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The complete mitochondrial genome of the Formosan black bear (*Ursus thibetanus formosanus*)

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Abstract

A complete mitochondrial genome of the Formosan black bear (*Ursus thibetanus formosanus*) was obtained by PCR amplification and DNA sequencing. The genome spans 17,044 bp that includes 13 protein-coding genes, 22 tRNA genes, and two rRNA genes. The base composition of the heavy strain is 31.0% A, 25.6% C, 15.7% G, and 27.7% T. The control region (CR) is located between tRNA-Pro and tRNA-Phe, consists of 1,595 bp, and comprises 9.4% of the whole genome. The DNA sequence shares 98.7%, 96.3%, 91.0%, 91.8%, and 91.7% similarity with those of *U. t. thibetanus, U. t. mupinensis, U. americanus, U. arctos,* and *U. maritimus* respectively. Phylogenetic analyses suggest that the Formosan black bear is more closely related to *U. t. thibetanus* than to *U. t. mupinensis.*

Key words: mitochondrial genomes; phylogeny; Taiwan; *Ursus thibetanus formosanus*

Introduction

The Asiatic black bear (*Ursus thibetanus*), also known as the Tibetan black bear, the Himalayan black bear, or the Moon bear, is a medium-sized, sharp-clawed, black-colored bear with a distinctive white or cream "V" marking on its chest. It is a close relative of the American black bear with which it is thought to share a common European ancestor. The Family Ursidae consists of two Subfamilies: Ailurinae and Ursinae. The Subfamily Ursinae has four genera and seven species, of which brown bear (*Ursus arctos*), polar bear (*Ursus maritimus*), American black bear (*Ursus americanus*), and Asiatic black bear (*U. thibetanus*) belong to the genus *Ursus*. The Formosan black bear (*U. t. formosanus*) is a subspecies of the Asiatic black bear (Wilson and Reeder 2005), and is the largest carnivore endemic to Taiwan. It is an omnivorous animal that lives widely from middle to high elevations at 2,000 to 2,500 meters, and is active both day and night (Hwang *et al*. 2000). The Formosan black bear is listed as an endangered subspecies under Taiwan's Culture, Heritage and Conservation Law (1989). This means its population size has declined to such a dangerously low level that its long-term survival is threatened. Internationally, this species is protected by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Appendix I, which states that this bear deserves complete protection because of its endangered status. Furthermore, CITES bans all international trade in any products from this species. The Red List of the International Union for Conservation of Nature and Natural Resources (IUCN) also describes this bear as vulnerable to extinction. In order to identify the degree to which the Formosan black bear differs genetically from other members of its genus, we obtained its complete mito-

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