Massachusetts Wildlife

No. 1, 2021 $3.00

Black Bear

Trail Cameras

Heart of the Hunt

Photo © Mike Daly

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MASSACHUSETTS WILDLIFE

Vol. 71 No. 1

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In the mid-1970s, the Massachusetts black bear population was estimated at under 100 individuals. As the now-thriving population expands its range eastward, the risk of conflict with people increases as bears explore suburban communities for food. Minimizing this potential conflict will require people to adjust their behavior because bears aren't going to adjust theirs.

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On the Cover: Game biologist Erik Amati prepares to carry a newly collared one-year-old female black bear back to her den in the winter of 2018–2019. This winter, the bear was handled in the den as a three-year-old and biologists documented her first litter of two cubs. Photo by Dave Wattles/MassWildlife

Photo/Bear © Mike Daly

Photo by Troy Gipps/MassWildlife

MASSACHUSETTS *IS* BEAR COUNTRY

by Jim Behnke

BEDFORD, SEPT. 2018

John and Donna Betz looked out on their backyard from a kitchen window late one afternoon and were surprised to see two bears investigating their bird feeder. Several of their neighbors also reported the bears poking around in their backyards. That same month, bears were reported in Lexington, Concord, and Lincoln.

ARLINGTON, MAY 2019

It was about 6:30 a.m. on a misty Friday when the first reports of the bear reached police. The young male had been traversing backyards in a residential neighborhood. Chased by a dog, it sought sanctuary in an oak tree 35 feet above the ground. A nearby elementary school delayed its opening as local news networks, Massachusetts Environmental Police, and MassWildlife converged on the scene. Curious Arlington residents of all ages gathered to watch the spectacle. Some saw it as a good omen for the Bruins' Stanley Cup run (it wasn't). After a two-hour vigil, the bear slowly succumbed to the immobilizing darts deployed by MassWildlife. It climbed, clumsily, down from the tree, avoiding a potentially dangerous fall. Then, it was carefully loaded into a truck and moved to an undisclosed location well west of Boston.

LEOMINSTER, AUG. 2020

Paul Gove never actually saw the bears that wreaked havoc on his farm. During a routine check of his cornfields ahead of the harvest, Paul discovered numerous large circles of demolished corn plants. He estimates the bears consumed 25 dozen ears of corn. He sprang into action the very next day and installed an electric fence around the cornfield. That night, finding the corn secured, the bears changed tactics and raided his beehives, consuming approximately 20 pounds of honey. MassWildlife officials determined that the culprits were an adult sow (female bear) and her two cubs.

GREENFIELD, SEPT. 2020

It was all caught on a security camera. The black bear entered the field of view as the homeowner dozed in broad daylight in a chaise lounge next to his backyard swimming pool. After taking a drink from the pool, the bear approached the man, sniffed and licked his foot, and then gave it a nudge with an outstretched paw. The contact awakened the man, and the startled bear made a hasty exit, stage left. The incident received national network news coverage and went viral on social media with over a quarter million views on YouTube.

These are just four of many recent reports of the eastward expansion of the black bear's range in Massachusetts. In the last few years, one-time bear sightings have also been reported in Newton, Chelmsford, North Andover, and Amesbury. And who could forget the famous Cape Cod bear of 2012? It wandered all the way to Provincetown before it was tranquilized in Wellfleet and relocated by MassWildlife officials.

While folks west of the Connecticut River have been living with bears for quite some time, the gradual expansion of their range has exposed countless others to the challenges of living in Bear Country. Dave Wattles, black bear and furbearer biologist for MassWildlife says, "As our bear population increases and expands, human–bear encounters are occurring with greater frequency. To limit potential conflicts, people need to understand what it means to co-exist with bears. People need to change *their* behavior because bears aren't going to change theirs."

Challenges aside, the resurgence of the Massachusetts black bear population is a remarkable comeback story, especially considering that as recently as 1940 the population was estimated by the U.S. Fish and Wildlife Service to be under 10 individuals restricted to the northwest corner of the state. How did it happen?

