

Inside: Michio Hoshino — Bear Photographer

BEARS MAGAZINE

Your Wilderness Guide to the Bear's World

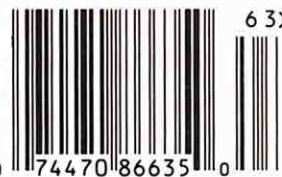
Walrus Hunting
POLAR BEARS

Grizzlies and Hunters

Bear Gallery

Plus Much More!

BEARS \$3.95 (CANADA \$5.95) - VOL 2 ISSUE 3



63>

0 74470 86635 0

TRACKING THE GREAT BEAR

Red, White, and Blue Black Bears

by Jim Halfpenny, Ph.D.

Puzzling as it may seem, the North American black bear (*Ursus americanus*) comes in more colors than just black. It may be polar-bear white, or grizzly-bear brown; even red or blue. In the past, when people began encountering and classifying these new bear pelage, or hair colors, the variety of colors confused species definition, yielding more species than really existed. The black bear's coloration is one of the most fascinating aspects about the animal.

There are stories about hair color, but few serious studies have documented color patterns or how individual pelage may change over time. Perhaps the most experienced bear hair experts are the fur buyers who annually work with thousands of animal skins, as well as bear skins. Their recognized terms provide a basis for our entry into the realm of bear color.

Hair may be divided into two types: guard hair and fur. The guard hairs are longer, coarser and provide protection for the shorter, finer fur known as wool. Each hair may contain pigment or be absolutely clear on all of its shaft or any portion of it. Different combinations of pigmentation provide for different color patterns. Guard hairs may be a different color than fur. In black pelts, guard hairs have black tips and the bases may be

dark gray or black and the underfur may be very dark gray or black.

Different colored guard hairs and fur may cause a bear to appear to change color during a summer season. Early in the summer, a bear may appear black when only the new black-tipped guard hairs are present. But as hair growth continues and brown underfur becomes prominent, the bear turns brown, not black. Conversely, sun bleaching may lighten the hair on some bears.

Fur buyers sort bear skins depending on color. They recognize black, dark brown, light brown, cinnamon (reddish-brown), and honey (yellowish-brown) color morphs or phases of bears. Cinnamon and honey are rare, but not as rare as Glacier (blue) or Kermode (white).

Black bears dominate eastern North America. Of over 14,500 bears examined in Michigan, New York, Maine, Tennessee, West Virginia, and Ontario, not one brown-phase black bear was observed. Whereas in the West, brown-phase bears are common. Cinnamon-phase bears are occasional residents in my front yard, Yellowstone, and honey bears even occur on occasions. The Glacier and Kermode phases are the most interesting.

Kermode, or white-phase, black bears are found from central British Columbia west to the

coastal islands. Kermodes, named after Francis Kermode who was instrumental in their scientific recognition, vary from white to gold in color. Kermodes have creamy underfur with white guard hairs. The color of Kermode hair is very sensitive to light and to stains. Therefore, a Kermode may change colors from day-to-day or even during a day.

To the northwest is the home of the Glacier or blue-phase black bears. Some claim Glacier bears are rarer than Kermodes, others say it is the other way around. From my experience, both are difficult to find. Glacier bears are found along the coast of Alaska, in and around Glacier Bay National Park. We found blue bears deep in remote sections of the Park; they were rare, but doing well.

Blue hair color is found in many carnivores, including fox, wolves, bobcats, lynx and bears. The blue color, often described as slate, gun-metal, or light gray, has a distinct blue glint in sunlight. While the bear's underfur is mostly medium brown, the blue results from guard hairs that are mixed dark and grayish-blue with some white tips.

For a great photographic review of the color phases see Tom Wolfe's *Bears: Their Life and Behavior* (Crown Publishers, Inc., N.Y.).

We have yet to understand

the influence of genetics on hair color. Perhaps it is due to recessive genes. In his book *Spirit Bear: Encounters with the White Bear of the Western Rainforest* (Key Porter Books, Toronto), Charlie Russell says that the Kermode's white fur results from a double recessive gene, though I know of no study to support this conclusion. We do know that white Kermode females may give birth to black cubs and black females may have white cubs. The cubs retain their birth color for their entire lives. Estimates on the Kermode's ratio of white to black bears range 1:4 to 1:40, and much of it depends on the location and the observer.

Since geographic ranges of Glacier and Kermode bears abut in the coastal rain forests, I suspect that genetic controls over hair color are closely linked, and probably somehow tied to the same rare genes in both color phases. There may be several genes to account for all the color variation.

Bear biologist, Lynn Rogers, reviewed several ecological hypotheses about the causes of bear coloration. Black melanistic fur may be more resistant to abrasion, as are dark-colored feathers. Therefore, black, resistant fur wears better in dense eastern hardwood forests, and is not needed in the more open areas of the west.

Alternatively, black individuals may be more susceptible to heat stress and not do well in open meadows of the west. Since brown-phase bears occur mostly where there are predatory wolves and grizzlies, brown-phase bears may be camouflaged from their predators, or they may even mimic grizzly bears.

But then how do you explain white and blue bears in dark rain forests of western coasts? They can be neither mimics nor camouflaged. These theories are difficult if not impossible to test, and different causes may be important at different locations. We may never know.



Jim Halfpenny, Ph. D. owns and operates Naturalist's World in Gardiner, MT.