



Bears Will Be Bears

CONSERVING BLACK BEARS BY ALTERING HUMAN BEHAVIOR

By Jon P. Beckmann, Ph.D.



Credit: K. Inman

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Black bears (*Ursus americanus*) capture both the public's imagination and, at times, its fear. That fear takes the spotlight if a bear fatally attacks a human. Though tragic, such events are rare. Far more common are incidents involving hungry bears that ransack campsites, topple garbage cans, raid bird feeders, or break into cars and homes in search of food. These human-bear incidents will only increase: Black bear populations are at their highest levels in the past 100 years and human populations are spreading into areas adjacent to public lands—trends that present serious challenges for bear management and conservation.

Bear biologists addressed these challenges in May of this year, when the Nevada Department of Wildlife (NDOW) hosted the 10th Western Black Bear Workshop in Reno, Nevada. There Wildlife Conservation Society (WCS) researchers distributed a report titled “Coexisting with Black Bears,” which offers four case studies based on years of research concerning black bear conflict and management in the United States. My colleagues and I discussed the underlying causes of human-bear encounters, their consequences for bear ecology, and the management solutions that

can help minimize conflict. Ultimately the solution is clear: remove anthropogenic food sources. Achieving it, however, is an enormous challenge.

Abundant evidence shows that human-bear conflict is increasing rapidly across North America (Hristienko and McDonald 2007, Baruch-Mordo *et al.* 2008). A sampling of recent statistics from around the U.S. reveals the scope of the problem.

- Yosemite National Park averaged 745 bear incidents each year from 1990 to 1998 (Madison 2008), and reported 9,333 incidents between 1989 and 2002 (Matthews *et al.* 2003).
- The Lake Tahoe Basin of western Nevada has seen a ten-fold increase in citizen complaints about black bears since 1990, peaking at 1,500 complaints in 2007 alone (Beckmann *et al.* 2008).
- In Colorado, reports of human-bear encounters rose at least 70 percent from 2006 to 2007, a year in which wildlife officials had to destroy a minimum of 30 bears in response to nuisance calls (Kohler 2007).
- In New Jersey, bear damage complaints rose from 285 to more than 1,200 between 1995 and 2003 (Carr and Burgess 2004).

The Price of Conflict

These high levels of human-black bear conflict have negative consequences for both species. For bears, the most pointed impact is increased mortality. WCS and NDOW are conducting an on-going case study of black bears in Nevada's Lake Tahoe Basin, for example, which shows significant differences between mortality of wildland and urban bears (Beckmann and Lackey 2008). From 1997 to 2008, 240 of the area's black bears died of known causes. Remarkably, 100 percent of those deaths were due to human activities, despite bears' protected status in Nevada. Among the causes: Vehicle collisions led to more than half of the 240 deaths, or 129, with an average of 11.7 bears killed each year by cars—a 22-fold jump over the past decade. Managers killed 26 bears for preying on livestock and 59 bears for reasons of public safety, such as home break-ins. Notably, during the 1980s and early 1990s, prior to bears becoming food-conditioned, no bears were destroyed because of safety concerns in Nevada (Goodrich 1993).



Credit: Jon Beckmann

Black bear cubs learn early in life that dumpster-diving for human food scraps yields a high-calorie meal with little effort. Reliance on such anthropogenic food sources is the chief cause of human-black bear conflict.



Beyond the increased mortality rates of food-conditioned bears, we've documented physiological and behavioral changes as well. For example, male and female adult urban black bears in Nevada are on average 30 percent larger in mass and have home ranges 70 to 90 percent smaller than their wildland counterparts. They exhibit shifts in daily and annual activity patterns, as well as in denning behavior, spending significantly fewer days in dens compared to wildland counterparts (Beckmann and Berger 2003b).

Our data from Nevada suggest that garbage and other urban food resources may be “pulling” bears out of backcountry areas and down into wildland-urban interface areas, a situation that may occur in other systems as well. In western Nevada, densities of bears in urban areas have increased more than four-fold over historical levels (Goodrich 1990, Beckmann and Berger 2003a,b). This shift to urban regions has been accompanied by a reduced bear density in backcountry areas of western Nevada. Currently, high levels of bear mortality in Nevada's urban areas exceeds recruitment rates by bears from urban regions, thus creating urban “sinks” in western Nevada.

Of course humans also suffer consequences from human-bear incidents. On average, about one person per year has died from a black-bear attack in North America over the past decade (Beckmann *et al.* 2008). In terms of economic losses, hungry bears on the prowl for food cause hundreds of thousands of dollars worth of damage each year to cars, homes, campsites, crops, livestock, beehives, and timber. The public safety and economic impacts of human-bear conflict illustrate the need for improved management practices. It's vital to recognize, however, that the root cause of human-bear conflict is the growing reliance of bears on unsecured anthropogenic food sources (Beckmann and Berger 2003a, Matthews *et al.* 2003, Baruch-Mordo *et al.* 2008). To solve the problem, then, we need to focus mainly on changing *human* behavior rather than on controlling bears.

