

Mountain Lions In Our Towns

BEARS

AND OTHER TOP PREDATORS

Black Bears Return To Texas

Recognizing Bear Scat In The Wild

Respecting A Bear's Personal Space

BEARS \$4.25 (CANADA \$6.75) — VOL 2 ISSUE 1

0.4

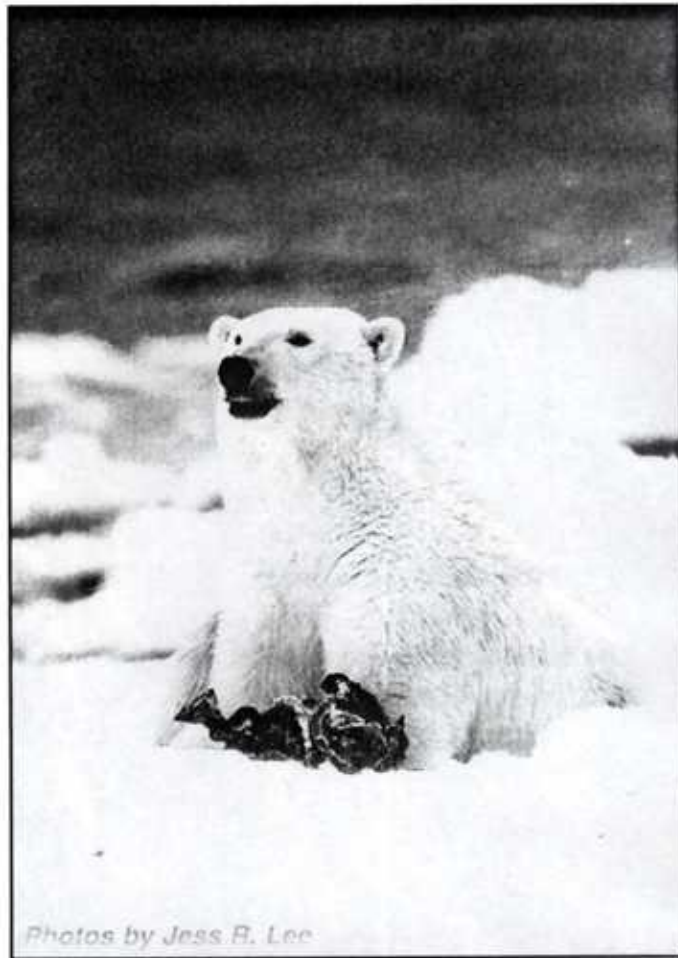


7 25274 86635 9

www.bearsmag.com

Tracking the Great Bear: Breaking the Rules

by Jim Halfpenny, Ph.D.



Photos by Jess B. Lee

Though technically different species, brown bears (*Ursus arctos*) are known to interbreed with polar bears (*Ursus maritimus*), producing fertile offspring. This violates a standard “rule” of species classification.

The flexibility of bears and the contrary inflexibility of the human race has always intrigued me. We humans are supposed to be more highly evolved, proficient at mental reasoning, and capable of independent actions. But our limiting need to stick things in pigeon holes, i.e., classification, and become mired in a rut by rules amazes me. Bears on the other hand are true individuals who follow no classifications and obey no rules. Venture with me through bear biology while I try to convince you that bears know no rules.

Consider the standard information on bear reproduction—a female bear has two cubs and keeps those cubs until it is time to mate, at which time she will “kick them out” if they have not already left her. Two cubs is, of course, an average. Some bears give birth to only one cub, while others may give birth to as many as four. Needless to say, bears do not know they are supposed to give birth to two cubs; they respond in complex biological ways to their environment. The rules are but mere generalities.

Another standard “rule:” Grizzly

cubs stay with mom for 2.5 years. Yellowstone bear biologist Kerry Gunther tells me of the admittedly rare cases in which sows have kicked their young out at 1.5 years of age and the cubs have survived. Early separation at 1.5 years also occurs with many polar bear cubs at Churchill, Manitoba.

