Phylogeographic research of Duttaphrynus melanosticctus in Taiwan

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ABSTRACT

The Asian black spined toad, Duttaphrynus melanostictus, is a common species from southern China to southeast Asian. In Taiwan, they are widely distributed under the altitude of five hundred meters. The collection sites we analyzed were from 23 populations in Taiwan, including Taipei, Taichung, Nantou, Changhua, Yunlin, Tainan, Kaohsiung and Hualien. The mitochondrial DNA gene fragments used for phylogenetic analysis were 982 base-pairs of cytochrome b and control region. There were 23 variable sites of 18 haplotypes sequenced from 90 specimens. By computing Kimura-2-parameter model of gene distance with neighbor-joining methods for reconstructinh phylogenetic tree of haplotypes and populations, the results showed that the phylogenetic relationships of Duttaphrynus melanostictus in Taiwan were not clear among the collection sites. The genetic distance among collection sites from 0 to 0.007 suggested that the populations of Duttaphrynus melanostictus in Taiwan were not significantly differentiated. However, the haplotypes found in populations of Hualien, Kaohsiung and Taipei were localized. According to phylogeographic analyses, the gene flow among populations of central Taiwan should be more frequently. Furthermore, it will be very necessary to understand the phylogeographic relationships between Asian coastland and Taiwan to discuss the dispersal patterns and speciation process of Duttaphrynus melanostictus.

Keywords : Duttaphrynus melanostictus, phylogeography, dispersal hypothesis, vicariance hypothesis, mitochondrial DNA

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