

Tracking the Bear

Biologists hike, dig and plot to unravel the secrets of black bear behavior.

BY ANDREW TIMMINS

Can you tiptoe in snowshoes? We need to be quiet. I can hear the breathing and whispers of my three research companions as we approach the end of our four-hour uphill trudge through deep powder. We're well off any hiking trail, in a dense, barely navigable softwood stand. The signal shows that we're close to pinpointing the bear den we're looking for; a few more careful steps will put us practically on top of the snow-packed blowdown where a sow and her cubs have holed up for the winter. The bears are very alert to our presence; now I can hear the cubs crying. The sow's telemetry collar has given away her location — and now, no matter how alarmed the bear may be to see us on her turf, we can complete today's task.

We're here in the White Mountains, high above the town of Lincoln, to learn more about this female bear. Slowly and quietly, the packs and the snowshoes come off, the shovels come out. We load up the jab-stick and dart guns, each with enough tranquilizing drug to calm the sow for an hour or two. We start digging snow to create access

to the den. Will gets down on his belly and slithers partway into the den, jabs the adult bear. Success! Now we will wait 15 minutes or so for the drugs to take effect.

It was a long road to get here — and not only in miles. Last summer, we trapped and collared this bear after several weeks of complaints from Lincoln residents that she'd been causing trouble in town — getting into garbage, dog-food dishes, bird feeders.

The bear is now suitably slowed down; we remove her cubs from the den, tagging their little ears, weighing them and determining the sex of each, before snuggling them in our parkas to keep them warm. We remove the sow's collar — filled with valuable tracking data that will reveal her travel patterns over the last several months — and fit her with a new one. When our work is done, we nestle the cubs back up against their mother; soon, she will be back to normal, and the bears' lives will go on as before.

We take the collar, and ourselves, back down the mountain before it gets any darker or colder.

Andrew Timmins is a wildlife biologist and Bear Project Leader for N.H. Fish and Game.

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Fish and Game Wildlife Biologist Will Staats uses a jab-stick to inject a large male bear with a tranquilizing drug, so that a collar holding GPS tracking data can be retrieved. Large males like this one sometimes blast out of their dens and get away before they can be sedated.

Managing a Growing Population

The black bear population in New Hampshire, estimated at 5,500 animals statewide, is considered healthy, viable and relatively stable throughout the state, with densities increasing from south to north. A successful bear management program has brought the population of this elusive big-game species from a record low in the late 1800s to its highest level in 200 years. With the growing number of bears in the state comes increased complexity in how this important resource is managed. Bear hunting has become quite popular, as indicated by bear license sales over the last decade. The revenue from the special bear tag, along with funds from the Federal Aid in Wildlife Restoration program, has allowed Fish and Game to conduct important bear research.

As bear populations have grown, so have human populations — resulting in a decrease in available habitat that puts bears in closer proximity to humans. This trend is evident throughout the northeast and presents a challenge to wildlife agencies, who wrestle every day with the public's desire to see and admire bears or to hunt bears — but not to have the animals be too close or too numerous for people to be able to live with them amicably.

Our ability to maintain bear populations at levels both viable and consistent with public expectations is largely influenced by the public's willingness to *accommodate* bears. The opportunistic feeding behavior of bears, their seasonal dietary needs and annual fluctuations in wild food sources, combined with human habits, often causes bears to become conditioned to human presence and associated food resources. The combination of these factors tends to have direct influence on the level of “nuisance” bear complaints — often

associated with bears that have discovered easy sources of human food. When we learn more about the ecology and habits of the particular bears whose behavior people won't tolerate, we can formulate effective options for reducing bear/human interactions.

The search for effective strategies to cut down on bear complaints prompted a study during 2000-2003 in two northern towns — Lincoln and Berlin — both adjacent to excellent bear habitat and both with a long history of nuisance bear problems. Prior to the study, it was unclear as to the number of bears involved in generating the huge number of complaints received in these communities during some years. Additionally, we didn't know how the people of these communities influenced the bears' seasonal movements and home ranges. We started the study with an effort aimed at capturing all nuisance bears in both communities. After capture, we fitted each study bear with a modern GPS (*Global Positioning System*) telemetry collar. We retrieved the collars during the winter den checks, and the number crunching began.

