

Abstract

The Japanese mitten crab, *Eriocheir japonica* (de Haan, 1835), belonged to Decapoda, Grapsidae, is distributed in eastern Asia including Sakhalin, the eastern Korean Peninsula, Japan, China and Taiwan. In Taiwan, it is distributed in the northwest of Taiwan, from Juo-Shuei River in the central Taiwan to Bai-Mi River in Yilan County. This species and the Taiwanese mitten crab, *Platyeriocheir formosa*, are sympatric in Keng-Fang River, Shin-Cheng River and Bai-Mi River, which are located in Yilan. The reproductive behaviors are different between the two mitten crabs in Taiwan. The Japanese mitten crab migrated and reproduced in autumn and winter but the Taiwanese in spring and summer.

Mitochondrial *COI* gene was used to be a molecular marker to reveal the population genetics of *E. japonica* in Taiwan. Sixty-one specimens were analyzed and a partial fragment of *COI* gene, whose size is 555 bps in length, was obtained. Twenty-three haplotypes were obtained including 3 classified from four sequences in GenBank. The high haplotype but low nucleotide diversity of the Japanese mitten and the results of Tajima's D and Fu and Li's D test were indicated that the populations of Japanese mitten crab have experienced bottleneck effect and population expansion event in the past. The NJ tree of the mitten crabs have shown that the Japanese mitten crabs are divided into three major groups with high bootstrap, which are group Japan, group Okinawa and group Taiwan and China. This division may result from the affections of Kerama and Tokara gap in western pacific. We hypothesize that there might be three species existed in Japanese mitten crabs. *E. japonica*

could indicate the populations in Japan. The populations in Okinawa could be a new specie (*E. sp. nov.*) and the populations in Taiwan and China could be the members of *E. hepuensis*. In order to protect the populations of Japanese mitten crabs in Taiwan, three evolutionarily significant unit (ESU) and management unit (MU) should be proposed. The low genetic diversity and high frequent gene flow among the populations of Japanese mitten crabs in Taiwan could be influenced by the coastal current.