Back from the Brink

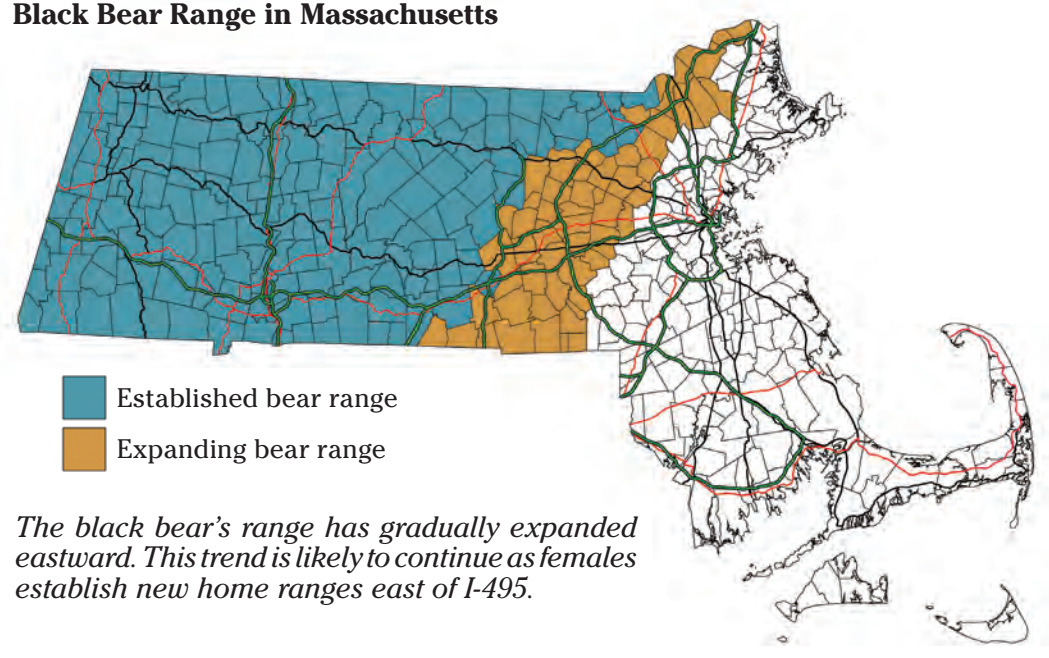
In pre-colonial times, the indigenous peoples of the area hunted bears for food, clothing, bedding materials, and barter. They revered their prey and evidence suggests that bear killings were regulated by cultural practices. At the time of European colonization, the current area of Massachusetts was almost 100% forested. Bears were found everywhere, except Cape Cod and the Islands. Colonists killed bears for the same reasons as the indigenous peoples and found novel uses for the oil rendered from bear fat for cooking and medicinal purposes, including treating rheumatic complaints and as a popular remedy for baldness.

Bears were still common in Massachusetts in the mid-1700s, but as the colonists clear-cut forests and converted forested land for agricultural purposes, bears were increasingly considered a threat (along with wolves and mountain lions). Bounties were set and exterminating bears became standard practice. By the turn of the 19th century, bear sightings east of the Connecticut River were rare.

The decline in the bear population correlated with the decline in forested land. By the mid-1800s, 60 to 80% of the land was cleared for pasture, tillage, orchards, and buildings and remaining woodlands were subject to frequent cutting for lumber and fuel. By the turn of the 20th century, forests had started to regrow as New England residents began to rely on fruits and vegetables delivered by rail from the Midwest and firewood was replaced by coal as a primary source of fuel. Today, some 64% of the land in Massachusetts is forested, an important factor in the comeback of bears, as well as moose, fishers, bobcats, and beavers.

From its low point in 1940, the bear population gradually increased. According to MassWildlife records, there were likely under 100 bears in the state in the mid-1970s, increasing to 500 in the 1980s, and approximately 3,000 by 2005. Today, the estimated population is 4,500–5,000 animals, but Dave Wattles isn't fixated on the total population numbers. "What's more important," he said, "is that we're conserving and managing a healthy bear population below the 'cultural carrying capacity'—the number of animals the human population will tolerate before the risks of conflict become too high." A critical part of that management is hunt-

Black Bear Range in Massachusetts



The black bear's range has gradually expanded eastward. This trend is likely to continue as females establish new home ranges east of I-495.

ing. Since 2010, 2,376 bears have been harvested by Massachusetts hunters, including 325 bears in 2020 alone, the largest recorded annual harvest.

