

A New Color Phase of *Ursus thibetanus* (Mammalia: Ursidae) from Southeast Asia

The Asiatic black bear or moon bear, *Ursus thibetanus* G. Cuvier, is known to have black (common) and brown (rare) color phases. We here document a blond color phase and “intermediates” between the blond and black phases. It is striking that a distinct form of a large mammal can still be described at the beginning of the 21st century.

Terminology. Site acronyms include BWC for Banglamung Wildlife Breeding Center of the Thai Royal Forest Department; LZ for Lopburi Zoo, Thailand; and BF for Bayab Farm Zoo, Cambodia. Bears one to four years in age are considered “subadult.” Though longest on the neck sides, the “mane” technically comprises all hair grown from the top and sides of the neck and head, forward to and including a strip anterior to the ears.

Background and methods. Pelage of black-phase individuals (when not in molt) is indeed mainly black externally, the muzzle and the usually pale chest-mark being areas typically of different coloration; see POCOCK (1932, 1941) for a discussion of pelage color variation. Many “black” cover hairs are actually banded, with minimally one black band and a proximal brown, gray, or blond band. The number of bands can reach at least four.

Dark brown Pakistan specimens were reported by BLANFORD (1877) and ROBERTS (1977). These records from the western part of the species’ distribution are now supplemented by similar BWC specimens (e.g., Fig. 1A) from Southeast Asia.

MILLET (1930) noted indigenous knowledge in what is now southern Vietnam of a large, “fauve” type of bear. In 1988 in Simao, southern Yunnan, Galbreath and P. S. Walker examined a captive blond-phase male moon bear. In 1999–2001, 13 more blond-phase or intermediate captive specimens were examined in Thailand and Cambodia, five of which are here described and figured to illustrate variation. Using mitochondrial DNA from hair samples, a 288 base-pair fragment containing portions of the cytochrome b gene and the control region was sequenced for four of these specimens and for 12 other individuals.

Results. With regard to 14 blond-phase or intermediate bears, regions of “blond” pelage ranged from tan to very pale yellow. Many black hairs were banded with blond. The muzzle was always mainly pale, and the pale chest mark remained identifiable.

An adult female (LZ1, Fig. 1B–D) was extensively blond; black pelage was visible only on mane and perhaps withers. A subadult female (Fig. 1E,F; since relocated to Phnom Tamao Zoo), also extensively blond, had been captured as a cub in 1997 within a few km of National Road No. 4 in northern Prey Nup District, Sihanoukville Province, Cambodia. Black pelage was visible only on mane, ear edges, and perhaps eye region and/or withers.

A subadult female (BF1, Fig. 2A,B) and two adult males (LZ2, BWC3; Fig. 2C–E) were intermediate in coloration, being notably darker than blond-phase bears in dorsal or lateral view. The female had a blonder face and nape than the other two, a blonder underside than at least LZ2, and a large, distinct black patch above the tail. She had

reportedly been captured well west of Kampong Speu city, near the border between Koh Kong and Kampong Speu Provinces. Male LZ2 had the darkest head and lower forelimbs.

Black-phase adult male BWC4 (Fig. 2F) exemplifies another link with the blond phase. Limited blond areas occurred on face, ears, and lower limbs. Another light-faced specimen, subadult male BWC5, provided DNA and was more thoroughly examined. He had blond hair rooted inside the pinnae, some pale pelage on the lower forelimbs, and a mottled face with large eye patches. Many black hairs were banded with pale yellow.

At a private zoo, three litters were reportedly produced by the same blond (male) and intermediate (female) parents. Two subadults or adults, reportedly from the same litter, were intermediate and blond respectively. Two cubs from a second litter were intermediate, though predominantly light tan. A recently produced cub was blond.

One haplotype was possessed by the four sequenced blond or intermediate bears (Prey Nup, LZ1, BF1, and LZ2), by BF2 and LZ3, and by six BWC bears (including the light-faced BWC5 and BWC17). Four other haplotypes were found among BWC and LZ specimens.

Discussion. That blond coloration is heritable is indicated by the breeding data. Particolored patterning (Fig. 2B–D) exemplified by LZ2 and BF1 may resemble an early stage in the evolution of the pattern of the giant panda (*Ailuropoda melanoleuca*).

One haplotype was shared by blond and black specimens. The coloration continuum and the DNA data together indicate that blond specimens do not represent a new species, but belong to *U. thibetanus*. That a blond individual can occur within a primarily black-phase population is shown by the case of the Prey Nup bear. There are, then, at least three color phases of *U. thibetanus*, black, brown, and blond, paralleling phases of *U. americanus*.

With regard to biogeography, the blond Prey Nup specimen and reportedly BF1 came from southwestern Cambodia. A Brou informant in Lao reported a convincing field sighting from Mok District of Xiangkhouang Province. We conclude that the blond phase of *U. thibetanus* occurs in the Elephant/Oral/Cardamom Mts. complex, probably occurs in the northern Annamite Mts., and may well occur elsewhere in Southeast Asia.

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Figure 1. *Ursus thibetanus* specimens from southeast Asia. a) upper left: Brown-phase bear at BWC. b-d) Blond-phase specimen: adult female LZ1. e-f) Lowest row: Blond-phase Prey Nup subadult female.



Figure 2. Partially blond specimens of *Ursus thibetanus*. Note panda-like patterns of first two specimens. a,b) Upper row: BF1 subadult female. c-d) Middle row: LZ2 adult male, with black-phase specimen for comparison. e) BWC3 adult male. f) Black-phase adult male BWC4, with light face.

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Gary J. Galbreath
Biological Sciences
Northwestern University
Evanston, IL 60208 USA
and
Geology Department
Field Museum of Natural History
Chicago, IL 60605 USA
email: gjg853@northwestern.edu

Hean Sun
Wildlife Protection Office
#40, Preah Norodom Blvd.
Phnom Penh, Cambodia

Sy M. Montgomery
P. O. Box 127
Hancock, NH 03449 USA