Even more variable is bear mating behavior. In general, bear cubs have dispersed or are forced to leave prior to mating. Biologically this makes sense since males wander great distances—the cubs of any female they encounter are not

likely theirs. When a male kills a female's cubs, she often comes into heat and may then mate with the male. The male's strategy succeeds because he has now replaced his genes with the genes of the cubs' father. However, bears do not always behave according to this rule.

the year and her cubs from her previous litter making five bears in the den. Did someone say something about rules?

When it comes to attack behavior, people want rules. Tell me exactly what to do when the bear comes! Remember, every bear is an individual and you never know

can breed and successfully produce offspring capable of breeding, they are considered the same species. What about the eight different bear species?

Before answering the question, some background. Standard dogma says panda bears diverged earliest, about nine to 12 million years ago,

Recently, biologists checking winter dens found a marked female black bear denned with her cubs of the year and her cubs from her previous litter for a total of five bears in the den.

During the summer of 1998 in Yellowstone, we video taped a mating pair of grizzlies. Interestingly, the female was accompanied by her two 2 1/2-year-old cubs, who were often within 25 to 50 yards of the male. I had heard of accompanied females mating before, but this was the first time I was fortunate enough to observe it.

Recently, biologists checking winter dens found a marked female black bear denned with her cubs of

which side of the bed the bear got up on. As bear mythologist Jim Garry jokingly explains, there are two rules for dealing with bears: First, bears NEVER attack without provocation. Second, the bear decides what's provocation. If there is a rule, it is expect the unexpected.

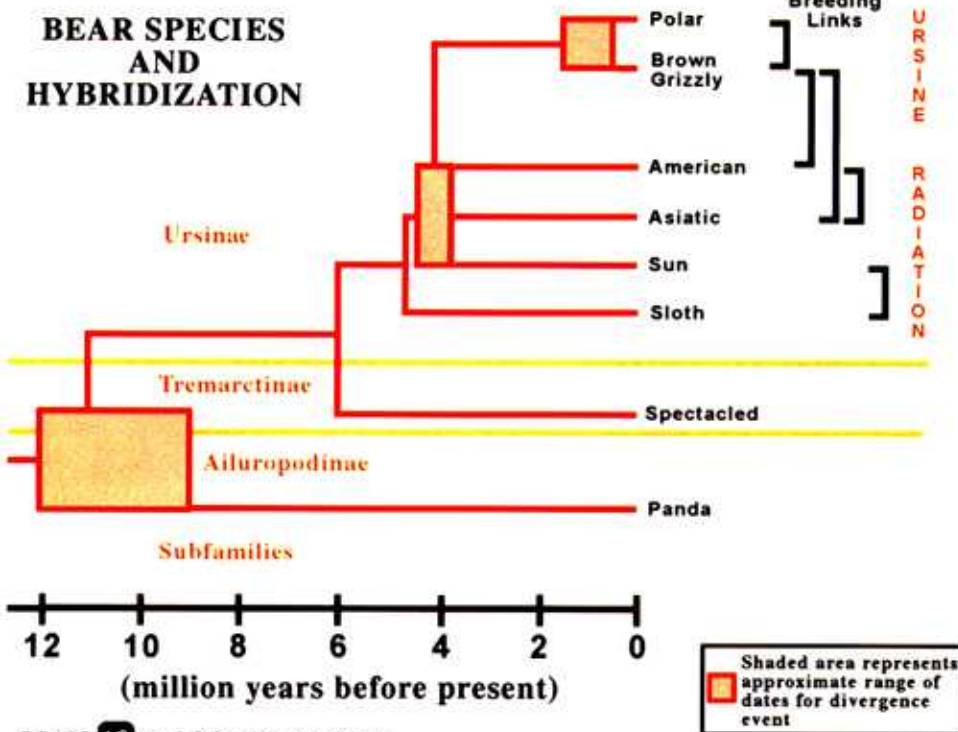
Biologically, the most interesting rule that bears violate relates to speciation (Fig. 1). We are taught in school that species classification is based on breeding. If animals

then spectacled bears, about six million years ago, and finally, ursine radiation resulted in the remaining six bear species. In the bear family *Ursidae*, scientists recognize three subfamilies: *Ailuropodinae* (pandas), *Tremarctinae* (spectacled), and *Ursinae*. Give the scientists a few beers and the arguments will rage over whether or not the pandas have been separated long enough from the rest of the bears that they deserve their own family. Incidentally, there are no rules to determine family level splits, it is a subjective call.