Only a Handful of Bears

The GPS collar tracks the movements of the bear, so we can — after the collar has been removed from the animal — plot each collared bear's whereabouts over time. When we mapped the data from the collars we collected, we learned that it only takes a handful of bears within a community to generate a steady flow of nuisance complaints. A small number of adult females, as indicated by analysis of their home range data, were responsible for most complaints and showed the greatest tendency to become persistent nuisance animals. These females formed relatively compact, stable home ranges within and around communities where their opportunistic behavior



Bear research and restoration work is made possible in part by Federal Aid in Sport Fish and Wildlife Restoration.



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Opportunistic bears can become a nuisance when humans make food available.

allowed them to exploit human-related food sources. Furthermore, their ability to impose learned behavior onto cubs and the tendency of female offspring to occupy a part of their mother's home range means that the young bears are *learning* nuisance behaviors and residency — and passing it on down through generations.

Adult and sub-adult males also exhibited nuisance behavior, but to a much lesser extent than females. Adult male bears occasionally took advantage of feeding opportunities on the outskirts of these communities, specifically during periods of food shortage, but rarely wandered into more suburban areas. These males showed a stronger preference for more remote and secure areas. Sub-adult males lacked the ability to become long-term residents within communities, presumably because of increased mortality rates compared to adult bears, more intense dispersal behavior and increased competition from adult bears.

Results from this study were very enlightening from a wildlife management perspective. One goal of the study was to assess the potential value of regulated hunting as a tool to reduce nuisance bear conflicts. To be an effective mitigation option, harvest would need to target individual offending bears. There was considerable overlap in home ranges during both the nuisance (May-August) and hunting seasons (September-December), indicating that nuisance bears were in close proximity to the communities they visited during summer. Hunter effort focused around these communities may provide a useful option in reducing nuisance bear conflicts, because of the bears' seasonal proximity and fidelity to these communities.

Hair of the Bear

For wildlife managers and biologists to do the job right, we need to know approximately how many bears inhabit the woods of New Hampshire. Statewide bear population goals are expressed as regional densities (bears per square mile) and are formulated based on biological data, available habitat and public expectations. Rules governing the hunting season for bear — specifically, season length and bag limits — are modified every two years to achieve management objectives. The statewide bear population estimate is derived through analysis of age and sex data on bears that died, whether from hunting or some other cause. This statewide estimate is then partitioned into regional densities using regional deer-hunter observation rates.

Another project currently underway uses a “mark-and-capture” technique to estimate the bear population in New Hampshire's northernmost Wildlife Management Unit. Rather than physically marking a bear, a hair sample is col-

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Biologists keep a baby bear warm while its mother's telemetry collar is replaced; afterwards the cub is snuggled back into the den. The work is part of a 3-year tracking study that helped quantify bear use of human environments.

lected using a hair-removal trap. Analysis of a black bear's DNA (which, like human DNA, is unique to an individual) provides a genetic profile; in the study, we use this genetic profile to “mark” individual bears. Hair samples acquired during subsequent capture sessions are compared to the original samples to determine how many of the bears are “repeats.” These recapture rates are used in conjunction with established scientific models to develop a population estimate.

This genetic marking study will provide an independent population estimate that can be compared to the estimate derived from mortality data. The comparison will be valuable for testing the validity of the current model used to estimate bear populations. This study, a cooperative project between N.H. Fish and Game and the University of New Hampshire, is being conducted in Pittsburg, both on state land and on property owned by the Connecticut Lakes Timber Company.

A successful bear program requires management strategies based on the best data available, including both harvest data and research initiatives. New Hampshire's annual bear hunt and the bear research it supports allow Fish and Game to maintain a healthy, viable bear population that is consistent with the desires of a multitude of user groups. These fascinating animals have a broad fan base: sportsmen hunt them in fall by various methods; wildlife watchers travel to watch a sow and her cubs feed on a field edge during spring. As for me — during the chilly hike back down into Lincoln, on a researcher's high, I can hardly wait to learn what other bear secrets we will discover.

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