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Understanding how bears hibernate may lead to breakthroughs in human healthcare

February 28th, 2011 10:09 am ET



Hibernating black bear and cub
Photo: All Canada Photos/Alamy

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Everyone knows that the black bears common throughout Connecticut hibernate for the winter, generally for 5-7 without eating, drinking, or eliminating. Then "emerge from their dens in the spring none the worse for wear." This is because they are able to dramatically slow down their metabolisms.

What you may not know is that during this time, bears' heart rates dropped from 55 to 9 beats a minute. Scientists also found that "during intervals when the bears were not breathing, there were also as many as 20 seconds between beats." The reason being that "when metabolism slows, so does the need for the heart to pump oxygen through the body."

However, while these same scientists believed that (like most animals) the black bears needed to drop their body temperatures to slow down their metabolisms sufficiently, a

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new study by Oivind Toien, a zoophysiologicalist at the University of Alaska, Fairbanks found that bears there generally lowered their internal thermostats by only about 9 to 11 degrees Fahrenheit while still being able to bring their metabolisms almost to a grinding halt, at 25 percent of the normal rate."

"If we had that kind of longer interval within our heartbeats, we would probably faint," he remarked..

"The bear's uncoupling of metabolism from temperature "is yet another amazing thing that black bears can do," noted Bryan Rourke, a biologist at California State University, Long Beach, who has studied how bears' hearts can withstand hibernation. He also noted that the new study discovered that bears are able to " regulate their temperatures to suit individual needs." A prime example being the fact that "a pregnant female black bear in the study did not allow her body temperature to fluctuate as much as other hibernating bears, presumably to protect the fetus."

According to the researchers, this study (published in the February 18th issue of the journal Science) may lead to medical breakthroughs for treating humans with muscle or heart disease, such as "understanding how bears can survive with such low amounts of oxygen may help stroke victims who temporarily lose oxygen flow to the brain. Or, unlocking how bears can control their metabolism without dropping their temperatures may provide clues to how people can lose weight, exclaimed Rourke."Nearly every organ system in the hibernating mammal.demonstrates some fascinating but contrasting physiology to humans."

Editor's note: Although it has been estimated that there are somewhere between 300-500 black bears here in Connecticut, their population has been growing. According to the DEP, there were 2,759 reported sightings in 133 towns throughout the state between 2007-2008.



By [Diana Duel](#)
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Known to readers as Hartford's Wellness Examiner, Diana's passions and expertise also extend to animals and their welfare. A graduate of the North... [Read more](#)

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