To more fully appreciate the comeback story, we need to look more deeply at how this large mammal goes about surviving and thriving under the forest canopy.

Black Bear Biology

The American black bear (*Ursus americanus*) is widely distributed in North America and is the only bear species found in New England. Adult males, or boars, are much larger than females, often weighing more than 450 pounds. Males are solitary animals except during mating season, which peaks in June. Dominant males will mate with as many females as possible, while younger males will disperse widely until they work their way up the mating hierarchy. It's usually young males, like the Arlington bear and the Cape Cod bear, that turn up on the eastern edge of the range.

Females, or sows, are smaller, typically weighing 140–225 pounds, and first come into estrus at the age of three. Like rodents, mustelids, and marsupials, bears employ the reproductive strategy of delayed implantation. After breeding, the fertilized egg remains dormant until the fall when the sow achieves a nutritional threshold that triggers the implantation of the egg into her uterine wall. This requires adding some 50% to her body weight prior to hibernation. She needs to ingest enough calories to ensure her own survival for approximately five months in the den. During that time, she will not eat, drink, urinate, or defecate, while simultaneously producing enough milk for her cubs.

In Massachusetts, pregnant sows usually begin denning in early November, but that can vary depending upon weather and food availability. Boars hibernate alone and usually begin the denning process somewhat later than sows. If food is abundant and the weather mild, it's possible for any bear to skip hibernation altogether. Bears den in burrows in the ground, at the base of fallen trees, in tree hollows and rock crevices, and in very dense brush or brush piles.

Cubs are born in the den in January or February after a short gestation period of 50–55 days. Cub survival rates for first-time mothers are poor, but will improve over their lifetimes, which can span over 20 years. In Massachusetts, the typical litter size is two or three cubs. Cubs are heavily dependent on milk but are introduced to other foods by their mothers throughout their first summer

