

The Concrete Jungle

Wildlife specialists are urging city dwellers to consider their effect on nonhuman neighbors

By DIANE D. EDWARDS

There were smiles of relief when Humphrey the whale found his (or her) way home to the Pacific Ocean last month, after 25 days zigzagging up the Sacramento River. Human beings spent many hours and about \$75,000 luring the whale from California's populated interior back to open saltwater.

But not all such removals are intended as rescue attempts. Humans also paid U.S. pest control companies and chemical manufacturers more than \$2.8 billion in 1984 to rid themselves of those non-human creatures considered undesirable or untouchable.

Encounters between humans and animals, whether in Yellowstone Valley or downtown Manhattan, can be confusing or even openly hostile. Conflict intensifies when wild animals move in or stay put as humans expand their own high-density urban niches. To examine the animals that choose urban life, the Smithsonian Institution's National Zoological Park conducted a public symposium last month in Washington, D.C. "Wildlife Survivors in the Human Niche" brought together specialists in urban design, ecology, wildlife biology and animal sciences, who discussed the ways humans can adapt to, or even choose, their animal neighbors.

Despite the many animals in the city, the professional literature on urban planning rarely includes considerations of wildlife, notes Robert Dorney, an urban planner at the University of Waterloo in Ontario. "The general assumption is that cities have very little biological surface," he says. "That's absolutely incorrect."

The few habitat mapping systems in use define urban ecosystems as having a central core, fringe areas zoned for urban development and outer fringes with commuter dwellings. The last are what Dorney describes as "the urban shadow, where man and nature fit together with a different set of rules." Other urban segments create habitats where humans and animals overlap — the city dump, park lakes, roadways, back alleys.

Dorney feels that classical ecology is nearly worthless in studying urban wildlife. Unlike their country cousins, urban insects float vertically with warm air ris-

ing above cities. Mice living along busy roads have high lead levels in their hair. And migrating birds frequently strike high-rise buildings or are confused by unpredictable water runoff.

Humans unquestionably have altered the population dynamics of some species. In 1890, a Shakespear aficionado released starlings into New York's Central Park because the English bird was mentioned by the writer. Today there are 900 million descendants of those transplanted birds in the United States, causing problems at airports and around buildings. On the other hand, the introduction of snakes to Guam Island put two bird species in danger of disappearing. An animal can become extinct by humans "chipping away at its niche," says amphibian specialist Charles Stine of Ellicott City, Md.



Michael Robinson

Unwelcome insects find human dwellings the perfect home.

Animal habits are affected as well. According to Dorney, most birds in the United States in 1860 were migratory; now fewer than half migrate. A study of a large planned community in Maryland by Al Geis, urban wildlife specialist for the U.S. Fish and Wildlife Service in Laurel, Md., revealed a dramatic shifting of bird populations. Although he found increases in total numbers, there were steep declines in species like meadowlarks and mourning doves. These field-loving songbirds were replaced by pigeons, starlings and sparrows better adapted to nesting in human-made structures.

Birds are not the only victims of ur-

banization. Fewer people may be adding squirrel meat to authenticate their Brunswick stew, but the ubiquitous city squirrel has its own modern-day problems. Vagn Flyger of the University of Maryland in College Park reports that a poxlike viral disease afflicts only urban squirrels. And city-dwelling squirrels quarrel over space and food, something rarely seen among squirrels in the wild.

While animal attacks on tourists always make headlines, the sight of road-killed animals is part of the story. For example, in Boulder, Colo., 200 mule deer are killed each year by motorists. More than 130 black bears are hit by cars in Pennsylvania each year while crossing an interstate highway bisecting their territory. Such small tragedies may be inevitable. Nonetheless, as Stine points out, the majority of wild animals show "remarkable plasticity" in adopting an urban home.

What is it that makes the concrete jungle hospitable to some animals and not to others? National Zoo Director Michael Robinson claims that cockroaches, former tropical dwellers at home around the world, moved north with central heating. The shape of bedbugs, he says, helped them hide in the wild, and later in floor and wall cracks. Most mammals that climb trees can climb houses; fish and amphibians adopt drainage ditches and excavations. All have carved a place of their own with people as neighbors — a place where behavior, morphology and physiological response overlap in a "niche" different from that of their rural relatives.

