

ADIRONDACK BLACK BEARS

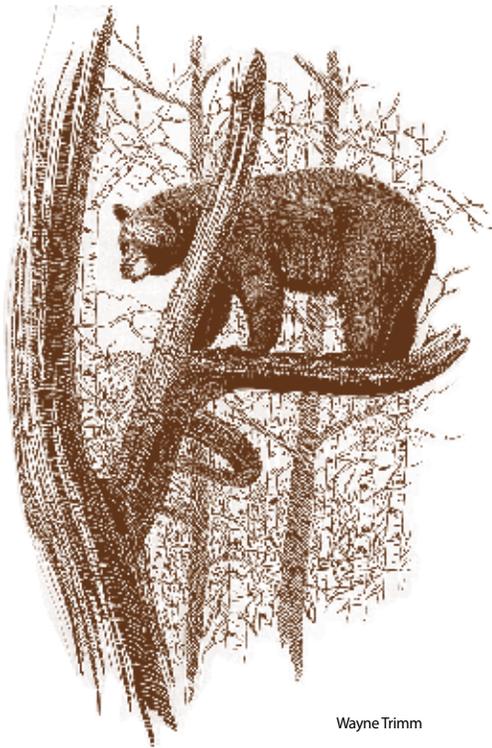
—Does beech nut abundance affect human-bear conflicts?

By Courtney LaMere

Every few summers in the Adirondack Park, incidents like the one the Schwartz family experienced (pp. 20-21) serve as vivid reminders of the saying, “A fed bear is a dead bear.” Bears that get food from humans (whether intentionally or unintentionally) lose their natural fear of people, which can lead to dangerous encounters with bad consequences for both humans and bears.

Most people who live in bear country know that they need to secure all potential food items that may attract a hungry bear. However, every year we hear about black bears getting into garbage cans, coolers and cabins in search of an easy meal. Some years—like 2012—are worse than others. Perhaps this results from the previous year having few bear encounters and lulling us into letting our guards down.

As a graduate student studying wildlife biology and management at the SUNY College of Environmental Science and Forestry, I wondered why we saw these spikes in human-bear conflicts, and perhaps more importantly, wondered if there was a way to predict when they would happen. Why would DEC have 39 bear complaints filed in the Adirondacks by the public one year (2006), followed by 194 (almost five times as many!) the next



Wayne Trimm

year, and then only 14 bear complaints the next year? Was natural food availability driving complaint numbers, or did it have to do with the number of bears in an area at any given time?

Previous research in other areas of the U.S. has shown that black bears’ home range sizes and long-distance movements are greater in times of food scarcity. This, in turn, increases the opportunities for bear-human interactions, as bears cover more area in search of food. In New York,

DEC biologists theorized that natural cycles in beech nut production (literally the nuts of beech trees, an important fall food for bears) might have an impact on the number of human-bear conflicts experienced in the Adirondack Park.

To test this theory, I studied how beech nut cycles relate to human-bear conflict levels and how they influence cub production in black bears, suspecting that high cub production one year might lead to a higher prevalence of conflicts with people the following year when those young bears disperse.

Bears and Beech Nuts

Black bears routinely seek out easy, energy-rich meals like acorns or beech nuts when they are available, or sometimes garbage and bird seed. And biologists in some areas have observed that years of high and low cub production are tied to the availability of high-quality food. Pregnant females need to enter their dens in late fall with maximum fat reserves as they require large energetic stores to draw from during gestation and lactation. In years with poor food availability, some female bears may forego cub production.

Beech nut leaves and fruit



Adult female bears (sows) regularly breed every other year and, in New York, they generally produce two or three cubs per litter. Breeding every other year allows for the cubs to remain with the sow for 16-18 months. Biologists have observed that in certain habitats a large proportion of female bears breed on the same two-year cycle, a trait known as reproductive synchrony.

Beech nuts have a high fat content and when they are abundant they are a primary fall food source for Adirondack black bears. Beech trees intermittently produce large seed crops (called “mast”). In New York, they typically follow an alternate-year pattern of mast production—one year the forest floor will be covered with beech nuts (as many as tens of thousands per acre); the next year hardly any nuts will be produced.

So the first thing I looked at was whether female black bears in northern New York were on the same two-year cycle as beech trees (i.e. successful pregnancies coinciding with beech mast). Through a process called population reconstruction, I used harvest-by-age data to calculate a minimum estimate of the number and ages of bears in the population in any given year. For example, there were an estimated minimum of 716 yearlings in the Adirondack black bear population in 1980, meaning they had been born in 1979. In contrast, I calculated a minimum estimate of 199 yearlings in 1981 (born in 1980), suggesting that 1979 had a higher cub production than 1980. After looking at the number of yearlings in the population from 1970 to 2008, I was able to see that the data indicated that with a few exceptions, female bears in northern New

DEC photo



A collared female bear with her cub in their winter den.

York have been producing cubs in a synchronized alternate-year pattern for the past 40 years.