Continued on page 12

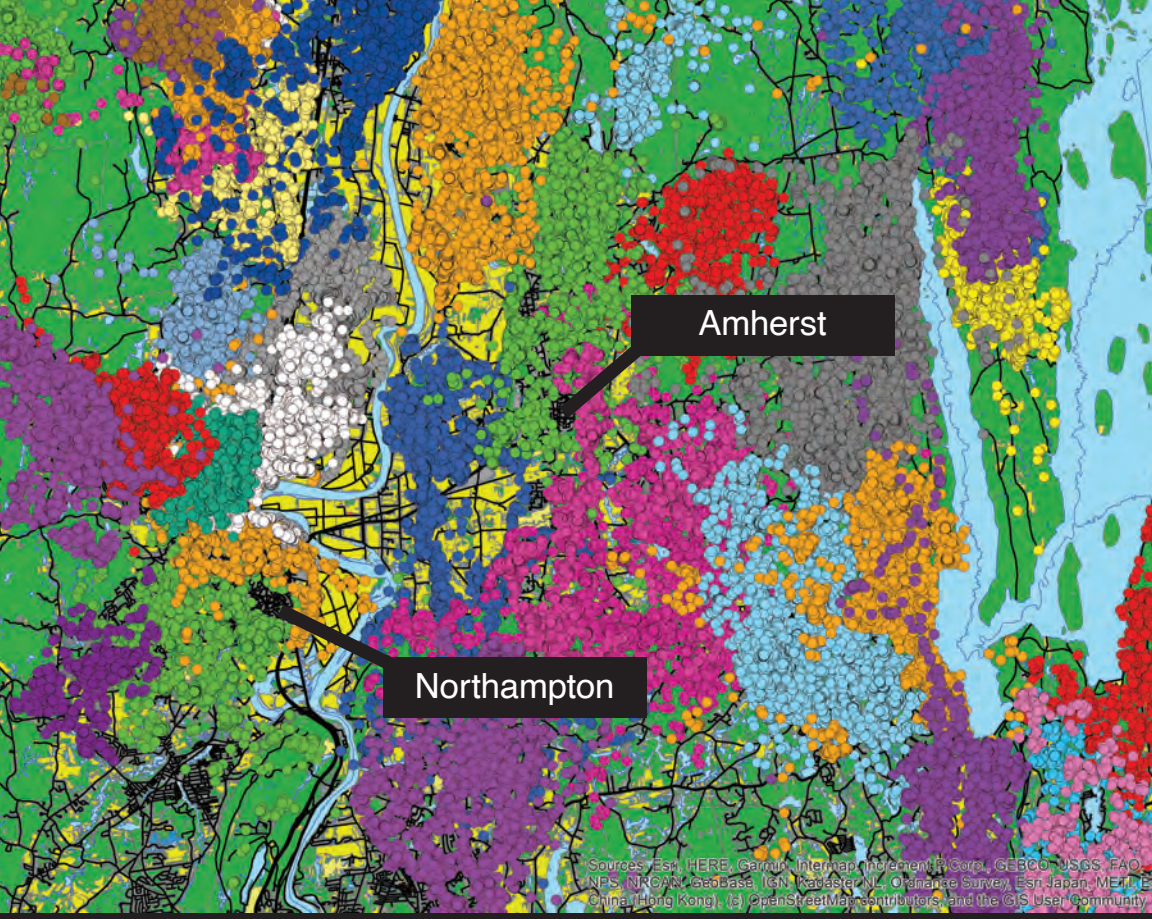
Photo by Erik Amati/MassWildlife

Photo © John and Donna Betz

BIRD FEEDERS: THE "GATEWAY DRUG"

MassWildlife black bear and furbearer biologist Dave Wattles considers bird feeders the "gateway drug" to other human-supplied food sources. This is particularly true in suburban areas like Bedford, where the bears shown above turned up in September, 2018. New construction that abuts woodlands, like this house in Millbury, provides bears with easy access to backyards.

Photo by Troy Gipps/MassWildlife



BEAR USE OF DEVELOPED AREAS

(Above) On this map of the Connecticut River Valley, each colored cluster represents a different GPS collared female black bear. Each dot shows her precise location between 2010 and 2017. Keep in mind that this is only a small fraction of the bears that actually live in the area, yet these communities have been able to co-exist with bears despite their ubiquity.

(Right) A sow and first-year cub dumpster diving. Everything a bear cub learns about finding food it learns from its mother. This cub is well on its way to habituating to human-supplied food sources. Bear-proofing such food sources is an important step in the process of learning to live with bears.

Photo by Dave Fuller/MassWildlife

Continued from page 9

and are generally weaned by the fall. Cubs stay with their mothers through summer, and a second winter in the den, finally dispersing when they are about 16 months old. Because sows cannot enter estrus while lactating, most will have cubs every other year.

Benjamin Kilham has been raising orphaned cubs and reintroducing them to the wilds of New Hampshire for over 20 years. His research suggests that sows maintain matriarchal hierarchies by sharing access to food sources with their female progeny. The eastern expansion of the black bear's range is partly a result of matriarchal sows gradually ceding home range to their female young over generations while those sows seek new, unclaimed habitat to the east.

As one bear expert put it, "bears live in a world of feast or famine." Some 85% of their diet consists of vegetative plants, berries, roots, and nuts, and food sources will shift seasonally over the course of the year. In the spring, they consume a lot of buds, emerging grasses, sedges, skunk cabbage, and an occasional deer fawn. In summer, their options shift to berries, insects (especially bees, wasps, and ants, and their larvae), and carrion. In the fall, when they are bulking up for hibernation, bears will consume large quantities of acorns, beechnuts, and hickory nuts.

Bears are opportunistic omnivores and will consume whatever sources of nutrition they encounter, like the corn and bee larvae and honey on Paul Gove's farm. And this is precisely the problem with bear–human interaction. When they encounter food sources (e.g., crops, chicken coops, bird feeders, garbage) from humans, they will quickly learn to return to those same areas unless the food sources are removed or secured.

Bears have an extraordinary sense of smell, which helps them find food and keep a "nose" out for other bears. The National Institute of Environmental Health reported that "bears are thought to have the best sense of smell of any animal on earth." Benjamin Kilham says that "bears' ability to receive and analyze scent puts bloodhounds to shame." This makes it virtually impossible for a bear to surprise another bear and unlikely for a bear to be surprised by a human. MassWildlife biologist Dave Fuller tells a story of a sow whose home range was south of Quabbin Reservoir. Late one summer, during a bumper beechnut crop up near Keene, New Hampshire, that bear traveled 40 miles north to feed on those beechnuts. "How did she know?" Dave wondered. Is it possible she picked up the scent of the beechnuts on a prevailing wind? Possibly.