The black bear illustrates the adaptation that is part of urban wildlife-style. In Pennsylvania, feeding backyard bears has become "a recreational pastime," says wildlife biologist Gary Alt of the state's game commission. Alt and his co-workers have snared more than 2,000 black bears and one angry farmer in their study of bear/human cohabitation. Radio monitoring has shown thousands of bear-human encounters during the last decade. To Alt, the "most surprising statistic of all" is the lack of a single reported case of bear-related injury to humans in the state.

Stray dogs, such as these relaxing in a St. Louis alley, are seen by many as the most aggravating of urban wildlife species.



Alan Beck

Pennsylvania's black bears are thriving. "Without question, this is due to their tremendous adaptability to human environments," says Alt, who removes about 12 bears from city streets yearly. Thanks to human generosity and garbage, the average Pennsylvania male bear weighs 487 pounds, overshadowing his 250-pound counterpart in Montana or Alaska. Increased growth rates enable eastern bears to breed at less than half the age of other black bears.

Why are some furred, feathered, scaled or otherwise-clothed wild animals seen as lovable, and others as unwanted pests? Many people recoil in horror when they come face to face with a raccoon, says urban wildlife biologist Guy Hodge of the Washington, D.C.-based Humane Society of the United States. "The principal complaint [against wild animals is] where they decide to den or roost, when we see firsthand the distinction between sentiment and reality."

Our affection for pets typifies what Hodge calls "the uneasy truce," a camaraderie between humans and animals that can turn sour. There are 48 million dogs, 27 million cats and 25 million birds kept as pets in the United States. Although there is no official census of abandoned pets, stray and feral dogs in particular cause homeowners and city officials considerable aggravation. Hardly unique is the scenario described by Dorney of 1 million pounds of dog feces affecting water quality in mid-sized Waterloo, Ontario, each year. New York City pays the American Society for the Prevention of Cruelty to Animals \$1.5 million a year for animal control. Like coyotes, packs of stray dogs kill hundreds of sheep in places like California and Nevada.

Add to the monetary price of stray and wild animals fears for personal safety. Horror films feature vengeful birds and voracious insects, but real-life confrontations can be serious. Diseases like salmonellosis and plague can be transmitted from wild animals to people, and dur-

ing the past five years major outbreaks of rabies have occurred along the Mid-Atlantic Coast, apparently started by raccoons transported from Florida, according to Suzanne Jenkins, Virginia's assistant state epidemiologist.

More common problems are simple bites from dogs, cats and rodents. Twenty percent of U.S. children under age 12 are bitten each year. A study by Alan Beck of the University of Pennsylvania in Philadelphia partly vindicates urban wildlife in this case. "It is the owned pet," he says, "that accounts for the vast amount [91 percent] of animal bites."

But it is the stray dog that joins more than 100 species on what Hodge calls a "list of nuisance animals," which have homeowners calling pest control.



The highly adaptable city squirrel.

Seventeenth-century Puritans withheld marriage licenses until the groom-to-be killed a quota of six blackbirds. Today pest control is more sophisticated. There are at least 15,000 pest control companies in the United States. Federal assistance programs help fight rats. And off-the-shelf household pesticide sales top \$385.8 million a year, according to John Suarez, technical man-

ager of the National Pest Control Association in Vienna, Va. He told SCIENCE NEWS that, of the 10.5 million households that have rodents each year, 24 million call professional exterminators.

"City dwellers," Hodge says, "will not spend money on commercial exterminators to *relocate* the offending animals." He calls current animal control laws "blindly acquiescent" to the homeowner. Because they feel private homeowners ultimately determine pest control policies, wildlife biologists at the symposium emphasized public awareness and "integrated pest management." The goal of this approach is to alter environments so they become inhospitable, support fewer animals or provide a home for desirable species.

Hodge suggests people "sit down and think like a pest" to find what is attracting the unwanted animals. Manipulation of the environment can include removing plant cover, using mechanical or chemical repellents and designing buildings to prevent nesting. Suarez, noting that retail sales of household pesticides are expected to increase 77 percent by 1989, says pest control industry observers feel most of this rise will be in products containing pest birth-control agents.

Another ploy is to attract certain animals that may replace disliked species. Habitat planning, by providing specific foods and shelter, can give homeowners butterfly-filled gardens or singing bullfrogs in the backyard. City-wide biotic mapping systems can be used to analyze which species should be discouraged and which encouraged to cohabitate with humans.

"We have an urgent need to come close to animals," says Robinson. "We should plan zoos to fill the void that urbanization . . . has left.

"There is no possibility of a modern-day Noah's ark, with 30 million species to put into it." □