Now it was time to test whether the bears were synchronized with the beech nuts. To do this, I compared the calculations on bear reproduction with data on annual beech nut abundance gathered since 1988 by Stacy McNulty at Huntington Wildlife Forest in Newcomb, NY. The results: cub production did, in fact, correspond closely to beech mast production, with peaks of cub production in the springs following abundant mast crops.

Predicting Human-Bear Conflicts

Knowing that black bear reproduction and beech nut abundance are correlated can help us predict when there is the potential for increased human-bear conflicts. For instance, we could counsel visitors to be extra vigilant during summers that follow a large fall beech nut crop as there will be more bears.

Young black bears leave their mothers at the beginning of their second summer. Males travel long distances to find new home ranges, while females typically occupy home ranges adjacent to their mothers'. Results of the first step of my study showed that every other year there is an elevated number of young bears in the population. Given that, I wanted to also look at whether there was an obvious increase in bear-human encounters during the same years there was a higher number of young bears dispersing. So, the next step of my research project was to investigate whether the pattern in cub production and the natural food abundance cycles—black bears eat fruits such as raspberries, blueberries and serviceberries in summer, then hard mast like beech nuts in fall—affect the level of human-bear conflicts in the Adirondack Park.

I analyzed DEC records of bear complaints reported by the public to come up with annual levels of human-bear conflicts in the Park. I then used statistical models to test the effect of summer bear



John Adamski



It's important to keep the cubs warm while the sows are being weighed, measured and tagged by biologists.

food abundance (data available from Huntington Wildlife Forest), beech nut abundance, the size of the whole bear population, and the number of the young male bears on levels of human-bear conflicts each year from 2001-2009. Contrary to my hypothesis, neither the size of the total bear population nor number of young bears were the most important factors for predicting human-bear conflict levels, though overall bear population size was a strong contributor. Of all the variables tested, only the abundance of

beech nuts in the previous fall correlated closely enough to be able to predict spikes in bear complaints. This may have to do with the availability of overwintered beech nuts as an energy-rich food in the spring. Once the overwintered beech nuts are gone, the transition to lower-quality leafy vegetation that's available in spring may be a difficult one and bears that are less wary of people may seek human food sources, leading to negative encounters.

While more research is needed, we know enough to say that residents and visitors to the Park can expect elevated levels of human-bear conflicts in summers that follow a fall with a large beech nut crop, as illustrated by the summer of 2012. But regardless of this human-bear conflict forecast, it's important for all of us to remember that people are half of the equation, and we need to do our part to keep bears wild.

Courtney LaMere graduated with her Master's degree from SUNY-ESF in 2012 and is currently working for USDA-APHIS Wildlife Services on the feral swine management and disease surveillance project in Central New York.

Author's note: Funding for this project was provided by the Pittman-Robertson Program and the Edna Bailey Sussman Foundation. Additional data assistance was provided by the Wildlife Conservation Society's Adirondack Program.

Help Prevent Human-Bear Conflicts

By Steven Heerkens

Each year, DEC responds to reports of bear damage ranging from tipped garbage cans and raided bird feeders, to agricultural damage and home entries. While DEC cannot always predict when a bear might become a nuisance, we can anticipate problems by understanding the conditions that lead to visits by bears.

- Bird feeders attract bears, particularly in the spring after bears emerge from winter dens. Bears will stay near homes and camps for a longer period of time if feeders are available. Consider removing bird feeders by April 1st.
- Garbage cans and dumpsters (especially those left unsecured in garages or along the roadside) are easy targets for bears. DEC recommends that garbage be brought to the curb as close to pick-up time as possible—do not put them out the night before! If you have a commercial dumpster in bear country, request a bear-resistant container from your waste management company or erect an electric fence.
- Feeding bears is illegal! Some people will intentionally place food outside their tents, cabins or homes in hopes of attracting bears for viewing, but this is illegal. When a bear is rewarded with food, it is encouraged to continue seeking human food sources. If allowed to continue, this behavior can lead to property damage or potential threats to human safety. In many cases, DEC staff are asked to intervene and handle nuisance animals whose behavior has escalated to these levels.
- Home entries are, fortunately, one of the least common complaints DEC receives annually. However, a number of these occur each year. Considered the most serious nuisance incident by a bear, DEC has a zero-tolerance policy for such behavior. Bears that enter homes are a severe threat to human safety and are euthanized. Property owners in bear country can reduce the risk of home entries by: maintaining a clean home and yard; minimizing attractants on porches; and by closing windows when not at home.
- Bears are native to New York; many people live in close proximity to them and never experience a problem. If we maintain clean properties and minimize attractants, we can avoid human-bear conflicts and appreciate these magnificent animals from a distance.

DEC is currently developing a statewide black bear management plan. To learn more about bears and bear management, visit www.dec.ny.gov/animals/6960.html.

Steven Heerkens is a wildlife biologist in DEC's Utica office.

DEC photo



DEC photo