Forty Years of Research

A black bear field study was launched in 1980 as a collaborative effort between MassWildlife, UMass Amherst, and the Massachusetts Cooperative Fish and Wildlife Research Unit. The goal of this continuous longitudinal study, currently directed by Dave Wattles, is to monitor the black bear population to determine survival and reproductive rates and use those data to model the status and health of the population. More recently, the study has focused on gaining an understanding about black bear habitat use and movement across the landscape, as well assessing public perceptions of black bears.

Every spring, MassWildlife researchers trap bears using baited metal culvert traps. When a bear enters the trap and takes the bait, the door is triggered to close. Once trapped, bears are immobilized with a tranquilizer. All bears are ear-tagged and females are fitted with a satellite (GPS) tracking collar. Collars aren't a reliable option for males because of their rapid rate of growth and the fact that their necks are actually larger than their skulls. Ear tags can be useful when bears are reported by hunters or after vehicular collisions or "nuisance kills."

Each winter, researchers track collared sows to their dens where the sow is tranquilized before they remove her and her young from the den. They then assess the sow's condition, weigh her, and make any necessary adjustments to her collar.

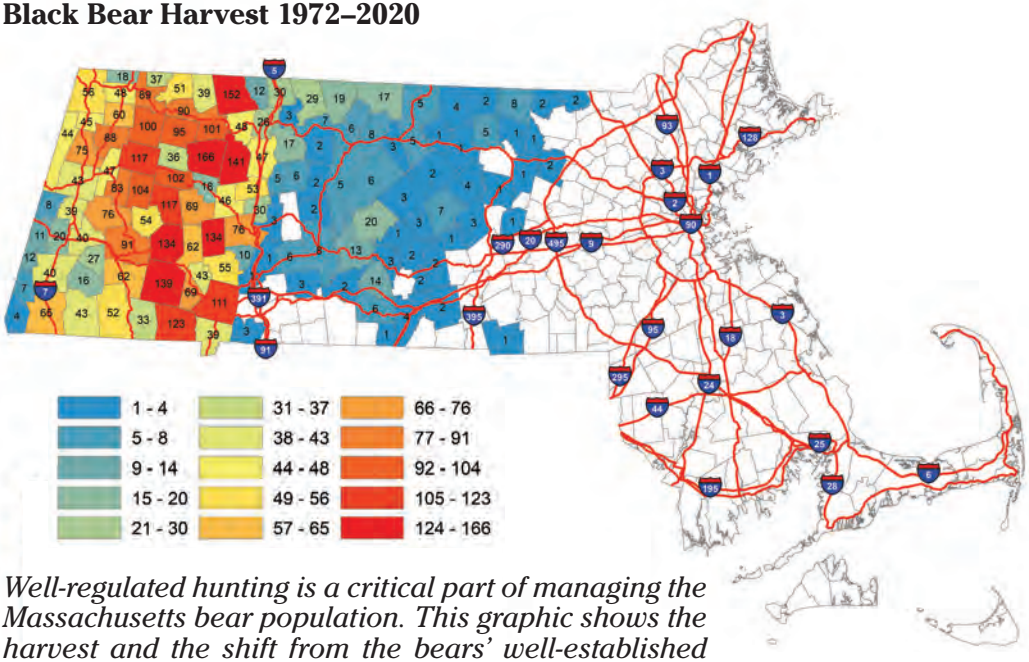
Photos by Dave Wattles/MassWildlife

WINTER BEAR DEN CHECKS

MassWildlife biologists Dave Fuller (above) and Chalis Bird (below) place radio collars on adult and yearling bears, while wildlife technician Chris Conners (right) weighs a newborn cub. Den checks are a critical part of the overall field study. Data from this study provides the information MassWildlife needs to inform management decisions on the bear population in the state.

Photo by Jesse St. Andre/MassWildlife

Black Bear Harvest 1972–2020



Well-regulated hunting is a critical part of managing the Massachusetts bear population. This graphic shows the harvest and the shift from the bears' well-established range west of the Connecticut River to the Pioneer Valley and points east.