Bears themselves prove this point. WCS scientists working with state agencies have studied the effectiveness of translocation (moving nuisance bears out of populated areas) as well as the most common non-lethal deterrents used in “aversive conditioning,” including pepper spray, rubber slugs and buckshot, noisemakers, and dogs. Translocation has spotty success at best, especially with adult bears (see Science in Short page 12). In the WCS Nevada case study, all relocated bears—even those moved



Credit: AKC Shapiro

A campsite's unsecured scraps make for an easy afternoon meal for a bear in the Inyo National Forest in California's Eastern Sierra Nevadas. “This bear wandered in and out of the campground a number of times while we were there,” says Ari Shapiro, who photographed the bear at a neighboring campsite then helped chase it off with loud noise.

as far as 100 kilometers away—returned. However, in New Mexico, translocation worked for some very specific age and sex classes of bears (WCS 2008). By itself, aversive conditioning with deterrents and dogs tends to have limited success as well. In Nevada 92 percent of bears exposed to deterrents at a particular site quickly returned to that exact spot to forage in dumpsters and other anthropogenic food sources. Although certain non-lethal deterrents show some evidence of success (Maszer 2009), these steps generally are reactive and not proactive in nature, and are likely temporary solutions.

Best Practices for Bear Control

Successful management of human-bear interactions involves a combination of strategies. The best solution by far is to reduce or eliminate the availability of anthropogenic food sources (Beckmann *et al.* 2004, Spencer *et al.* 2007). Convincing people to change their behaviors regarding food and garbage, however, requires a comprehensive plan that includes the following components:

Bear-proof food storage. Anyone living in or hiking through bear country must keep food tightly stowed in bear-resistant containers. Bears are attracted to smells, and are anything but picky. The National Park Service (NPS) recommends bear-resistant containers for anything with a scent, including human and pet food, trash, toiletries, first aid kits, cleaning products, bug spray, makeup, and tobacco (NPS 2005). Many manufacturers offer bear-resistant containers, and some state agencies, such as the Alaska Department of Fish and Game (ADFG), provide websites showing a variety of containers ranging from lightweight backpackers' jars and residential trash cans to aluminum campsite lockers and huge steel dumpsters.

Rigorous public education. The public must become partners in the effort to keep



Though designed to last for years, an experimental structure called a hexayurt clearly couldn't withstand a bear assault in Virginia. With powerful teeth and claws, hungry bears can break through cars and cabin walls.



Credit: Walker J. Hardy

bears wild by preventing food-conditioning. Numerous programs at the local, state, and national level exist to help wildlife managers develop effective public-education campaigns. For example, the Center for Wildlife Information's "Be Bear Aware" campaign posts online information about bear ecology as well as guidance on food storage and other safety precautions. Wildlife managers in bear-habitat areas should enlist the help of homeowner's associations, trash haulers, hiking clubs, retail stores, schools, scouting clubs and other groups to spread the word about bear safety. At campsites, vivid signs with current information about bear safety can be effective, as can displays of visual evidence of bear damage. A ripped tent or shredded cooler will speak volumes.



Credit: Suzann Julien/Stockphoto

A black bear cub is stumped by a bear-proof dumpster in Hatcher Pass, Alaska. Ordinances requiring bear-proof food storage can significantly reduce human-bear encounters in neighborhoods near wild lands.

Regulation and enforcement.

Education alone isn't enough. Regulations that require the use of bear-resistant containers must be in place to significantly reduce food-raiding incidents. In 2005, for example, the New York Department of Environmental Conservation began requiring the use of bear-resistant canisters in the eastern High Peaks of the Adirondacks. Bear sightings there dropped from 420 in 2004 to 93 in 2006 (WCS 2008). Regulations must also be enforced with penalties and active efforts to persuade people to comply. The town of Canmore in Alberta, Canada in 1999 banned all residential curbside trash removal, installed about 60 communal bear-proof waste containers, and instituted fines of \$100 to \$500 for noncompliance. In the summer of 2000, there wasn't a single bear-garbage incident (Comeau date tk).

Multi-faceted management plan. Managers would be wise to proactively prevent food-condition-

ing before it becomes entrenched. But even in areas where bears have been foraging on tourists' scraps for years, conflict incidents can be significantly curbed by a well-coordinated, comprehensive management plan. Such a program should include not only mandatory bear-resistant containers, public education, and law enforcement, but also research and monitoring, lethal and non-lethal control measures, reporting programs, and community involvement.

Yosemite National Park established a prime example of such a plan in response to an escalating problem. In 1998, the park logged an astounding 1,584 bear incidents resulting in more than \$650,000 in damage, 85 percent of which was caused by bears breaking into cars for food (Madison 2008). To address the problem, the park formed the Yosemite Bear Council (YBC) in 1998, and in 2000 commissioned WCS to do a three-year assessment of human-bear conflicts. By employing all available bear-management options—including food-storage regulations, increased enforcement, vigorous public education, research and monitoring, aversive conditioning, and removal—Yosemite achieved remarkable results. As reported in *Human-Wildlife Conflicts* (Fall 2008), from 1990 to 1998 (before the YBC) Yosemite averaged 745 bear incidents per year costing an average of \$288,721. From 1998 to 2007 (post YBC) the park averaged 521 bear incidents per year (a drop of 31 percent) costing an average of \$107,038 (a 63 percent decline).

There is no one-size-fits-all solution to managing human-bear conflicts. Successful plans depend upon a clear understanding of the human, bear, habitat, population, and even political dynamics of each particular location. It's universally true, however, that bear management takes significant time, capital, and a willingness to form a strategy and change the status quo. Local concern about bear issues seems to wane when bears go into hibernation, and rises up again when spring arrives and hungry bears emerge to eat. What's needed, then, is sustained discussion among agencies, NGOs, lawmakers, businesses, and the public to form a plan that, at its core, reduces the availability of anthropogenic food. Simply put, when the food is gone, the problem goes with it. ■

This article has been reviewed by subject-matter experts.



For a complete bibliography, see page 79 or go to www.wildlife.org.