Subfamily differences are substantial and significant. If you take living cells from each bear species, squash them, and look at the contents under a microscope, you will observe that cells from pandas have 42 chromosomes, those from spectacled bears 52, and the rest of the bears 74. Chromosomes, of course, carry all of the inherited genetic information for each species. Confined to South America, spectacled bears are geographically isolated, while pandas possibly overlap in distribution only with Asiatic black bears. Are any of these bears capable of breeding with others?

Records from the zoos of the

Figure 1



A Naturalist's World

Presents
A Celebration of Bears



A video 9 years in the making, Jim and Diann tell all—we'll show all—about the bears that is! A fun video celebrating the diversity of bears: size, shape, color, and behavior. Includes 7 subspecies: black bears, spirit bears (Kermodes), glacier (blue) bears, Kodiaks, coastal brown, interior grizzly, and polar bears. From Yellowstone to Alaska to Canada, it's all there. You'll be amazed at bear antics. Excellent for classroom use. UHS, 28 minutes. TO ORDER: Send \$19.95 to address below.

TRACKING THE GREAT BEARS OF NORTH AMERICA



Black, glacier blue, white Spirit (Kermode), Kodiak brown, coastal brown, interior grizzly, Khutzymateen grizzly, and polar bears.

Get to know all the bears with Dr. Jim Halfpenny, BEARS columnist, carnivore ecologist and animal tracker, and Diann Thompson. Study bears up close. Learn about their evolution, natural history, ecology, management, and future. Photography possible. On-site field classes from Yellowstone to Alaska to Canada. Many offerings each year. Contact us for more information at the address below.

Jim Halfpenny & Diann Thompson P.O. Box 989-B Gardiner, MT 59030 www.tracknature.com (406)848-9458

world often provide behavioral and reproductive information about bears. Carefully searching the records shows breeding crossovers have occurred only within the most recently diverged subfamily, *Ursinae*.

Brown/grizzly bears (*U. arctos*) are known to breed with polar (*U. maritimus*), American black (*U. americanus*), and Asiatic black bears (*U. thibetanus*). American blacks breed with Asiatic blacks. Sun (*U. malayanus*) and sloth (*U. ursinus*) bears also interbreed. Yes, sun and sloth bears are often shown as *Helarctos malayanus* and *Melurus ursinus*, but recent classification generally puts them in the genus *Ursus*. Given the chance, I suspect that sun and sloth bears could interbreed with other *Ursus* bears. Hybrids from these unions of different *Ursus* "species" are fertile and capable of producing

offspring.

To brush this romance under the rug, some argue that zoo-generated hybrids do not negate the species rules. However, in the wild, crosses are known or reported by natives for all North American species.

There is also the example of the odd bear from the barren grounds of northern Canada that C. Hart Merriam in his 1918 tome on grizzlies classified as *Vetularctos inopinatus*. In reality, *V. inopinatus*, may represent a grizzly/polar bear hybrid. Hybrids do occur naturally.

To further strengthen our classification of species, scientists often add geographic separation. Giving the Kodiak brown bear its own subspecies name, *U. a. middendorffi*, intuitively feels right because of the gene flow separation from the mainland bears. Since North American bears are geographically separated from Old World bears, we

feel better recognizing them as species even though Asiatic black bears will interbreed with grizzlies and American black bears. But are they really properly defined "species?"

It is better to recognize these exceptions to the species rules than to hide them behind inflexible categories. After all, nature recognizes the exceptions! Ambiguity is to be expected. We modern ursophiles live in interesting times. It appears that the ursine radiation is far from over and what humans wish to pigeon hole as six different species may, in fact, represent a dynamic and exciting stage of one species, *Ursus*, undergoing speciation. Don't hide it, flaunt it—bears successfully hybridize. It's exciting, it's now, it's evolution happening to our favorite furry bruins.