They also count and weigh her young. Newborn cubs are small enough (3–8 pounds) to handle without drugs, but yearling cubs, who can weigh anywhere from 35 to over 100 pounds, need to be tranquilized. Yearling counts help to confirm how many cubs survived their first year. Female yearlings are then collared and males are ear-tagged. If everything works out, these collared and tagged yearlings will provide valuable data on movement, reproductive success, and survival for the rest of their lives. Once their work is completed, the researchers safely return the bears to their dens.

With 32 collared females and over 100 ear-tagged bears currently out in the field, researchers have a large enough sample size to make meaningful inferences about the status of the population as a whole. From 2001 to 2020, the average survival rate of collared, adult females was 87%. With such a high survival rate, it's no wonder the population is thriving, and its range is expanding into new territory. The study has also shown that the highest mortality risk is from the time cubs leave their mothers to age three or four.

Hunting is the only way to keep the population from increasing beyond what the public can accept. It also pays for the conservation research in a very direct way through the purchase of hunting licenses and permits and via the Pittman-Robertson Act of 1937, which created a federal excise tax on firearms and ammunition that is distributed back to the states for conservation purposes. Without hunting, there would be no bear conservation program.

Ron Gleason of Greenfield, a retired salesman, Vietnam veteran, and lifelong hunter, has hunted bears in Massachusetts with all manner of firearms and bows since the early 2000s. Bear meat is a favorite at the Gleason family table. To a non-hunter, shooting such a large animal may seem easy. Not so. Ron has hunted game animals all over the world and he considers the black bear one of his most challenging quarries. "They smell danger and seem to remember unfamiliar smells from year to year. When they detect a human scent, they change their routines to avoid trouble. It's almost

impossible to get a shot without being upwind of a bear."

Getting Along with Bears

Massachusetts may be heavily forested, but it's also the third most densely populated state in the country. As their range expands eastward toward the most populous parts of the state, bears are finding new habitats quite to their liking. As bear sightings and encounters increase, many people wonder just how dangerous these creatures really are. Black bears are not inherently aggressive and generally avoid people. Since 2008, there have been only six instances in Massachusetts of someone being injured by a bear, minor injuries in all cases. Nevertheless, more serious encounters are possible. A college-aged hiker was killed in New Jersey in 2014 by a predatory bear, and a 71-year-old woman was seriously injured when a bear broke into her home in Groton, New Hampshire in 2018. Although the risk is small, it's important to respect bears and, if encountering one, to give them plenty of space.

People report "nuisance bears" to the Environmental Police all the time. It is legal for a property owner to kill a bear in the act of killing his or her livestock, destroying crops, or other property. But the solution to bear problems is more about managing people than managing bears. Dave Wattles could not be more emphatic about where he believes most problems between humans and bears begin: bird feeders. Dave sometimes refers to birdfeeders as a "gateway drug." While other wildlife (e.g., coyotes, fishers, bobcats) are drawn to feeders for the easy prey they attract, bears come for the birdseed. A large birdfeeder full of black-oil sunflower seeds has the caloric equivalent of 12 cheese pizzas!

Bears are smart, and each time they feed at a birdfeeder they are learning that the easiest and best place to find food is around our homes and neighborhoods. Once a bear finds easy access to a birdfeeder, it's one step closer to finding an unsecured garbage can, or breaking into a backyard chicken coop or beehive, or entering a garage or shed to access bird seed, or even entering the living space of a home. The bear experts all agree that it is essential for us to be proactive and not reactive in order to prevent bears from learning these behaviors by removing and securing food sources around our homes, neighborhoods, and communities.

Dumpsters at restaurants, apartment complexes, and industrial parks are another favorite target. An unwitting person throwing away their garbage could be in for an unpleasant surprise if a bear happens to be dumpster-diving

TRACKING BRUINS: *MassWildlife biologists Dave Fuller (left) and Dave Wattles use radio telemetry to track collared female black bears in Massachusetts.*

Photo by Jesse St. Andre/MassWildlife

and gorging on leftovers. All of these problems are avoidable by taking easy, commonsense actions: eliminating bird feeders, securing trash cans and putting out garbage the morning of pickup, and acquiring metal-topped dumpsters. A detailed summary of mitigation tactics can be found at mass.gov/bears or by calling a MassWildlife office for assistance.

