of the new species is also supported by differences in the mitochondrial cytochrome oxidase I (COI) and control region (CR) genes. *U. boninensis* **sp. nov.**, appears to be endemic to the Ogasawara Islands, and as the only known population is small, urgent conservation measures are needed for its protection. Our study brings the total number of the Japanese fiddler crab species to 12.

Key words: fiddler crab, *Uca boninensis*, *U. crassipes*, new species, COI, control region

Introduction

The Ogasawara (Bonin) Islands is an oceanic archipelago in the northwestern Pacific Ocean about 1000 km south of Tokyo, Honshu, the main island of Japan (Fig. 1). The archipelago consists of more than 30 tropical and subtropical islands, extending approximately 400 km from north to south. Although the islands of the archipelago are small, several possibly endemic crustacean species have been reported, inhabiting inland waters, terrestrial, semiterrestrial or shallow-water marine environments, primarily from Chichi-jima Island (insert in Fig. 1; Kato & Takeda 1981; Asakura 1991; Satake & Cai 2005; Sekiguchi & George 2005; Komai *et al.* 2006; Nunomura *et al.* 2006, 2008; Komai & Ng 2013).

The occurrence in the Ogasawara Is. of only one species of the fiddler crab genus *Uca* Leach, 1814, referred to *U. crassipes* (White, 1847), has been confirmed (Kobayashi & Satake 2009), although there have been several previous records of the genus from the archipelago under various names (Yoshiwara 1901; Parisi 1918; Balss 1922; Sakai 1939, 1976; Imajima 1970; Ooishi 1970; Shigei 1970; Takeda & Miyake 1976; Takeda 1995; Yoshigou 2002; Kobayashi & Satake 2009; Komatsu 2011; Aoki & Wada 2013), reflecting the confusion on the taxonomy of the genus (cf. Crane 1975). Takeda (1995) suggested that the Ogasawara population might represent a subspecies or even a distinct species from *U. crassipes*, although no clear evidence was given. Yoshigou (2002) compared the morphology of the male first gonopod (G1) between specimens from Chichi-jima Island and those from Okinawa Island, Ryukyu Is., and clarified minor differences in the stoutness and angle of the main shaft, which he attributed to geographical variation. Aoki & Wada (2013) reported that the Ogasawara population is genetically different from those representing *U. crassipes* from the Ryukyu Is. and Moorea in French Polynesia in the mitochondrial control region marker, although the authors still referred the Ogasawara population to *U. crassipes*. Shih *et al.* (2012), based on molecular phylogenetic analysis and detailed morphological comparison, showed that *U.*

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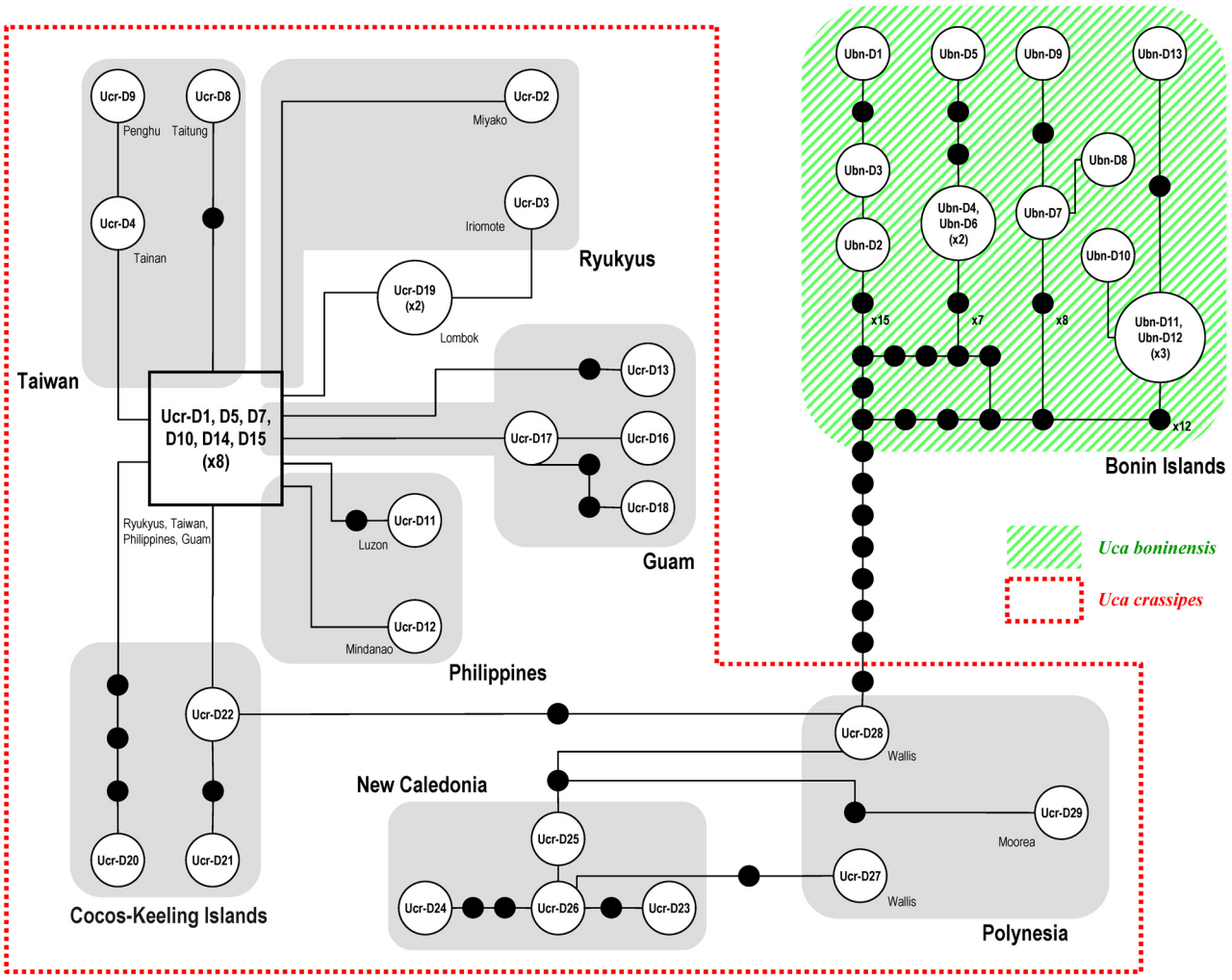

FIGURE 9. Genealogical network for the control region haplotypes observed within the clades of *Uca crassipes* (White, 1947) (collected from the Ryukyus, Taiwan, the Philippines, Guam, Indonesia, Cocos-Keeling, New Caledonia and Polynesia) and *U. boninensis* **sp. nov.** (from Ogasawara Is.). The ancestral haplotype, or root of the network, is indicated by a square. Unlabelled nodes indicate inferred haplotypes not found in the sampled population.

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