Bears also present challenges for beekeepers and chicken owners. Kim Skyrm, state apiarist for the Department of Agriculture, has noted that beekeeping as a hobby has skyrocketed in recent years, estimating 6,000 beekeepers in the state. Many were reporting bear incidents three to five years ago. The good news is that reports of beehive raids have actually gone down over the last two years, which Kim Skyrm attributes to the explicit guidance provided by MassWildlife on bear mitigation. Backyard chicken coops have also become a frequent target for bears in recent years. Fortunately, the best way to prevent beehive and chicken coop raids—installing an electric fence—is pretty straightforward and not excessively expensive. Please don't wait until you have a bear problem to install an electric fence. A complete electric fencing guide is available at mass.gov/bears.

As residents of eastern Massachusetts brace themselves to become part of Bear Country, they should take heart that residents of central and western Massachusetts have been co-existing with bears for decades. If there's a "ground zero" example of major communities that have had to learn how to live with bears, it's the towns of Northampton and Amherst. Surrounded by forests and wetlands and with a high concentration of chicken coops, beehives, and other human-supplied food sources, this area offers bears an abundance of the wrong kind of foraging opportunities. Northampton has been living with bears for 50 or 60 years, and Amherst for about 15 years. It took a long time for the breeding population of bears to traverse I-91 and the Connecticut River. Carol Hepburn, the Amherst animal welfare officer, reports

BEAR-PROOF BEES: *A properly installed electric panel fence, like this one in South Deerfield, can protect an apiary from black bear damage.*

Photo by Dave Fuller/MassWildlife

Photo by Dave Wattles/MassWildlife

NEXT GENERATION: *The amount of human interaction these newborn cubs will experience will be largely decided by our behavior, not theirs.*

getting about 10–15 bear-related calls a year. "It's a problem, and it's also a fact of life," she said. Nevertheless, Dave Fuller points out that "we have to continually educate these communities about how to live with bears because Bear Country now includes downtown Northampton and Amherst."

Looking Ahead

What might our bear population's range look like a decade from now? "If you look at the area between I-495 and Route 128 on Google Earth," Dave Wattles said, "there are some ideal habitats for bears—large blocks of protected forest and wetlands intersected by suburban developments. I expect our established bear range to expand another 20 or 30 miles to the east to the corridor between I-190 and I-495 and inside of I-495 and in southeast Massachusetts through Douglas and Oxford and nearby towns."

While not everyone in eastern Massachusetts may be thrilled about the idea of living in close proximity to black bears, many see the comeback of bears and other species that were formerly eradicated as a cause for celebration. Andy Finton, landscape conservation director at The Nature Conservancy put it this way: "Black bears and their habitats are worthy of our attention and resources because they represent landscapes that are functioning not only for them but for all of us as well."

A healthy bear population feeding on natural foods, living in natural settings, and compatibly co-existing with people is an achievable goal if people are willing to adjust their behavior. It's well worth the effort.

About the Author

Jim Behnke is a retired science publisher who lives in Manchester-by-the-Sea. He has traveled the world as a nature lover and fly fishermen, but his writing focuses on the natural history of Massachusetts. In 2020, he published articles for The Manchester Cricket *about striped bass, coyotes, fishers, snowy owls, ospreys, corvids, starling murmurations, and bees.*

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MassWildlife would like to congratulate the 2020 Freshwater Sportfishing Awards Program's Catch & Release Anglers of the Year, Andrew Langley of Peabody (pictured below with his canoe paddle trophy) (18 species) and David Desimone of Amherst (18 species), and Adult Catch & Keep Angler of the Year, Joshua Christman of Pittsfield (14 species), and Youth Catch & Keep Angler of the Year, Philip Prieur of South Hamilton (10 species), and all of the gold pin winners, mass.gov/gold-pin-winners. For over 55 years, MassWildlife has recognized anglers like these who catch exceptional freshwater fish across Massachusetts. Information on how to enter your catch in the Program can be found at mass.gov/dfw/sportfishing-awards. (Photo courtesy of MassWildlife/SFAP)

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